

# UNIVERSITY CATALOG

2016-2017





The Rush University Catalog is published as a guide for the faculty and students of Rush University. The University reserves the right to add, amend, delete or deviate from any specifications herein at any time and to apply such changes to registered and accepted students. Policies as stated in the Catalog supersede policies in departmental student handbooks. Students are responsible for reading the Catalog and acquainting themselves with the University policies and regulations to which they are required to adhere. Additionally, students are responsible for knowing the degree requirements relevant to their majors and for enrolling in the courses satisfying those requirements.

Rush University believes the information contained herein is accurate as of August 8, 2016.

# University Catalog 2016-2017

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## 2016-2017 Academic Calendar

Term/Event	Rush Medical College M1	Rush Medical College M2	Rush Medical College M3	Rush Medical College M4	College of Health Sciences	The Graduate College	College of Nursing
<b>Fall 2016</b>							
Registration Begins	7/11/2016	7/11/2016	2/29/2016		7/18/2016	7/18/2016	7/18/2016
Registration Ends	7/22/2016	7/22/2016	3/11/2016		7/29/2016	7/29/2016	7/29/2016
Start of Term	8/1/2016	8/1/2016	5/9/2016	5/9/2016	9/12/2016	8/29/2016	8/29/2016
Labor Day Holiday	9/5/2016	9/5/2016	9/5/2016	9/5/2016		9/5/2016	9/5/2016
Thanksgiving Break	11/22-11/27/2016	11/22-11/27/2016				11/24-11/27/2016	11/24-11/27/2016
Classes End					11/18/2016	12/9/2016	12/2/2016
Final Exams	12/9-12/13/2016	11/25/2016			11/21-11/23/2016	12/12-12/16/2016	*see notes
End of Term	12/16/2016	11/25/2016	10/21/2016	10/21/2016	11/25/2016, 12/9/2016, or 12/16/2016 (depending on program)	12/16/2016	12/9/2016
Graduation					12/17/2016	12/17/2016	12/10/2016
Christmas Holiday	12/25/2016	12/25/2016	12/25/2016	12/25/2016	12/25/2016	12/25/2016	12/25/2016

Term/Event	Rush Medical College M1	Rush Medical College M2	Rush Medical College M3	Rush Medical College M4	College of Health Sciences	The Graduate College	College of Nursing
<b>Winter 2017</b>							
Registration Begins					10/24/2016		
Registration Ends					11/4/2016		
New Year's Holiday					1/2/2017		
Start of Term					1/3/2017		
MLK Holiday					1/16/2017		
Classes End					3/10/2017		
Final Exams					3/13-3/17/2017		
End of Term					3/17/2017		
Graduation					3/18/2017		

Term/Event	Rush Medical College M1	Rush Medical College M2	Rush Medical College M3	Rush Medical College M4	College of Health Sciences	The Graduate College	College of Nursing
<b>Spring 2017</b>							
New Year's Holiday	1/2/2017	1/2/2017	1/2/2017	1/2/2017		1/2/2017	1/2/2017
Registration Begins	10/24/2016	10/24/2016	8/22/2016		2/27/2017	10/24/2016	10/24/2016
Registration Ends	11/4/2016	11/4/2016	9/2/2016		3/10/2017	11/4/2016	11/4/2016
Start of Term	1/3/2017	11/28/2016	10/24/2016	10/24/2016	3/27/2017	1/3/2017	1/3/2017
Thanksgiving Break							
MLK Holiday	1/16/2017	1/16/2017				1/16/2017	1/16/2017
Term Break	3/25-4/2/2017	12/17/2016-1/1/2017	12/19/2016-1/1/2017	12/19/2016-1/1/2017		3/11-3/19/2017	
Classes End					6/2/2017	5/5/2017	4/10/2017
Final Exams	5/15-5/17/2017	3/13-3/17/2017			6/5-6/9/2017	5/8-5/12/2017	*see notes
End of Term	5/19/2017	3/18/2017	4/21/2017	4/21/2017	6/9/2017	5/12/2017	4/14/2017
Graduation				4/22/2017	6/10/2017	5/13/2017	4/15/2017
Commencement				5/25/2017	5/25/2017	5/25/2017	5/27/2017

Term/Event	Rush Medical College M1	Rush Medical College M2	Rush Medical College M3	Rush Medical College M4	College of Health Sciences	The Graduate College	College of Nursing
<b>Summer 2017</b>		M2 - special term (effective 2016-2017 only)			10 week term (class times will be extended)		
Registration Begins					4/17/2017	2/27/2017	2/27/2017
Registration Ends					4/28/2017	3/10/2017	3/10/2017
Start of Term		7/31/2017	5/8/2017	5/8/2017	6/19/2017	5/15/2017	5/1/2017
Memorial Day			5/29/2017	5/29/2017		5/29/2017	5/29/2017
Independence Day			7/4/2017	7/4/2017	7/4/2017	7/4/2017	7/4/2017
Classes End					8/18/2017	8/18/2017	8/4/2017
Final Exams			8/14/2017	8/14/2017	8/21-8/25/2017		*see notes
End of Term		9/1/2017	8/18/2017	8/18/2017	8/25/2017	8/18/2017	8/11/2017
Graduation					8/26/2017	8/19/2017	8/12/2017

\*Notes: Not all classes in the College of Nursing have final exams. Please consult the individual course syllabi for details. Nursing students should plan to be available for coursework and/or exams until the official end date of each term. \*\*\*Calendar dates are subject to change without notice.\*\*\*

## **Degree and Certificate Programs**

### **Rush Medical College**

Doctor of Medicine

### **Rush University College of Nursing**

Master of Science in Nursing

Post-Graduate Certificate and RNFA Course Series

Doctor of Nursing Practice

Doctor of Philosophy

### **College of Health Sciences**

Bachelor of Science

*Health Sciences*

*Imaging Sciences*

*Vascular Ultrasound*

### **Certificate**

*Specialist in Blood Bank*

### **Master of Science**

*Clinical Laboratory Management*

*Clinical Nutrition*

*Health Systems Management*

*Medical Laboratory Science*

*Medical Physics*

*Occupational Therapy*

*Perfusion Technology*

*Physician Assistant Studies*

*Respiratory Care*

*Speech-Language Pathology*

**Doctor of Audiology**

**Doctor of Philosophy**

### **The Graduate College**

#### **Master of Science**

*Anatomy and Cell Biology*

*Biochemistry*

*Biomechanics*

*Biotechnology*

*Clinical Research*

*Immunology/Microbiology*

*Medical Physics*

*Pharmacology*

#### **Doctor of Philosophy**

*Anatomy and Cell Biology*

*Biochemistry*

*Biomechanics*

*Health Sciences*

*Immunology/Microbiology*

*Medical Physics*

*Molecular Biophysics and Physiology*

*Neuroscience*

*Nursing Science*

*Pharmacology*

## University Governance

### Board of Governors

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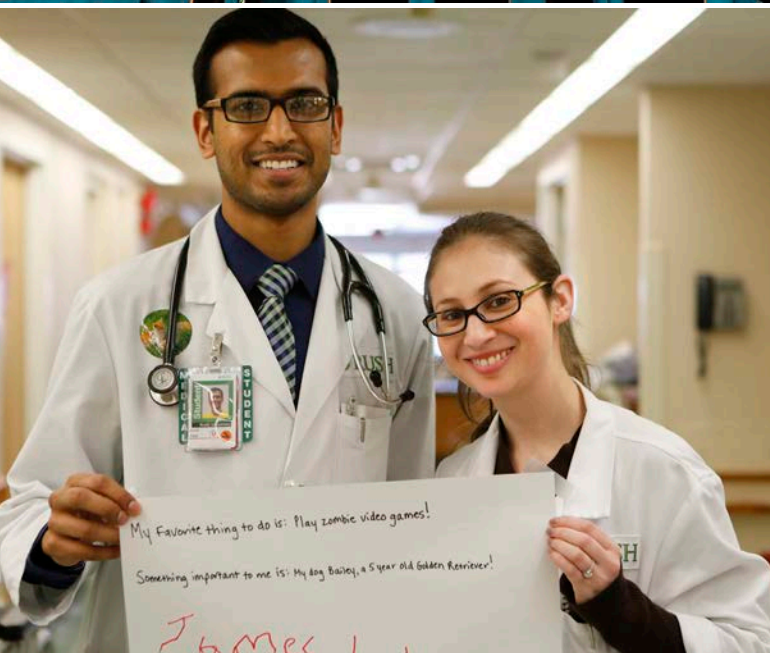
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Prohibition Against Harassment, Discrimination and Sexual Misconduct

Office of Institutional Research, Assessment and Accreditation

## Welcome to Rush University!



Rush University is dedicated to training in the clinical and basic sciences of health care and medical research. Its four colleges — Rush Medical College, Rush University College of Nursing, the College of Health Sciences and the Graduate College — together train more than 2,500 students. In addition, Rush University Medical Center trains more than 600 residents and fellows in the graduate programs of clinical education for physicians.

Students have the opportunity to train at Rush University Medical Center, one of the nation's leading academic medical centers. The desire to participate in the education of trainees at all levels has attracted some of the most outstanding scientists, physicians, nurses and allied health professionals in the country to Rush, where our primary interest is to provide the very best in patient care.

Trainees in the clinical disciplines will be prepared for the challenges that they will face by active participation in clinical care at the Medical Center throughout most of their training. Basic scientists will work as part of those teams. The link between basic science and clinical programs often stimulates each side to find creative solutions to the health care challenges of today and the future.

I am pleased you have chosen Rush for your training. We take the responsibility seriously. At any time during your training, please feel free to contact one of your deans or myself for any suggestions or to address any issues. Training is exciting as well as challenging. All of us are here to support you.

Thanks for choosing Rush.

A handwritten signature in black ink that reads "Larry Goodman". The signature is fluid and cursive.

Larry Goodman, MD  
President, Rush University  
Chief Executive Officer, Rush University Medical Center



## **Rush University Medical Center Mission, Vision and Values**

### **Mission**

The mission of Rush is to improve the health of the individuals and diverse communities we serve through the integration of outstanding patient care, education, research and community partnerships.

### **Vision**

Rush will be the leading academic health system in the region and nationally recognized for transforming health care.

### **Core Values**

#### **I CARE**

**I**nnovation

**C**ollaboration

**A**ccountability

**R**espect

**E**xcellence

These five values, known as our I CARE values, convey the philosophy behind every decision Rush employees make. Rush employees also commit themselves to executing these values with compassion. This translates into a dedication — shared by all members of the Rush community — to providing the highest quality patient care.

## **History of Rush University Medical Center**

Rush University Medical Center is one of Chicago's oldest health care organizations. Its heritage extends back to 1837, when Rush Medical College was established. St. Luke's Hospital, founded in 1864, and Presbyterian Hospital, founded in 1883, merged in 1956 to form Presbyterian-St. Luke's Hospital. The subsequent incorporation of these pioneer institutions in 1969 created Rush-Presbyterian-St. Luke's Medical Center, which was renamed Rush University Medical Center in October 2003.

Rush is a not-for-profit academic medical center comprising Rush University Medical Center, Rush University, Rush Oak Park Hospital and Rush Health.

## **Renowned Patient Care**

Rush University Medical Center encompasses a 664-bed hospital serving adults and children, including the Johnston R. Bowman

Health Center, which provides medical and rehabilitative care to older adults and people with short- and long-term disabilities.

It includes Rush's 376-bed Tower hospital building, which opened in 2012 as part of the Medical Center's major campus renovation. Rush's commitment to sustainability and innovation earned the Tower LEED Gold certification. It is the largest new construction health care project in the world to be LEED Gold certified. Rush's renovation also includes Rush's Orthopedic Building, which opened in 2010, and the ongoing campus-wide implementation of an electronic medical record system, enhancing patient care and safety.

A unique combination of research and patient care has earned Rush national rankings in seven of 16 specialty areas in U.S. News & World Report's 2015–16 America's Best Hospitals issue, among other recognitions of our quality of care and accreditations.

Our nurses are at the forefront of our efforts to provide quality care, receiving Magnet status four times for making outstanding nursing care the standard at the Medical Center. Rush was the first hospital in Illinois serving adults and children to receive Magnet status — the highest honor in nursing.

And some of the world's best athletes trust themselves to the hands of our physicians. Rush is proud to be the preferred hospital for the Chicago Bulls.

## **Educating Future Health Care Providers**

Rush University is home to one of the first medical colleges in the Midwest and one of the nation's top-ranked nursing colleges, as well as graduate programs in allied health, health systems management and biomedical research. The Medical Center also offers many highly selective residency and fellowship programs in medical and surgical specialties and subspecialties. Rush's unique practitioner-teacher model for health sciences education and research gives students the opportunity to learn from world-renowned instructors who practice what they teach.

## **Committed to Community**

In addition to patient care, education and research, Rush maintains a strong commitment to the community. Many students, faculty and staff at Rush generously donate their time and skills both within and outside of the Medical Center. Their efforts include numerous health outreach projects in which Rush collaborates with neighborhood clinics, churches, schools and

other organizations to provide health screenings and vital health information for underserved children and adults.

Our education and research endeavors, community service programs and relationships with other hospitals are dedicated to enhancing excellence in patient care for the diverse communities of the Chicago area — now and in the future.

Larry J. Goodman, MD, is CEO of Rush University Medical Center and president of Rush University. He also serves as president of the Rush System for Health, and he is the principal officer of the Rush Board of Trustees.

## Rush University Mission, Vision and Values

### Mission

Rush University provides outstanding health sciences education and conducts impactful research in a culture of inclusion, focused on the promotion and preservation of the health and well-being of our diverse communities.

### Vision

The Rush learning community will be the leading health sciences university committed to transforming health care through innovative research and education.

### Core Values

As the academic component of Rush University Medical Center, the University shares the Medical Center's core values: innovation, collaboration, accountability, respect and excellence. The I CARE values guide the efforts of Rush University students, faculty and researchers.

## History of Rush University

Rush University is the academic component of Rush University Medical Center. Founded in 1972, the University has expanded from one college and fewer than 100 students to four colleges and more than 2,500 students. It includes Rush Medical College, Rush University College of Nursing, the College of Health Sciences and the Graduate College.

**Rush Medical College** is named for Benjamin Rush, a physician from Pennsylvania, who also signed the Declaration of Independence. Rush Medical College was chartered in 1837 and

opened officially on Dec. 4, 1843, with 22 students enrolled in a 16-week course. During the first century of operation, more than 10,000 physicians received their training at Rush Medical College.

Rush Medical College was affiliated with the University of Chicago from 1898 until 1942, when the medical college temporarily suspended its educational program, though it continued its corporate existence. Its faculty continued undergraduate and graduate teaching of medicine and the biological sciences as members of the faculty of the University of Illinois. The charter of the medical college was reactivated in 1969, when it became part of the Medical Center. Rush Medical College reopened in 1971 with a class of 66 first-year students and 33 third-year students. First-year class size reached its projected maximum of 120 in 1976.

**Rush University College of Nursing** represents a combined heritage dating back to the late nineteenth century when its first antecedent, the St. Luke's Hospital School of Nursing, opened in 1885 to offer diploma education to nurses. In 1903, the Presbyterian Hospital School of Nursing accepted its first students. From 1956 to 1968, nurses were taught at the merged Presbyterian-St. Luke's Hospital School of Nursing. Before the establishment of the College of Nursing in 1972, more than 7,000 nurses had graduated from these three schools.

The **College of Health Sciences**, established in 1975, traces its origins to the School of Medical Technology sponsored by Presbyterian-St. Luke's Hospital from 1959 to 1972. This school was the second largest of its kind in the city of Chicago. During its operation, it provided a one-year professional internship program to more than 200 baccalaureate students in medical technology. Today, the College of Health Sciences offers doctoral programs in audiology and health sciences, 10 programs at the master's level, and bachelor's programs in health sciences, imaging sciences and vascular ultrasound technology.

The **Graduate College** was established as a separate academic unit in January 1981, having previously been organized as the Graduate School within the College of Health Sciences. The Graduate College is responsible for educational programs in the basic sciences and offers master's and doctoral degrees in 12 disciplines.

## The Seal of Rush University

The seal of Rush University is a shield, a classic Greek symbol of preservation and protection and also a medieval British emblem used for identification. As such, it recognizes the University's



overarching commitment to educating health professionals who preserve life and protect patients, and it is the distinguishing identification of Rush University. Its two colors, green and gold, merge the tradition of the past with the custom of the present: Gold was the single historical color of Rush Medical College, and green is used for the modern Medical Center.

The motto, *ministrare per scientiam*, translated from Latin, means to minister (care for or serve) through scientific knowledge. It was adopted by the Board of Trustees in September 1993 to reflect the commitment to educate caring professionals whose

practice is based in knowledge. The shadow in the background is the anchor cross, a symbol of hope and steadfastness, which became the emblem of the merged Presbyterian and St. Luke’s hospitals in 1957, and the foundation that created the vision for Rush University. Superimposed on top is the stylized version of the anchor cross that was adopted in 1971 upon the merger of Rush Medical College and Presbyterian-St. Luke’s Hospital. The final elements are Chicago, the city that is home to the University, and the date of the University’s founding, 1972. The Rush University Board of Overseers adopted the seal in 1999.

### Student Characteristics

Statistics below are based on fall 2015 enrollment figures.

Fall 2015 Enrollment	Men	Women	Total
Rush Medical College	248	261	509
College of Nursing	110	941	1051
College of Health Sciences	163	492	655
The Graduate College	102	117	219
Non-Degree Seeking	8	73	81
<b>Grand Total</b>			<b>2,515</b>

Students by Race and Ethnicity	Total
American Indian or Alaska Native	7
Asian	305
Black or African American	152
Hispanic	229
Native Hawaiian or Other Pacific Islanders	35
White	1637
Two or More Races	45
Unknown	135
<b>Grand Total</b>	<b>2,515</b>

## **Accreditation, Authorization and Licenses**

### **Rush University**

Higher Learning Commission  
230 S. LaSalle St., Suite 7-500  
Chicago, IL 60604  
Phone: (800) 621-7440  
<http://www.hlcommission.org>

### **Rush Medical College**

Accreditation Council for Continuing Medical Education  
(ACCME)  
515 N. State St., Suite 1801  
Chicago, IL 60654  
Phone: (312) 527-9200  
<http://www.accme.org>

Accreditation Council for Graduate Medical Education  
(ACGME)  
515 N. State St., Suite 2000  
Chicago, IL 60654  
Phone: (312) 755-5000  
<http://www.acgme.org>

American Medical Association (AMA)  
330 N. Wabash Ave.  
Chicago, IL 60611  
Phone: (800) 621-8335  
<http://www.ama-assn.org>

Association of American Medical Colleges (AAMC)  
655 K St. NW, Suite 100  
Washington, DC 20001  
Phone: (202) 828-0400  
<http://www.aamc.org>

Liaison Committee on Medical Education (LCME)  
655 K St., NW, Suite 100  
Washington, DC 20001  
Phone: (202) 828-0596  
<http://www.lcme.org>

### **College of Nursing**

Commission on Collegiate Nursing Education (CCNE)  
One DuPont Circle NW, Suite 530  
Washington, DC 20036  
Phone: (202) 463-6930  
<http://www.aacn.nche.edu/accreditation>

Council on Accreditation of Nurse Anesthesia  
Educational Programs  
222 Prospect Ave., Suite 304  
Park Ridge, IL 60068  
Phone: (847) 655-1160  
<http://home.coa.us.com>

### **College of Health Sciences**

#### **Department of Clinical Nutrition**

Academy of Nutrition and Dietetics  
Accreditation Council for Education in Nutrition and Dietetics  
(ACEND)  
120 S. Riverside Plaza, Suite 2000  
Chicago, IL 60606-6995  
Phone: (312) 899-0040 ext. 5400  
<http://www.eatrightacend.org>

#### **Department of Communication Disorders and Sciences**

Council on Academic Accreditation in Audiology and Speech-  
Language Pathology (CAA)  
American Speech-Language-Hearing Association  
2200 Research Blvd.  
Rockville, MD 20850-3289  
Phone: (800) 498-2071  
<http://caa.asha.org/>

#### **Department of Health Systems Management**

Commission on Accreditation of Healthcare Management  
Education (CAHME)  
6110 Executive Blvd., Suite 614  
Rockville, MD 20852  
Phone: (301) 298-1820  
<http://www.cahme.org>

#### **Department of Medical Laboratory Science**

##### *BS and MS programs*

National Accrediting Agency for Clinical Laboratory Sciences  
(NAACLS)  
5600 N. River Rd., Suite 720  
Rosemont, IL 60018-5119  
Phone: (773) 714-8880  
Fax: (773) 714-8886  
<http://www.naacls.org>

### *Specialist in Blood Bank Certificate Program*

Commission on Accreditation of Allied Health Education Programs (CAAHEP)  
25400 U.S. Highway 19 North, Suite 158  
Clearwater, FL 33763  
Phone: (727) 210-2350  
Fax: (727) 210-2354  
<http://www.caahep.org>

### Department of Medical Physics

Commission on Accreditation of Medical Physics Education Programs, Inc. (CAMPEP)  
One Physics Ellipse  
College Park, MD 20740  
Phone: (301) 209-3346  
Fax: (301) 209-0862  
<http://www.campep.org>

### Department of Occupational Therapy

Accreditation Council for Occupational Therapy Education (ACOTE)  
c/o Accreditation Department  
American Occupational Therapy Association (AOTA)  
4720 Montgomery Lane, Suite 200  
Bethesda, MD 20814-3449  
Phone: (301) 652-6611  
Fax: (240) 762-5150  
<http://www.acoteonline.org>

### Department of Perfusion Technology

Accreditation Committee – Perfusion Education  
(A committee on accreditation for CAAHEP)  
6663 S. Sycamore St.  
Littleton, CO 80120  
Phone: (303) 794-6283  
Fax: (303) 738-3223  
<http://www.ac-pe.org>

### Department of Physician Assistant Studies

Accreditation Review Commission on Education for the Physician Assistant, Inc. (ARC-PA)  
12000 Findley Rd., Suite 150  
Johns Creek, GA 30097  
Phone: (770) 476-1224  
Fax: (770) 476-1738  
<http://www.arc-pa.org>

### Department of Religion, Health and Human Values

Association for Clinical Pastoral Education, Inc. (ACPE)  
One West Court Square, Suite 325  
Decatur, GA 30030  
Phone: (404) 320-1472  
Fax: (404) 320-0849  
<http://www.acpe.edu>

### Department of Respiratory Care

Commission on Accreditation for Respiratory Care (CoARC)  
1248 Harwood Rd.  
Bedford, TX 76021-4244  
Phone: (817) 283-2835  
Fax: (817) 354-8519  
<http://www.coarc.com>

### Department of Vascular Ultrasound and Technology

Joint Review Committee on Education in Diagnostic Medical Sonography (JRCEDMS)  
(A committee on accreditation for CAAHEP)  
6021 University Blvd., Suite 500  
Ellicott City, MD 21043  
Phone: (443) 973-3251  
Fax: (866) 738-3444  
<http://www.jrcdms.org>

### Authorization

The Illinois Board of Higher Education has authorized all degree programs offered through Rush University.

### Illinois Board of Higher Education

1 N. Old State Capitol Plaza, Suite 333  
Springfield, IL 62701-1377  
Phone: (217) 782-2551  
Fax: (217) 782-8548  
<http://www.ibhe.state.il.us>

### Additional State Authorizations

Board for Proprietary Education  
Indiana Commission for Higher Education  
101 W. Ohio St., Suite 300  
Indianapolis, IN 46204-4206

### Licenses

State of Illinois  
Department of Public Health  
Cook County Board of Health

## **Rush University Medical Center Memberships**

*Rush University Medical Center belongs to the following organizations:*

American Academy of Physician Assistants  
American Association of Colleges of Nursing  
American Hospital Association  
Association for Clinical Pastoral Education  
Association for Health Services Research  
Association of American Medical Colleges  
Association of Bioethics Program Directors  
Association of Schools of Allied Health Professions  
Association of University Programs in Health Administration  
Blue Cross/Blue Shield Health Care Service Corp.  
Council of Academic Programs in Communication Disorders and Sciences  
Council of Graduate Schools  
Federation of Independent Illinois Colleges and Universities  
Illinois Academy of Physician Assistants  
Illinois Association of Graduate Schools  
Illinois Hospital Association  
Interuniversity Consortium for Political and Social Science  
Metropolitan Chicago Health Care Council  
Midwestern Association of Graduate Schools  
National League for Nursing  
Physician Assistant Education Association  
Voluntary Hospitals of America

## **Rush University Affiliated Colleges and Universities**

*The following 22 colleges and universities in four states have programs that are affiliated with one or more academic programs at Rush University:*

Benedictine University, Lisle, IL  
Benedictine University, Springfield, IL  
Carleton College, Northfield, MN  
Carthage College, Kenosha, WI  
Concordia University, River Forest, IL  
Cornell College, Mount Vernon, IA  
DePaul University, Chicago, IL

Dominican University, River Forest, IL  
Hebrew Theological College, Skokie, IL  
Illinois College, Jacksonville, IL  
Knox College, Galesburg, IL  
Lake Forest College, Lake Forest, IL  
Lawrence University, Appleton, WI  
Lewis University, Romeoville, IL  
Macalester College, St. Paul, MN  
Monmouth College, Monmouth, IL  
North Central College, Naperville, IL  
Northeastern Illinois University, Chicago, IL  
Ripon College, Ripon, WI  
Roosevelt University, Chicago, IL  
Spelman College, Atlanta, GA  
Wheaton College, Wheaton, IL

## **Alumni Relations**

The Office of Alumni Relations is located in the Triangle Office Building, Suite 250, at 1700 W. Van Buren Street. Alumni Relations provides a planned, coordinated program of service and activities of mutual interest and benefit to Rush University, the Medical Center and all alumni. Although the legacy of a Rush education dates back to 1837, Rush University is a relatively young institution. Since the University's inception in 1972, it has conferred more than 18,000 degrees in the health professions. The objective of the Office of Alumni Relations is to provide channels for Rush Medical College, Rush University College of Nursing, the College of Health Sciences, the Graduate College and our predecessor school alumni, as well as former Medical Center house staff, to stay connected to Rush as follows:

- Remain informed of current developments at the Medical Center
- Develop an active interest in and involvement with their alma mater
- Maintain contact with fellow alumni and faculty
- Take advantage of continuing educational opportunities offered through Rush University
- Respond positively through both financial and philosophical support
- Promote and perpetuate the high standards of excellence in patient care, education and scientific advancement consistent with the objectives of Rush University Medical Center

At this time, the following formally organized active alumni associations exist for Rush University graduates:

- The Rush Medical College Alumni Association
- The Rush-Presbyterian-St. Luke's Nurses Alumni Association
- Rush University Communication Disorders and Sciences Alumni Association
- Rush University Health Systems Management Alumni Association (HSMAA)
- Rush University Occupational Therapy Alumni Association
- Alumni Association of the Graduate College at Rush University
- Rush Surgical Society (Alumni Association for Rush-Trained Surgeons)
- Medical Society (Rush Internal Medicine Alumni Association)

For more information concerning Rush University alumni associations, programs and events, call the Office of Alumni Relations at (312) 942-2569, email [alumni@rush.edu](mailto:alumni@rush.edu) or visit [www.rushu.rush.edu/alumni](http://www.rushu.rush.edu/alumni).

## Drug Free Campus and Workplace

Rush University Medical Center is committed to achieving and maintaining a drug-free campus and workplace. The Medical Center has established a drug-free policy consistent with its commitment and goals. The policy states the following, in part:

*The illegal manufacture, distribution, dispensing, use, sale and/or possession of controlled substances on Medical Center property or while performing Medical Center business is strictly prohibited. An employee or student engaged in any such conduct will be subject to discipline up to and including expulsion or termination. In addition, students and employees are subject to all applicable criminal penalties under local, state or federal law for unlawful possession or distribution of illicit drugs and alcohol. Within five days of the conviction, employees and students must report to the Medical Center any conviction for violation of a criminal drug statute occurring within the Medical Center. The health risks associated with the use of illicit drugs and the abuse of alcohol are many and varied. Some drugs may cause psychological and physical dependence or addiction. Others attack the central nervous system, making the user dangerous to himself and others. In the extreme, they can result in convulsions, psychosis, coma and possible death.*

## Tobacco-Free Work Environment

Rush University Medical Center supports the surgeon general's report on use of tobacco products as a major cause of preventable death. Tobacco use has been documented to contribute significantly to health problems of those who engage in the practice, and those who are subjected to an environment where smoke is present.

Rush University Medical Center, to be consistent with its mission, seeks to promote the health, safety and quality of life of all people who come to the Rush campus.

1. In accordance with these standards, Rush University Medical Center prohibits smoking or the use of tobacco by all employees, patients, visitors, physicians, students, faculty, volunteers and contractors on the Medical Center campuses.
2. Regarding premises outside Rush University Medical Center campuses, smoking or the use of tobacco is prohibited in all other buildings or on grounds owned, leased or controlled by Rush University Medical Center wherever located, including adjacent public sidewalks and adjoining properties. This policy may be limited by the policies of the landlord or third party tenants of such premises.
3. Smoking or tobacco use is prohibited in Rush University Medical Center owned, leased or controlled vehicles wherever located.
4. Smoking or tobacco use is prohibited within 15 feet of all Rush shuttle bus stops, immediately adjacent to Rush University Medical Center campuses.
5. Signs are posted at each entrance indicating Rush University Medical Center is a tobacco-free environment.
6. Potential new hires will be informed of the tobacco-free work environment at the time of employment application.
7. Current tobacco use will be asked at the time of health screening. Those with a positive history will be given referral information for smoking cessation.
8. The tobacco-free work environment and policy will be reviewed at new employee orientation.
9. While this policy does not require employees to quit tobacco use, Rush University Medical Center supports and encourages all efforts by employees to quit tobacco use.
10. The Medical Center offers smoking cessation and coping programs to employees and encourages them to participate. For more information, please email [choosehealth@rush.edu](mailto:choosehealth@rush.edu) or call (312) 942-7479.

11. It is the responsibility of all Medical Center staff, faculty, students and employees to ensure compliance with this policy. Enforcement of this policy is a shared responsibility of all hospital personnel.
12. Employees violating this policy will be subject to disciplinary action (see Human Resources Policy and Procedure Code of Conduct).

## **Diversity, Equal Opportunity and Inclusion**

For over three decades, the Rush approach to equal opportunity, diversity and inclusion has not wavered. Our approach is that these are essential components of the best employment, educational and health care practices and must be furthered. This is a continuation of a policy that emanated from the hospital charters of 1865 and 1883 and the documents governing the establishment of Rush University in 1972.

In certain instances, the implementation of this policy and our goals in this area require the use of affirmative initiatives. At Rush, these initiatives are focused on strong recruitment, development and retention efforts, not on quotas — and these recruitment and programming efforts will be continued, consistent with federal, state and municipal guidelines.

Rush University is committed to attracting students who will enable the student body to achieve the educational benefits of diversity and to providing services to all students, faculty and other employees on a nondiscriminatory, equitable basis.

Discrimination or harassment against any member of the Rush University Medical Center community because of age, ancestry, color, disability as defined by Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act, gender, gender identity and/or expression, marital or parental status, national origin, pregnancy, race, religion, sexual orientation, veteran's status, or any other category protected by federal or state law is prohibited and will not be tolerated, nor will any person for those reasons be excluded from the participation in or denied the benefits of any program or activity within Rush University.

Shanon Shumpert, director of employee relations and equal employment opportunity officer, has been designated to oversee the implementation of this policy for Rush University. Ms. Shumpert can be contacted by telephone at (312) 942-5239 or via email at shanon\_shumpert@rush.edu.

Additional resources may be found in the Office of Human Resources, along with the following university individuals and offices:

LeManuel Lee Bitsoi, EdM, EdD  
Director, Student Diversity and Multicultural Affairs  
Armour Academic Center, Suite 984B  
Phone: (312) 942-0725  
Email: lee\_bitsoi@rush.edu

Paula J. Brown, MBA  
Manager, Diversity and Inclusion  
Office for Equal Opportunity  
Rush University Medical Center  
Professional Building, Suite 128  
Phone: (312) 942-7094  
Email: paula\_j\_brown@rush.edu

## **Office of Student Disability Services**

In keeping with its goal to promote diversity among its student population, Rush University is committed to attracting and educating students who will help to make the population of health care professionals reflective of the national population, including individuals with disabilities. In addition, Rush University is committed to ensuring equal access to its facilities, programs, and services are available to students with disabilities.

To be eligible for accommodations, a student must have a documented disability as defined by the ADA and Section 504 of the Rehabilitation Act of 1973. A reasonable accommodation is a modification or adjustment to an instructional activity, facility, program, or service that enables a qualified student with a disability to have an equal opportunity. Both the ADA and Section 504 define disability as: (a) a physical or mental impairment that substantially limits one or more major life activities of such individual; (b) a record of such impairment; or (c) being regarded as having such a condition. In order to respect your privacy and ensure a thoughtful interactive process please contact Student Disability Services.

For more information or to request accommodation(s) refer to the contact listed below:

### **Office of Student Disability Services**

Gayle B. Ward, JD, Sr. Associate Provost, Educational Affairs  
Rush University  
600 S. Paulina Street, Suite 440  
Chicago, IL 60612  
Phone: (312) 942-5237  
Fax: (312) 942-2778  
studentdisabilityservices@rush.edu  
<https://www.rushu.rush.edu/students-disabilities>



## Prohibition Against Harassment, Discrimination and Sexual Misconduct

Rush University Medical Center (Rush) strictly prohibits all forms of unlawful discrimination and harassment of and by any member of the community, including but not limited to students, faculty, employees, volunteers, guests and vendors. Rush complies with Title IX of the Higher Education Amendments of 1972, which prohibits discrimination on the basis of sex in educational programs or activities, admission and employment. Sexual misconduct (and its various forms, as defined below) constitutes sexual discrimination and is also covered under this policy. This policy does not only prohibit discrimination and harassment of employees by employers, but prohibits discrimination and harassment between any member of the Rush community, including between a member of the faculty and a student, between two students, between an employee and a campus guest or between a student and an applicant. This policy applies to all Rush programs and activities including instruction, grading, housing and employment. It is central to the values of Rush that any member of the community who believes that they have witnessed or been the target of unlawful discrimination or harassment feel free to report their concerns for an appropriate response and investigation, without fear of retaliation or retribution. All complaints and concerns about conduct that may violate this policy (including retaliation for reports made pursuant to this policy) should be filed with Rush's equal opportunity officer. Confidential reports can also be made through the Rush hotline at (877) 787-4009 or via the Rush web reporting tool at [rush.ethicspoint.com](http://rush.ethicspoint.com). Anonymous reporters do not need to identify themselves but are asked to provide enough information to enable an investigation. Upon receipt of a complaint, the equal opportunity officer will evaluate the information received and determine what further actions should be taken consistent with the procedures outlined. The complete policy can be found on the Rush website at <http://www.rushu.rush.edu/harassment-prevention>.

### Resources

For more information on Rush's policy against harassment, discrimination and sexual misconduct, contact the following staff member:

Shanon Shumpert  
Equal Opportunity Officer and Title IX Coordinator  
Rush University Medical Center  
Armor Academic Center  
600 S. Paulina St., Suite 403  
Chicago, IL 60612  
Phone: (312) 942-5239  
Email: [shanon\\_shumpert@rush.edu](mailto:shanon_shumpert@rush.edu)

## Office of Institutional Research, Assessment and Accreditation

The Office of Institutional Research, Assessment and Accreditation (OIRAA) serves Rush University by providing leadership and support in the area of institutional research, accreditation, assessment and regulatory mandates. The OIRAA fulfills its mission by doing the following:

- Providing comprehensive information to support institutional planning, policy formation, decision-making and evaluation of effectiveness
- Coordinating responses to external accountability mandates and a wide range of internal and external requests for information about the University
- Providing guidance and coordination for campus-wide and unit-level assessment of academic programs and administrative processes to support the university's quality improvement efforts
- Providing evidence of institutional effectiveness

### The office provides services in three major areas:

#### 1. External Reporting

The OIRAA has primary responsibility for preparing and submitting official reports and data files to ensure the University's compliance with state and federal reporting mandates. In addition, the office coordinates the University's response to a variety of other external requests for information that are received from internal and external stakeholders. Mandatory external reports and updates include the following:

- Integrated Postsecondary Education Data System (IPEDS)
- Illinois Longitudinal Data System (ILDS)
- Higher Learning Commission Annual Institutional Data Update (HLC/AIDU)
- Illinois Virtual Campus (IVC)
- Illinois Board of Higher Education (IBHE)

#### 2. Planning Support and Internal Reports

The OIRAA is charged with compiling, analyzing and interpreting statistical data used in strategic planning efforts by University administrators, trustees and committees. These data include the following:

- Student and faculty characteristics
- Enrollment
- Admissions
- Retention and graduation rates
- Degrees awarded
- Credit hour production
- Alumni performance

- Scholarship and research productivity
- Strategic planning and institutional performance metrics

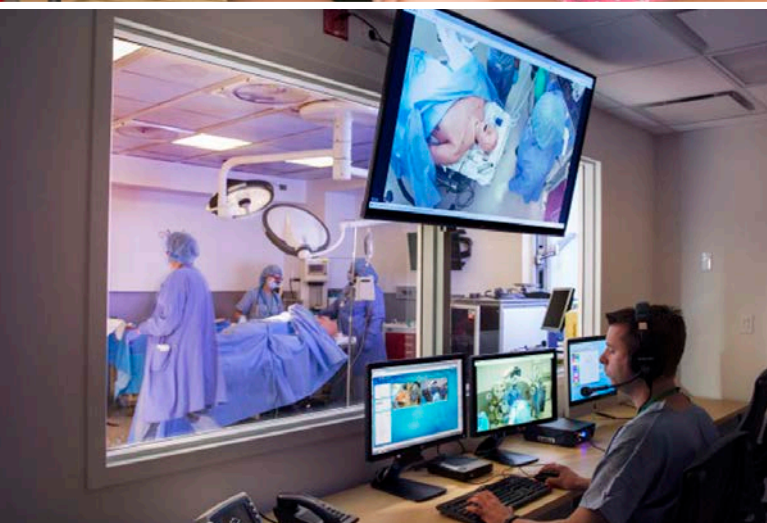
The information is disseminated to the University community through annual reports, websites and responses to ad hoc requests.

### 3. Institutional Effectiveness

The OIRAA is responsible for coordinating campus-wide and unit-level assessment of academic programs and administrative processes to support the University's quality improvement efforts. These activities include the following:

- Gathering and presenting institutional performance data
- Administering Rush University and other surveys
- Providing technical support and consultation to assist units in assessing student learning outcomes and administrative objectives
- Conducting special studies to evaluate the University's progress in achieving strategic goals
- Coordinating accreditation activities
- Supporting the University Assessment Committee in its assessment activities and program reviews
- Supporting and monitoring the HLC mandated quality improvement project

Contact the OIRAA staff at [oiraa@rush.edu](mailto:oiraa@rush.edu).



## Rush University Campus Information

Rush University's Campus

Office of Student Life and Engagement

Counseling Center

International Student Services

Office of Student Diversity and Multicultural Affairs

Campus Housing

Rush Community Service Initiatives Program

Recreation

Student Lounge

Student Lockers

Student Organizations

Voter Registration

Worship Opportunities

Rush University Bookstore

Office of General Education Resources

Quick Copy Center

Library of Rush University Medical Center

McCormick Educational Technology Center

Audio-Visual Services and Support

Rush Fitness Center

Rush Photo Group

## Rush University's Campus

The main campus of Rush University and Rush University Medical Center is located on the Near West Side of Chicago, not far from downtown (often referred to as the Loop). The area surrounding the campus is undergoing much redevelopment. Of particular interest is the Chicago Technology Park, which incorporates biomedical research facilities and programs.

Townhomes and condominiums have been built in Garibaldi Park, just east of the campus, and many new businesses are flourishing in the Taylor Street area. There are other health care facilities in the Medical Center District, including the University of Illinois at Chicago-West Campus, the John H. Stroger, Jr. Hospital of Cook County and the Jesse Brown VA Medical Center.

Rush is centrally and conveniently located. The Marriott Chicago Downtown at the Medical District, a hotel and fine dining establishment, is located at the corner of Harrison Street and Ashland Avenue adjacent to the Medical Center. The main campus now consists of 22 buildings, including facilities for achieving the goals of the Medical Center: patient care, education and research. The main campus also includes two indoor parking facilities.

Armour Academic Center is the hub of most student activities. The Library of Rush University Medical Center and the McCormick Educational Technology Center are located in the Armour Academic Center, along with classrooms, laboratories, academic computing, specialized facilities, the Student Affairs Suite, the Office of Student Life and Engagement, the Office of Student Diversity and Multicultural Affairs, the Rush University Bookstore, a cafeteria, and all of the colleges' administrative offices.

## Medical Center and Facilities

Laboratories are located throughout the Medical Center complex but are principally found in Jelke-South center. Additional departmental laboratories are located in the Cohn Research Building and in the Tech 2000 building. In addition to the main campus, Rush includes Rush-Copley Memorial Hospital, located in Aurora, and Rush Oak Park Hospital, located in Oak Park.

Directly across the Eisenhower Expressway from the main campus is the Triangle Office Building, which is home to finance, legal affairs, philanthropy, marketing and communications, the data center, and other functions of the Medical Center.

The Office of Student Life and Engagement distributes a campus map to new students and publishes the Rush University Student Handbook, which includes a yellow pages section providing locations and telephone numbers of persons, offices, departments and buildings of interest to students.

## Office of Student Life and Engagement

The mission of the Office of Student Life and Engagement is to provide an atmosphere that will enhance students' academic experiences and connection to Rush. The student life and engagement staff works closely with students, faculty and the administration to identify student needs and to design and implement programs and policies to meet those needs. The staff serves as advisors to student organizations, provides career counseling and services to students in each academic discipline, assists with the development and implementation of orientation and commencement events, monitors designated study space and sponsors educational, multicultural and social activities for all students.

Office of Student Life and Engagement

Armour Academic Center

600 S. Paulina St., Suite 984

Chicago, IL 60612

Phone: (312) 942-6302

Fax: (312) 942- 9283

Email: [student\\_life@rush.edu](mailto:student_life@rush.edu)

<http://www.rush.rush.edu/rush-experience/student-services/student-life-and-engagement>

## Student Activities and Programming

The Office of Student Life and Engagement sponsors programs that are open to all Rush University students, faculty and staff. The primary objective of these programs is to enhance the curricular life of the Rush student community. In the past, the office has sponsored events including Rush Roundtables and Current Issues in Health Care, as well as Fall Into Rush (student organization fair), International Student Day and Student Appreciation Week. In addition, the office encourages exploration of Chicago's many cultural, educational and social resources by regularly offering students discounted museum, theatre, sports and movie tickets. The staff in the Office of Student Life and Engagement welcomes input and assistance from students in planning and implementing programming events. Students wishing to become involved are encouraged to contact the Office of Student Life and Engagement at (312) 942-6302 or via email at [student\\_life@rush.edu](mailto:student_life@rush.edu).

## Career Development

The Office of Student Life and Engagement assists students who are preparing for internship or job searches and residency application processes with resumes, curriculum vitae, cover letters, personal statements and interviewing techniques. A variety of career resources are available for student use, including workbooks, handouts and guidebooks. Many of these resources are

available on the RUConnected Portal. Students wishing to make a one-on-one appointment for career assistance should contact the Office of Student Life and Engagement at (312) 942-6302 or via email at [student\\_life@rush.edu](mailto:student_life@rush.edu).

Students are also individually assigned academic advisors from their associated colleges who are knowledgeable about the student's educational program. These advisors provide assistance in curriculum selection, academic progression, and professional and career development.

## Publications for Students

The Office of Student Life and Engagement oversees the publication of student-related materials, such as the *Rush University Student Handbook* and the Online Picture Book. The Online Picture Book may be accessed through the RUConnected Portal. The *Rush University Student Handbook* is provided to each new student at orientation and is also available online at <http://www.rushu.rush.edu/current-students>.

## Counseling Center

The Rush University Counseling Center is open all year and provides professional counseling at no charge to all currently enrolled students. Individuals and couples explore a variety of concerns ranging from academic problems to issues encountered in the course of clinical training. Students also seek help for anxiety, depression, relationship problems, insomnia, eating disorders, sexual orientation and coming out issues, bereavement, family mental illness, and career decisions. The Counseling Center maintains strict standards of confidentiality. No information regarding a student is released to anyone —inside or outside of Rush — without prior consent of the student, within the limits of Illinois law. Contact with the Counseling Center does not become part of any other University record. The Counseling Center is located in 701 Kidston House. Appointments may be scheduled by calling (312) 942-3687.

## International Student Services

International Student Services, housed within the Office of the Registrar and located in the Armour Academic Center, suite 440, provides services for international students who are planning to study at Rush and will need authorization from the United States Citizenship and Immigration Service (USCIS) to do so.

International Student Services serves students in the following ways:

- Representing Rush to the Student and Exchange Visitors Program (SEVP) regarding the attendance of international students
- Helping prospective students navigate issues concerning international admission
- Issuing USCIS documents for F-1 students, to assure compliance with established governmental policies and procedures
- Consulting with current and potential students, academic and administrative offices, staff and faculty regarding nonimmigrant student issues
- Orienting new students to the Rush community in collaboration with the Office of Student Life
- Helping international students be an integral part of the diversity and culture of the Rush community

The International Student Services staff is also available to serve the needs of prospective international students and alumni. For additional information, please call (312) 942-2030.

## Office of Student Diversity and Multicultural Affairs

The Office of Student Diversity and Multicultural Affairs strives to create an environment that is welcoming, inclusive and supportive for all Rush community members. The office aims to develop a community culture that embraces diversity, equity and inclusion in both the educational and clinical environments. Accordingly, office collaborates with all Colleges in the recruitment of students and faculty that is reflective of the diversity that exists in the communities Rush serves. These aims are undergirded by the goal and vision of the office.

### Goal:

Shape and sustain a positive multicultural environment for all students at Rush University.

### Vision:

Rush will be known for creating and promoting a nurturing multicultural environment in which faculty, students and staff from all backgrounds embody and respect attributes, values and diverse perspectives which reflect the communities that we live in and that we serve.

To achieve the goal and vision, the office is committed to the following:

- **Student development** – Provides opportunities for students to participate in diverse leadership opportunities, professional development, service learning, community engagement, and

mentoring, while highlighting and encouraging wellness in students' lives.

- **Education and training** – Offers ongoing trainings, webinars, workshops, lecture series and events to promote diversity and inclusion awareness for students and the greater campus community.
- **Supporting academic success** – Assists in developing culturally inclusive co-curricular support programs that complement the learning environment and foster academic achievement.
- **Campus climate** – Implements a systematic, continuous assessment of campus climate for students and action plans to enhance and strengthen a welcoming, diverse and inclusive student environment.

The Office of Student Diversity and Multicultural Affairs is located in the Armour Academic Center, suite 984G. For additional information, please call (312) 942-0725.

## Campus Housing

Rush University provides a limited block of apartments at the following location to address current student housing needs while the University undergoes a new master facility plan:

Tailor Lofts Student Apartments  
315 S. Peoria St.  
Chicago, IL 60607

These apartments are located one mile east of Rush's campus, just two stops away on the blue line train. Tailor Lofts Student Apartments accepts applications for occupancy beginning Aug. 1, 2016.

For additional information, please view the property online at <http://tailorlofts.info/>.

The amenities at Tailor Lofts Student Apartments include the following:

- 24-hour security presence on the first-floor entrance
- Wi-fi throughout the entire building
- 24-hour Mac computer center with printing capabilities
- Laundry center and recycling facilities on every floor
- Kitchens in every unit (including microwave, stove and full-size refrigerator)

To ensure additional convenience, registered Rush students residing at Tailor Lofts Student Apartments will have their housing costs, in addition to their tuition, billed through the University.

Rush has worked with Tailor Lofts Student Apartments to negotiate special rates for Rush students, so these apartments are likely to go quickly. Interested Rush students can contact the Tailor Lofts Student Apartments leasing company at (312) 563-5638 for a tour and to begin the application process.

## Brokers

Rush University also works with two brokerage companies to provide assistance to students, free of charge, with locating and securing other off-campus housing. Both companies work with a variety of properties in the Chicago area and have received awards for their customer service.

### Downtown Apartment Company

[www.downtownloop.com](http://www.downtownloop.com)

Email: [rush@downtownloop.com](mailto:rush@downtownloop.com)

### The Apartment People

[www.apartmentpeople.com](http://www.apartmentpeople.com)

## Off-Campus Student Housing Guide

Additional information about off-campus student housing, Chicago neighborhoods, and transportation has been compiled in a guide that can be accessed by visiting the Student Life and Engagement or by email at [student\\_life@rush.edu](mailto:student_life@rush.edu) or by telephone at (312) 942-6302.

## Rush Community Service Initiatives Program

The mission of the Rush Community Service Initiatives Program is to provide community-based volunteer experiences for Rush students that enhance their ability to work in interprofessional teams, develop patient relationships, and care for diverse populations, and to provide targeted services based on community need.

The program achieves this mission by doing the following:

- Aligning volunteer experiences with the findings of the Rush Community Health Needs Assessment
- Developing community programs that align with Rush's community implementation plan
- Providing appropriate supports and training for student volunteers
- Accessing the outcomes of community programs
- Evaluating the effects of community service experiences on the personal learning and development of the students involved

## Recreation

For students interested in yoga and Pilates classes, Rush University Medical Center Employee Wellness sponsors classes during throughout the week. For a class schedule, fees and other information call (312) 942-5878.

## Student Lounge

The student lounge, located on the ninth floor, north end, of Armour Academic Center is equipped with couches, a flat screen television, an email workstation, tables and chairs, a copy machine and a kitchen (refrigerator and microwave ovens). All students are invited and encouraged to use the lounge. A student ID proxy mechanism located along the west corridor allows students 24-hour access to the lounge.

## Student Lockers

At orientation, Rush University will assign lockers for the storage of coats, books and other miscellaneous articles. Please note that most lockers are shared with another student. Be advised that Rush University assumes no responsibility for the loss of personal property from lockers. If any difficulties arise with lockers, contact the Office of Student Life and Engagement, located in the Armour Academic Center, suite 984.

## Student Organizations

The Office of Student Life and Engagement recognizes the interests and goals of each student organization through administrative and limited financial support. Students who wish to establish a new organization are encouraged to stop by the office and speak with a staff member. Currently, there are nearly 35 active organizations, including the American Medical Student Association, the Graduate College Student Council, National Student Speech-Language-Hearing Association, Rush Medical College Student Council, Rush Muslim Students' Association, RU-Student Nurses Association and the Student Occupational Therapy Association. A full listing of all approved organizations can be found in the Rush University Student Handbook, and a description of each student organization can be found on the Student Life and Engagement at <https://www.rushu.rush.edu/rush-experience/student-services/student-life-and-engagement>.

## Voter Registration

Voter registration materials are available through the Office of Student Life and Engagement, located in suite 984, Armour Academic Center. These voter registration materials allow for a student to vote in local, state and federal elections.

## Worship Opportunities

The Department of Religion, Health and Human Values provides weekly opportunities for worship in the J. Hall Taylor Memorial Chapel, located on the first floor of the Kellogg building near elevator C, as well as special services on faith-group holidays. A meditation room, available at all times as a refuge for the spirit, is located on the fourth floor in the Atrium lobby. A directory of churches in the area is available by calling the Department of Religion, Health and Human Values at (312) 942-5571. Chaplains are available for consultation about professional and personal issues.

## Rush University Bookstore

The Rush University Bookstore, located on the ground level of the Armour Academic Center, is a health sciences bookstore serving the needs of students, faculty and staff at Rush University Medical Center. The bookstore stocks the required and recommended textbooks for courses offered at Rush University, as well as an assortment of reference and review books. Special orders are handled by the bookstore and will generally be received in one or two weeks. Lab coats and medical-surgical equipment are also stocked. School supplies, greeting cards, convenience items, USPS stamps, computer software and Rush insignia items are also available.

## Office of General Education Resources

The Office of General Educational Resources offers a wide variety of services to Rush University students and faculty. Available services include laboratory services, the Emergency Cardiac Care Program, and the Quick Copy Center. The office is located in the Multidisciplinary Laboratory area in suite 720 of the Armour Academic Center. The classrooms are open to students between 8 a.m. and 4:30 p.m., Monday to Friday, and are closed Saturday and Sunday. Students who need special laboratory instruments or services for education or research projects should discuss such needs in advance with the staff. For questions, please call (312) 942-6791.

## Quick Copy Center

Located in suite 780 of the Armour Academic Center, this facility duplicates materials for educational purposes, as well as general needs. A full range of services, including front and back copying, three-hole punched copies, booklets and multiple binding options, colored copying and a variety of large format posters and banners are offered through the center. Personal work of one or more copies can be accommodated for faculty and students at a reasonable fee. The Quick Copy Center is open Monday through Friday from 8 a.m. to 4:30 p.m.

## Library of Rush University Medical Center

The library serves the education, patient care and research needs of the students, faculty, staff and patients at Rush University Medical Center. Visit the library on the 5th floor of the Armour Academic Center or online at <http://rushu.libguides.com>.

The library offers a comprehensive collection of print and online materials covering all areas of the health sciences. The library's database collection features resources such as SCOPUS, CINAHL, Medline, and PsycINFO. Other online resources include point-of-care reference tools like UpToDate and Clinical Key, which provide concise topic reviews, clinical guidelines, extensive drug information and full text for a wide range of medical textbooks and journals.

If the library does not have an item, it can be requested from another library via interlibrary loan or I-Share. Books, journal articles, proceedings, dissertations and audiovisual materials can all be requested from other institutions. Turnaround time and loan period depend upon the lending library. For details, call (312) 942-5950.

The students, faculty and staff of Rush University Medical Center may access online library resources, such as full-text journals, eBooks and databases, from off-campus locations. For more information, please call (312) 942-5950.

Reference librarians provide personalized information services to all members of the Rush community. Request a comprehensive literature search or schedule individual or group instruction at your convenience to learn how best to use PubMed, evidence-based medical databases, bibliographic management tools or any other library resources. Call (312) 942-6784 or email [lib\\_ref@rush.edu](mailto:lib_ref@rush.edu) to make arrangements for individual or course-related instruction.

## McCormick Educational Technology Center

The McCormick Educational Technology Center (METC) is a media, computer, and educational support center. Its mission is to facilitate university teaching and learning through the use of media, computer software and instructional design assistance.

The METC houses a large collection of media, which are available for student and faculty use. Tablets, laptops, projectors, video and audio recorders, and other accessories are also available to students for limited checkout. Most media and equipment may be reserved in advance.

The METC is home to three multimedia classrooms, room 902 (capacity 10), room 903 (capacity 40), and room 908 (capacity 17), and three media viewing rooms. Rush faculty can reserve multimedia classrooms through the Astra room scheduling system. Students can use viewing rooms for study and group discussion. Workstations in room 917 (the computer lab) are also available for students and residents. Students with a valid Rush University ID have computer lab access on a first-come, first-served basis 24 hours a day, seven days a week. There are two printers in the METC. Software installed on workstations includes the Microsoft Office suite, Web browsers, secure exam software, SPSS, and various software requested by faculty for instruction.

The METC also coordinates the Academic Testing Center located in the Triangle Office Building. This center accommodates up to 75 students for testing, and it includes a multipurpose waiting area that can function as a collaborative learning space. The center can be reserved by email at [registrars\\_scheduling.edu](mailto:registrars_scheduling.edu).

METC staff is available to partner with faculty to enhance instruction. Staff also assist with locating, previewing, evaluating and acquiring commercially produced software and media for use within courses, and can offer collaborative support with audio-visual projects using products such as Blackboard Collaborate, Camtasia and Panopto.

METC staff also provides assessment support through the scanning and reporting of testing results to faculty through optical mark reader test forms and online testing.

## Audio-Visual Services and Support Media Services

Audio-Visual Services and Support provides audio-visual support for classrooms, meeting rooms and auditoriums throughout



the University and Medical Center. Additionally, Audio-Visual Services and Support is glad to provide recommendations to faculty, staff or students who are purchasing audio-visual equipment.

### **Audio-Visual Services and Support**

Armour Academic Center, Suite 734

Office hours: 7:30 a.m. - 4 p.m.

Phone: (312) 563-2527, press 1 at the prompt

### **Rush Fitness Center**

The Rush Fitness Center is open to all students and features cardio equipment, circuit and free weights, a variety of group exercise classes and personal training. Locker rooms with showers and towel service are available. The fitness center is located at 711 S. Paulina St, (312) 947-BFIT (2348), from 5:30 a.m., - 9:30 p.m., Monday to Friday and 7 a.m. - 5 p.m., Saturday or contact us a [rushfitnesscenter@rush.edu](mailto:rushfitnesscenter@rush.edu).

### **Rush Photo Group**

Rush Photo Group is an in-house multimedia department specializing in professional photography, videography and motion graphics. The group's work can be seen in print literature, brochures, publications like Rush News and Inside Rush, social media postings, as well as on the Rush campus monitors. Videos are used for patient education, recruitment and people profiles, to name a few areas.

In tandem with the Department of Marketing and Communications, Rush Photo Group collaborates with departments throughout the Medical Center and University to effectively visualize the Rush brand.

If you have a request for a photo or a video, please download the Questionnaire for Photo/Video Proposals from the Document Library at [http://inside.rush.edu/Corporate/General\\_Info/photogroup/](http://inside.rush.edu/Corporate/General_Info/photogroup/), complete and email it to [photo\\_group.rushu@rush.edu](mailto:photo_group.rushu@rush.edu).

#### **Please Note:**

*Rush Photo Group no longer prints research posters or poster boards. This service has been transferred to the Quick Copy Center located in Armour Academic Center, suite 780. Please submit your request to [quick\\_copy@rush.edu](mailto:quick_copy@rush.edu) or call (312) 942-6697.*

*We also no longer take passport photos. These can be obtained at your select Walgreens or CVS stores.*

*For filming of PowerPoint presentations and classroom lectures, please contact the McCormick Educational Technology Center at (312) 942-6799.*

Rush Photo Group is experienced in the following areas:

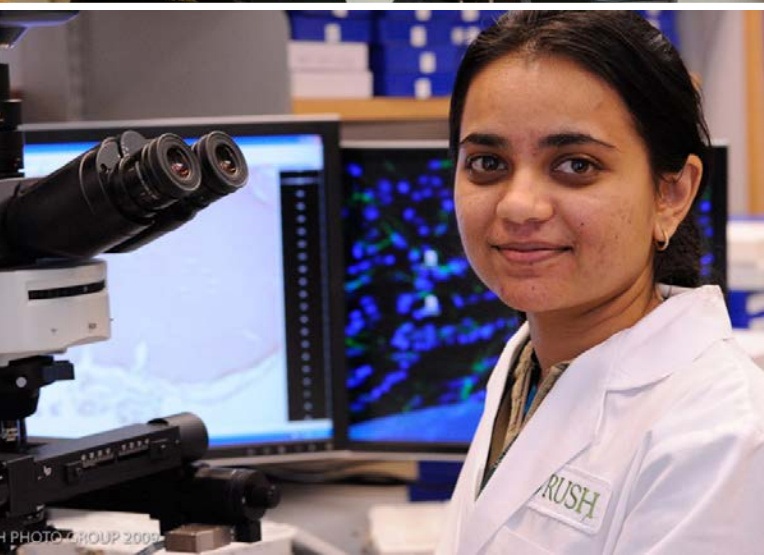
### **Photo Services**

- Headshots or portraits (in studio)
- On-location portraits
- Group shots
- Event coverage
- Clinical shots
- Annual reports

### **Video Services**

- Patient care
- Recruitment
- Training
- Event coverage
- People profiles
- Community outreach and programs

For more information, call the Rush Photo Group at (312) 942-8278 or email [photo\\_group.rushu@rush.edu](mailto:photo_group.rushu@rush.edu).



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## Administrative Offices

### Office of the Provost

The provost is the chief academic officer of the University. The provost oversees academic policies and activities throughout the University. Responsible for strategic planning, the provost provides leadership in setting the vision for the University and for fulfilling the University's mission. Management of the colleges is accomplished through the deans, who report directly to the provost.

The Associate Provost for Research Affairs has overall responsibility for research activity and policy at the University and oversees all aspects of the research enterprise within the University.

The Associate Provost for Faculty Affairs is responsible for the University activities in global health affairs and faculty affairs.

The Senior Associate Provost for Educational Affairs is responsible for University operations and planning, as well as the coordination of academic resources, and oversees programs and services that support the student experience. Responsibilities include oversight of University Enrollment Services, counseling center, McCormick Educational Technology Center, library services, Office of Student Financial Aid, Office of the Registrar, Office of Student Life and Engagement, Office of Student Diversity and Multicultural Affairs, International services and University facilities, .

The Associate Provost for Professional Education and Community Engagement is responsible for the development and administration of the University's Office of Continuing Health Professional Education. Additional responsibilities include development of student volunteer services based on community health and student service learning needs, facilitating inter- and intra-professional student clinical experiences across the University and College of Nursing community faculty practice sites, and aligning the University's community efforts with those of the Medical Center's Community Benefit Plan and the Community Needs Assessment findings.

The Associate Provost for Institutional Research, Assessment and Accreditation is responsible for providing accurate and reliable data in support of planning, policy making, academic assessment and program reviews, in accordance with Rush's mission and strategic goals.

### Office of the Registrar

University by facilitating the transition of students from matriculation to degree completion; interpreting and enforcing established academic and administrative policies and procedures; overseeing the Family Educational Rights and Privacy

Act of 1974 (FERPA); scheduling all classroom space in the Armour Academic Center; issuing student identification cards; fulfilling transcript and credentialing or licensing requests; and providing accessible, reliable, responsive and courteous personal services and support that meet the diverse needs of the University's students, faculty, staff, administration and alumni. More information about the Office of the Registrar is available at <https://www.rushu.rush.edu/rush-experience/student-services/office-registrar>.

## Academic Resources and Policies

### Academic Honesty and Student Conduct

Rush University students and faculty belong to an academic community with high scholarly standards. Academic honesty is essential to the educational process. Academic dishonesty violates one of the most basic ethical principles of an academic community and will result in sanctions imposed under the University's disciplinary system.

The following are some examples of conduct that would subject a student to disciplinary action:

- All forms of academic dishonesty including cheating; plagiarism; collusion; gaining or seeking unfair advantage in relation to any work submitted; helping others to gain an unfair advantage; removing examination materials from a secure examination area; the unauthorized downloading or copying of examinations that are given online; fabricating assigned academic work, including clinical assessments, and presenting them as authentic; facilitating academic dishonesty; unauthorized examination behavior
- Obstruction or disruption of teaching, research, administration, clinical practice and community outreach or other University or Medical Center activities
- Falsification of student records, transcripts or financial aid forms or applications
- Theft of or damage to University or Medical Center property or the property of a member of the University or Medical Center community
- Threats or physical abuse of any person or action that threatens or endangers the safety of others
- Misrepresentation, falsification, alteration or misuse of the University or Medical Center documents, records or identification, or research data
- Unauthorized use or entry of University or Medical Center facilities

- Conviction of a crime deemed serious enough to render the student unfit to pursue his or her profession
- Conduct that is inconsistent with the ethical code of the profession the student is preparing to enter
- Unlawful use or possession of controlled substances on the Medical Center campus
- Unauthorized possession or concealment of firearms or other weapons on Medical Center premises at any time
- Attempting to gain access to another's email or computer account, username or password
- Knowingly setting off false fire, safety or security alarms
- An accusation of student or faculty academic dishonesty or misconduct made in bad faith

### Rush University Honor Code

I pledge that my academic, research and/or clinical work will be of the highest integrity.

I shall neither give nor receive unauthorized aid; I shall not represent the work of others as my own;

I shall not engage in scientific misconduct, and I shall treat all persons with the greatest respect and dignity, just as the ethical codes of Rush University Medical Center and my future profession demand.

I recognize that behaviors that impede learning or undermine academic, research and clinical evaluation, including but not limited to falsification, fabrication and plagiarism, are inconsistent with Rush University values and must be reported.

### Implementation of the Honor Code

This honor code (from now on referred to as the code) sets the standards for expected professional behavior within the University and the Medical Center. Commitment to this code is a shared responsibility of all faculty, staff and students within the Rush University community to ensure the highest standards of behavior, whether in the classroom, the laboratory or in the clinical setting, and to ensure that education obtained at Rush provides a sound foundation for each student's future success as an academic, scientific or health care professional.

### Code Enforcement

Any violations of this code or suspicion of student or academic misconduct should be reported to the student's college for further review in accordance with the procedures specified by that college. Each college will be expected to set standards for addressing honor code violations and cases of misconduct in

a fair and consistent manner that best fits their respective student population. Students refusing to sign must submit a letter to their dean's office explaining why. Adherence to the code is required for matriculation, whether or not the document has been signed. The code may also be enforced for off-campus actions when the student is representing himself or herself as a member of the University.

### Commitment

By signing the code, I affirm my commitment to this code and pledge to act with integrity and adhere to the Rush University values of innovation, collaboration, accountability, respect and excellence. I understand that the signed document becomes part of my permanent record, and I must uphold the letter and spirit of this code throughout my Rush education.

### Inappropriate Degree Usage

A student may not refer to himself or herself as having earned a specific degree until the following terms are met:

- All degree requirements have been successfully completed
- A completed Degree Approval Form has been submitted to the Office of the Registrar
- The official date of graduation for a particular term has been reached

A student who disregards this policy will be referred to the committee that addresses professional ethics violations for that student's program or college.

### Continuous Enrollment

Rush University requires continuous enrollment in the majority of its academic programs from the time a student matriculates through a student's graduation. Exemptions for the summer term only include both first-year medical students and health systems management majors. Students who are not officially enrolled or have not submitted a Petition for Leave of Absence or Voluntary Withdrawal Form risk being administratively withdrawn from the University.

A student enrolled in a noncredit residency or academic enrichment program prior to receipt of his or her degree must be registered for the Continuous Enrollment course to retain his or her student status.

Any degree or certificate student not enrolling in a new course but needing to replace an outstanding incomplete grade must register for the Continuous Enrollment course until the grade is satisfied.

A student who is auditing a course and not allowed in other courses during the same term must register for the Continuous Enrollment course to be charged appropriately.

## Credit by Proficiency

A student who passes a proficiency examination at Rush University will earn academic credit toward the degree. Programs have the discretion to offer credit by proficiency (e.g., standardized examinations, such as ACT-PEP Challenge or Advanced Placement Exams) or achieved prior learning (such as Continuing Education Units). Rush Medical College does not offer credit by proficiency.

Credit by proficiency or achieved prior learning is based upon documented equivalence with courses offered by the program. The minimum standards and format for demonstrating proficiency are determined by program faculty. Formats for demonstrating proficiency may include departmentally developed examinations, licensure or certification exams, portfolios, and competency demonstrations.

Credit awarded by proficiency will equal the credit value of the course(s) as listed in the Rush University Catalog under which the student matriculated. Information that is posted on the transcript for approved credit is the prefix, number and title of the course section, the credits awarded and the grade of K.

Credit for the course will appear in the appropriate term as credit earned. Credit earned by this mechanism will not be used in calculating the student's grade point average.

A fee or partial tuition related to what the student would have been charged may be assessed.

## Academic Credit

Academic credit is awarded to a student upon the successful completion of an approved instructional course or by the demonstration of competencies, proficiencies or fulfillment of learning outcomes equivalent to that provided by an approved instructional course.

One unit of academic credit is the measure of the total time commitment a typical student is expected to devote to learning per week of study.

Total time devoted to learning includes the following: classroom or faculty instruction in either a synchronous or asynchronous mode; time devoted to individual conferences with instructors; reading and completion of learning activities and assignments; posting in online discussion folders; performance demonstrations; examinations; work associated with completion of capstone assignments, theses or dissertations; laboratory work; clinical practica; or any other activity required of the student.

One hour of credit is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that reasonably approximates not less than one

hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work each week for approximately 15 weeks for one semester or one trimester hour of credit or 10 to 12 weeks for one quarter hour of credit or the equivalent of at least 37.5 hours of work for one semester or one trimester hour of credit or 25 hours of work for one quarter hour of credit.

In this context, an hour of work is defined as 50 minutes.

Course credits are not calculated for Rush Medical College and second or third year physician assistant studies courses; however, the number of weeks of clinical experiences appears on the student's transcript. Credit hour assignment for time spent in clinical practica, internships, seminars and laboratory work vary according to college or program requirements.

## Grade Point Average

A grade point average (GPA) is not reported for Rush Medical College students. Transfer credits from institutions outside of Rush University are not included in the GPA calculation. Transfer credits internal to Rush University are included in the GPA calculation. Separate grade point averages are calculated for a student's undergraduate and graduate records. A student's GPA is calculated using all grades in courses that could count toward the program. The GPA is recalculated from zero when a student successfully completes a program and matriculates into a new program at the graduate or professional level. Transcripts show the grade point average for each term in which grade points are earned and show a cumulative GPA for all work taken at Rush University for each program degree level.

When a course is repeated, only the most recent attempt is computed in the GPA, although all grades will display on the transcript.

No grade points are assigned for work taken on a pass/no pass basis, and therefore such work is not computed in the GPA.

Undergraduate students who are required to enroll in courses that typically are taught at the graduate level will have these courses count toward their undergraduate programs of study; thus the credits and grade points will be calculated as part of the undergraduate transcript.

## Grade Report

Students can access RUConnected for their grade report. Grade reports are not mailed to students. Printed copies of a student's grade report are unofficial and intended for the student's personal use and should not be accepted by another college or university in lieu of an official transcript.

## Grading and Numbering System

Grade	Points	Description
A	4.0	Excellent
B	3.0	Good
C	2.0	Satisfactory for undergraduates but may not be acceptable at the graduate level
D	1.0	Minimal pass for some undergraduate programs. May not be acceptable at graduate level. Not used at the graduate level by the College of Nursing, the Graduate College, or the Department of Health Systems Management.
F	0	Failure
P	0	Passing
HP	0	High Pass (only used by Rush Medical College for third and fourth year clinical courses)
N	0	No Pass
H	0	Honors (only used by Rush Medical College)
W	0	Withdrew beginning in week two through the fourth week prior to the end of the term, the student will be issued a grade of W for the course; also used by Rush Medical College when a circumstance beyond the student's control prevents completion of course requirements regardless of withdrawal date during the quarter
K	0	Credit earned through proficiency examination
T	0	Credit accepted in transfer from another college or university
CIP/IP	0	Course in progress and grade not reported
I	0	Incomplete
NR	0	No record (not used after summer 2009)
CC	0	Course continues into the next term. Grade received at end of series is grade for entire course.
AU	0	Audit
XX	0	Participation in an ungraded course or residency

## Graduation and Commencement

### Registration

Students must be registered for the term in which they graduate.

### Application for Graduation

Only Rush University students who are candidates for a degree may participate in the commencement ceremony. Certificate candidates are ineligible to participate.

Although Rush University has multiple graduation dates during which degrees are conferred, the University has only one commencement ceremony.

Students are invited to participate in the commencement ceremony in the following circumstances:

- They graduated in the fall, winter or spring term immediately preceding the current academic year's ceremony
- They are anticipated to graduate at the end of the spring or summer terms that immediately follow the current academic year's ceremony

Doctoral students writing a dissertation and master's students writing a thesis must provide the title of their dissertation or thesis by the date indicated on the Degree Approval Form in order to have that title included in the commencement program.

Publication of a student's name, academic credentials and dissertation or thesis title in the commencement program does not indicate that a degree has been officially conferred by Rush University.

Students must be registered for the term in which they graduate.

All degree-seeking students must submit both the Intent to Graduate Form and Degree Approval Form to the Office of the Registrar by the published deadlines.

Students who do not submit either the Intent to Graduate Form or the Degree Approval Form by the published deadline risk a delayed graduation and may be charged a processing fee.

The student's signature on the Intent to Graduate Form signals that the student is ready to graduate; allows, only for purposes of the ceremony, the release of directory information restrictions enacted by the student through his or her signature on the Directory Information Restriction Form; permits release of the student's name and address to the external photography vendor with whom Rush contracts and to have the vendor place photographs of the student on its website; permits the University to publish the student's picture in a picture composite; for medical students, permits publication of the student's name, photograph,

prior degrees and universities or colleges attended in the Rush Medical College yearbook; permits Rush University to print and announce the following:

- Student's name as indicated on the Intent to Graduate Form
- Honors or awards received
- Previous colleges or universities attended
- Prior degrees earned

The Degree Approval Form must be submitted after the following academic degree requirements are completed:

- All program prerequisites, including general education requirements
- All courses required in the major program of study and completion of required cumulative credit hours
- Residency requirements
- Dissertation or thesis defense (if required by college)
- Submission of the dissertation or thesis to the library (if applicable)
- Achievement of the minimum cumulative GPA of 2.0 for undergraduate and 3.0 for graduate students (not applicable to Rush Medical College)

### Awarding of Degrees

Rush University degrees are dated the day following the last day of the term in which the degree requirements are completed. Degree requirements must be fully met before the next term officially begins; otherwise, the student will be required to register for the subsequent term and will graduate at the end of that term. The student's transcript, diploma and other notification of degree conferrals will be held until a student's financial obligation has been met. Outstanding financial obligations have no effect on the awarding of degrees.

### Latin Honors

Candidates for the Bachelor of Science degree who have demonstrated academic excellence are honored at commencement by the Rush University faculty. Those earning a 3.40 to 3.59 cumulative grade point average at Rush are awarded the Bachelor of Science degree cum laude; 3.60 to 3.79, magna cum laude; 3.80 to 4.00, summa cum laude. Only Rush University courses are calculated into the GPA. Latin honors appear on the student's transcript and diploma and are typically announced during the graduation exercises, including the Commencement ceremony and at college or departmental convocation or awards ceremonies.

## Graduation Prizes and Awards

Many prizes and awards are given at the time of graduation. Award winners are identified in the Commencement ceremony program and in college or departmental convocation or awards ceremony programs.

## Thesis, Dissertation or Scholarly Project Requirements for Graduation

Doctor of Philosophy (PhD) candidates must complete a dissertation. The Doctor of Nursing Practice (DNP) program requires completion of a scholarly project. Some master's programs require a thesis to meet degree requirements.

Each thesis, dissertation or scholarly project must be original and cannot have been used to meet the requirement of any other degree, either at Rush University or any other university.

Each student will have a committee whose role is to assure that the student's thesis, dissertation or scholarly project is of high quality and meets the standards of the program and the University for originality, contribution to the field and scholarly presentation.

Review of a thesis, dissertation or scholarly project will follow the sequence of steps as described by each college, including the prescribed preparation manual for each degree.

Students must give a public presentation of the knowledge developed through the thesis, dissertation or scholarly project process to the academic community.

Public presentation of the thesis, dissertation or scholarly project must precede the final approval by the thesis or dissertation committee.

A copy of the thesis or dissertation must be approved by the Director of the Library of Rush University Medical Center for conformance to publishing requirements and copyright compliance. Scholarly projects are not reviewed by the library.

## Hazardous Exposure Procedures

An exposure incident is defined as eye, mouth, mucous membrane, non-intact skin contact or parenteral exposure to blood or potentially infectious or hazardous materials that result from the performance of a duty related to a student's educational program.

### Procedure at Rush University Medical center:

1. Wash injured area with soap and water. Use water only for the eyes, nose or mouth.
2. Immediately report the incident to your preceptor, supervisor or course instructor. Do not complete the employee injury report.

3. Immediately call Employee and Corporate Health Services (ECHS) at (312) 942-5878 and then report to ECHS, located in suite 475, Atrium Building, 1650 W. Harrison St. during regular hours (Monday to Friday, 7:30 am to 4 pm).
4. If ECHS is closed, immediately report to Emergency Department (ED) on the first floor of the Tower, 1620 W. Harrison St., and (312) 947-0100. Please bring your student ID or indicate that you are a student and not an employee. If a student is seen in the ED, that student must report to ECHS on the next business day.
5. Supply the ECHS or ED nurse or physician with the following information on the source: name, date of birth, medical record number, known medical diseases (Hepatitis B, HIV) and patient room number. All information is recorded confidentially in the Blood/Body Fluid Exposure Record.
6. If the incident occurs in the OR, have personnel draw two red top tubes on source and label with source information and take to ECHS or ED. Students will be counseled or treated as deemed appropriate by ECHS or ED personnel.
7. Follow up with ECHS as directed for follow-up lab work and treatment as indicated. Medical students will follow up with Lifetime Medical Associates.
8. Follow the protocol at your facility. If directed to the Rush ED facility, bring source patient information (No. 4) and source blood in two red top tubes with source information. Email [ru.report\\_exposures@rush.edu](mailto:ru.report_exposures@rush.edu) with exposed student's name, college, course, date, time and details of exposure for follow up and billing. Follow-up care should be received at ECHS or Lifetime Medical Associates.

## Phone Numbers Students May Need

### *Rush University Counseling Center*

(312) 942-3687

### *Rush University Medical Center Campus Security*

(312) 942-5678

### *Rush University Medical Center Emergency Room*

(312) 942-0100

### *Rush University Medical Center Employee and Corporate Health Services*

(312) 942-5878

### *Office of Medical Student Programs*

(312) 942-6915

### *Rush Hotline*

(877) 787-4009

### *Lifetime Medical Associates*

(312) 942-8000



## Crisis Lines

*Chicago Police Department*  
911

*National Suicide Hotline*  
(800) 273-8255

*YWCA Rape Crisis Hotline*  
(888) 293-2080

*Alcoholics' Anonymous 24-hour Hotline*  
(312) 346-1475

*Narcotics Anonymous 24-hour Hotline*  
(708) 848-4884

*Northwestern Memorial Hospital 24-hour Hotline*  
(312) 926-8100

*Domestic Violence Helpline (City of Chicago)*  
(877) 863-6338

*Sarah's Inn Hotline (domestic violence)*  
(708) 386-4225

## Health and Immunization Requirements

Program-specific health and immunization requirements are determined by each college or academic program:

- Students are notified at the time of admission by the college or program of the health and immunization requirements for matriculation into the University.
- Students must comply with annual health and immunization requirements.
- Students who do not submit the proper proof of fulfilled health and immunization requirements by the designated deadline will be prohibited from registering for the next term and may be disengaged from the program until these requirements are met. Late registration fees will apply.
- Students should be aware that clinical sites outside of Rush may have additional requirements.

Students with a medical or religious exemption will be required to adhere to state and hospital policies concerning infection control.

## Incomplete Grades

The grade of incomplete (I) is given only when circumstances beyond the student's control prevent completion of course requirements and the student has received permission to defer completion of these unmet course requirements.

Students must be enrolled during the term in which course requirements are completed. Students enrolling only to complete requirements for a course in which a grade of incomplete was given must register for the Continuous Enrollment course

(XXX999) for zero or one credit hours. Upon completion of the course requirements, the 'I' grade will be replaced by the new grade earned in the course.

A student receiving a grade of 'I' in a course may not begin another course for which the incomplete course is a prerequisite. A student who fails to remove the incomplete grade within the specified time period will receive a final grade of F or N in the course. It is the student's responsibility to pursue the completion of an incomplete grade.

Students in the College of Nursing, the College of Health Sciences, or the Graduate College and students-at-large must complete the unmet course requirements, typically within one term after the term in which the incomplete grade was assigned and not to exceed one calendar year, unless an extension is approved. Students in the College of Nursing may not register for new courses if they have two or more incomplete grades.

Rush Medical College students will be informed by the course instructor and the Office of Medical Student Programs regarding the specific time frame in which an incomplete grade must be resolved.

Additional college-specific policies may apply.

## Pass/No Pass Grading Option

Designated letter grade courses may be taken as pass/no-pass based on approval by the course or program director. The pass/no-pass option is college and course specific, as is the proportion of courses that can be taken pass/no pass. The decision to take a course for a pass/no pass grade cannot be changed after the first Friday of the term.

## Repeated Courses

Some courses, such as research and clinical, may be repeated. These are usually indicated in the course description. All grades and grade points are counted in the GPA for these courses. For all other courses that are repeated, only the most recent grade is counted in the GPA. Both the original course and the repeated course appear on the student's transcript.

## Repeated Courses: Rush Medical College

All instances of a course are represented on the student's official transcript. Course and exam remediation are also represented.

## Room Reservations

To schedule the use of classrooms, lecture halls and auditoriums in the Armour Academic Center, individuals should request a room from the Office of the Registrar. The Office of the Registrar will assist in making room reservations for classes, meetings and campus events based on room availability. Priority for rooms

is given to instructional or class meetings, followed by standing meetings, ad-hoc meetings, student organizations and other requests on a first-come, first-served basis.

Student events must have the approval of the Office of Student Life regarding the date and time and either the organization faculty sponsor's or the Office of Student Life's verification regarding the sponsorship of the event.

### **RULearning (Blackboard)**

To schedule the use of classrooms, lecture halls and auditoriums in the Armour Academic Center, individuals should request a room from the Office of the Registrar. The Office of the Registrar will assist in making room reservations for classes, meetings and campus events based on room availability. Priority for rooms is given to instructional or class meetings, followed by standing meetings, ad-hoc meetings, student organizations and other requests on a first-come, first-served basis.

Student events must have the approval of the Office of Student Life regarding the date and time and either the organization faculty sponsor's or the Office of Student Life's verification regarding the sponsorship of the event.

### **Account Creation**

Students will have RULearning accounts created for them automatically when they have a Rush email account created and register for a course that requires this access. Students will receive their RULearning account through their Rush email.

### **Account Deactivation**

RULearning accounts for students will remain active for the duration of their affiliation with the University. Students' accounts will be deactivated 14 days after their graduation or their affiliation with the University ends.

### **Course Availability and Retention**

Courses in RULearning are available to students on the start date of the term.

Courses will be retained in RULearning for one year past their expected end date. At the end of this period of time, courses will be archived and removed from RULearning. Students will be informed how to download relevant information from their courses that they might need after leaving Rush.

### **System Availability**

RULearning is available on campus via the Rush network and off campus via public Internet. System maintenance is performed every Sunday between 2 a.m. and 6 a.m. Central Time. The system may be unavailable during this time.

### **Students-at-Large**

Individuals who have not formally matriculated to a degree or certificate program, but who want to enroll in a course may do so by completing the Student-at-Large Registration Form.

Students are not allowed to take Rush Medical College courses as students-at-large.

Students are not allowed to take clinical courses as students-at-large.

Instructors are not obligated to accept students-at-large into their classes.

A final grade will be assigned to any course taken as a student-at-large. Individuals should be sure to have the appropriate preparation to take any courses they register for as students-at-large.

Students in degree or certificate programs have enrollment priority over students-at-large.

Students-at-large may be removed from a course if degree- or certificate-seeking students need to enroll in that class. If a student-at-large is removed from a class the student has already paid for, a full refund will be issued.

A student may accumulate no more than 12 credit hours of academic credit as a student-at-large. These hours may be taken within one term or over a period of time. Registration as a student-at-large that results in more than the allowable number of hours in the student-at-large status can only be authorized by the Dean or Associate Dean of the college offering the course(s).

Credit earned as a student-at-large will not necessarily apply toward a Rush degree, if the individual is subsequently admitted to a degree program.

Any incomplete (I) grade earned as a student-at-large will revert to a permanent failing grade (F) unless completed by the end of the next academic term. It is the student's responsibility to pursue the completion of an incomplete grade.

Student-at-large registration forms are only accepted during the designated priority registration period for continuing students for the term in question. Late forms will only be accepted if authorized by the Dean or Associate Dean of the college offering the course(s).

Student-at-large registration forms will only be processed with full tuition payment and all appropriate approvals.

Students-at-large who qualify for Rush University Medical Center employee LEAP tuition assistance must have applied for LEAP tuition assistance by the end of the designated priority

registration period for continuing students for the term in question. Please note that the designated priority registration period may end earlier than the normal LEAP tuition assistance deadline for degree- or certificate-seeking students.

Students cannot be admitted to a Rush University degree or certificate program if they have had a probationary event as a student-at-large. Students who have already been admitted when a probationary event occurs will have their admission rescinded or be dismissed from the program. To be considered for admission, applicants must be considered in good academic standing.

### **Student Email Accounts**

Rush University creates an email account for each student prior to the student's first term. Students are expected to check their email account with regular frequency since Rush University considers email an official means of communication. Often, students are notified of important news and deadlines via the campus email system. Students should also use their Rush email account to communicate with faculty and staff versus sending an email using a personal email account.

Should problems arise with a student's email account, the student should contact the Information Systems Help Desk at (312) 942-4357 or via email at [help@rush.edu](mailto:help@rush.edu).

Graduates of Rush University should have access to their Rush email account for 14 days after graduation. Students who leave the University but who have not graduated should expect to have their email accounts terminated immediately.

Rush University Medical Center has the right to assign, reassign or terminate any individual's access to electronic communications, information systems or networks and take disciplinary actions up to and including dismissal in response to any negligent or deliberate misuse thereof. Email belongs to the recipient. A user's mailbox is treated in the same manner as any other file belonging to that user.

Information proprietary to Rush University Medical Center may not be shared outside the organization without the approval of management. Patients' (HIPAA) protected information may qualify as medical records and are considered confidential. Therefore, email related to patient care, treatment, therapy or testing should be incorporated into the patient's medical record or be encrypted. Rush University Medical Center is not responsible for the content of emails received.

The following are examples of actions that may be subject to disciplinary action:

- Sharing account information, including user name and password
- Attempting to gain access to another user's password, user name or email account
- Attempting to read, delete, copy or modify the email of other users
- Posting email messages with sexually explicit images or language that may be construed as harassment or disparagement of others based on a person's race, color, sexual orientation, gender identity and/or expression, religion, national origin, ancestry, age, marital or parental status, disability as defined by Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act of 1990, Americans with Disabilities Act Amendments Act of 2008, veteran's status, pregnancy or any other category protected by federal or state law or county or city ordinance
- Spamming

### **Student Account Management and Identity Security**

Every approved user will be provided an individual computer account with a unique password. Users are able to update their passwords at [resetmynetworkid.rush.edu](http://resetmynetworkid.rush.edu). Generic sign-ons used by groups of individuals are not allowed. Sharing a sign-on and password or the unauthorized access of another person's computer account is not permitted and can lead to disciplinary action up to and including dismissal.

Every Rush-affiliated user is responsible for every transaction originating from his or her computer account. Accounts that are not used for nine months may be deactivated without notice by Information Services.

Anyone engaging in unauthorized use, disclosure, alteration or destruction of data is subject to disciplinary action. Computer accounts may not be used in any manner that would be illegal or violate the following:

- Rush University Medical Center's Code of Conduct policy
- Any Rush policy addressing privacy; confidentiality; or the use or disclosure of patient, staff, physician, student or other data

### **Student Identification Cards**

Rush students are required to wear their student ID card at all times while on campus. Students not wearing a valid student ID card could be asked to leave the University or Medical Center and related clinical sites. A valid student ID card is needed to access and use the library, laboratories, bookstore and student lounge, and is required for admission to some school events.

The student ID card is valid only while the student is enrolled at Rush University and is immediately deactivated upon graduation, withdrawal or dismissal from the University. Students must return the ID card to the Office of the Registrar upon separation from the University.

New students who attend a formal orientation program will be issued their ID card during the orientation. Otherwise, new students can request an ID card from the Office of the Registrar starting the Friday before the term in which the student is matriculating officially begins.

The Armour Academic Center building opens at 5:30 a.m. and is locked at 7 p.m., Monday through Friday. On Saturday, the building opens at 8 a.m. and is locked at 1:30 p.m. The building is closed on Sundays and holidays. If there is a special event going on in the building or a special request made, the opening and closing times may change. As always, any visitor may enter Rush through the main visitor entrance in the Atrium Building and request a visitor pass.

In order to make it easier for students to enter the Armour Academic Center after the building has been locked at night and to utilize new and extended-hour study spaces, an ID card reader has been installed on the ground floor of the Armour Academic Center near the bookstore. ID cards for Rush students, faculty and employees may utilize this card reader.

Temporary ID badges are available in the event that authorized personnel have forgotten their original ID. Students may obtain a temporary ID from 8 a.m. to 4 p.m., Monday through Friday at the University registrar's office. The temporary ID will allow access for a 24-hour period. If the temporary ID is not returned after the expiration, neither the temporary nor the original ID will work until the temporary ID is returned. The temporary ID represents your original ID. If either is lost, there is a \$10 replacement fee. If the ID card is damaged or stolen, then the replacement fee will not be assessed if either the damaged ID card or a copy of a police report is received by the Office of the Registrar.

## Transcripts

### Transcripts from Previous Institutions

As part of the application for admission process, Rush University requires final and official transcripts from all institutions of higher education that a student attended, regardless of whether or not a degree was earned.

Rush University requires an independent evaluation of foreign credentials when a student earned a degree outside of the U.S. or Canada.

Non-medical school graduates from foreign institutions require course-by-course U.S. equivalency reports. Evaluations of other types will not be accepted. Applicants should not submit foreign transcripts in lieu of a foreign credential evaluation.

International medical school graduates can provide proof of certification from the Educational Commission for Foreign Medical Graduates (<http://www.ecfm.org/>) in lieu of a course-by-course evaluation.

Individuals who apply using a Centralized Application Service (CAS) should submit their final and official transcripts or foreign credential evaluations directly to the CAS.

Individuals who are taking prerequisite or other course work not listed on their CAS application need to submit their final and official transcripts to Rush University. NursingCAS applicants should submit all final transcripts directly to the CAS system.

Individuals who applied via CAS and whose degree was not conferred at the time of the application must submit their final official transcript with degree conferred information to Rush University. NursingCAS applicants should submit all final transcripts directly to the CAS system.

Non-CAS applicants must submit their official or final documents directly to Rush University.

### Rush University Transcripts

Copies of academic transcripts can be obtained at no cost to the student. The transcript is released only with written consent of the student or as consistent with legal requirements. Transcripts will not be released if the student has an outstanding financial obligation to the University.

Students may complete a Transcript Request Form available from the Office of the Registrar website or by writing to the Office of the Registrar, Rush University, 600 S. Paulina Street, Suite 440, Chicago, Illinois 60612. Fax requests are honored at (312) 942-2310. The letter or fax must include the handwritten signature of the student. Five to six business days should typically be allowed for processing.

Transcript requests by Rush Medical College students to be used in support of residency applications should be made to the Office of Medical Student Programs rather than to the Office of the Registrar. A Medical Student Performance Evaluation letter is included with these requests. Copies issued to students will be stamped in red ink as "Issued to Student." All transcripts bear the signature of the University registrar.

## Transfer Credit

Rush University may accept up to 90 quarter hours or 60 semester hours of credit toward general education and other lower-level course requirements.

Graduate-level transfer credit is subject to the approval of the major advisor, program or division director, or designated college administrator based on an evaluation of quality and equivalence.

For graduate-level programs, no more than one-third of the total number of required credits may be granted to a student as transfer credit for work done at another graduate institution.

Rush University will not refuse to consider transfer credit based on the accreditation of the sending institution.

Continuing Education Units cannot be transferred in for credit.

Undergraduate courses must be completed with a C grade or better to be awarded credit.

Graduate courses must be completed with a B grade or better to be awarded transfer credit.

Only letter-graded courses are eligible for evaluation as transfer credit; pass/no-pass courses will not be considered.

Undergraduate-level courses cannot be transferred to meet the requirements of a course taught at the graduate level at Rush.

Transfer credits can only be applied to satisfy the degree requirements of one program. Once applied, they cannot be used a second time for a new degree program.

Previously earned program credits at Rush University may only be used to satisfy the requirements of another program if they are at the same level (e.g., master's or PhD) and if they meet the current curricular standards. The number of credits granted for a given course cannot exceed the number awarded for the course on the transcript of the school where the course was taken or the number earned for the corresponding course at Rush University. Credits earned on the quarter system will be converted into semester credits where applicable. A quarter credit is equal to two-thirds of a semester credit (e.g., three quarter-system credits equal two semester credits).

Course information (including grades) from transferred courses is not recorded on the student's transcript; only the number of credits is recorded and added to the cumulative number of credits.

## Registration

### Adding/Dropping Courses

The first Friday of the term is the last day a course can be added through RUCONNECTED without instructor approval. A course dropped during the first week of the term will not appear on the student's transcript. After that date, one of the following applies:

- For a course dropped beginning in week two through the fourth week prior to the end of the term, the student will be issued a grade of W for the course.
- For a course dropped during the three weeks prior to the end of the term, the student will receive the grade earned for the course work.
- No course may be dropped after the last day of classes or after a final evaluation of the student has been delivered. No withdrawals are allowed during the final examination period.

Rush Medical College students wishing to change their clinical schedules must contact the Office of Medical Student Programs at least four weeks before the start of the scheduled rotation.

For additional information concerning tuition refunds, please refer to Financial Affairs: Tuition Refund Policy.

### Auditing a Course

A student wishing to attend a course without completing all the requirements for credit must register to audit the course with permission of the program director. If space in class is limited, continuing and new students have priority.

Registration in a course cannot be changed from audit to credit or credit to audit after the first week of the term.

Fees associated with auditing a course are listed in the Tuition and Fee Schedule.

Auditing of laboratory or clinical courses is prohibited.

*When auditing, a student does the following:*

- May participate in class discussion only at the invitation of the course director
- Is prohibited from taking examinations
- Is expected to attend class

An audited course will appear on the student's transcript with the designation of "AU". If the student does not attend the class, a grade of W will be assigned.

A student who has audited a course may not apply for credit for that course at a later time. Earning a grade and receiving credit

for the course can only occur by enrolling in and paying for the course during the term it is offered.

Rush Medical College does not allow students to audit Rush Medical College courses except with the permission of the Committee on Student Evaluation and Promotion.

### **Course Schedule**

The course schedule is available through the RUConnected student portal. Typically, the course schedule will be available one week before the two-week registration period begins. The Office of the Registrar will generally send an email announcement to students' Rush University email accounts regarding availability of the course schedule. Registration dates and deadlines are also published in the academic calendar.

Changes to the course schedule, including updates to meeting times, instructors, classrooms and added/closed/canceled courses, will be updated in RUConnected.

### **Independent Study**

To register for independent study, the education coordinator or course instructor offering the course will approve the course and its objectives. Then forward the independent study course request form, including instructor, course title, course description, number of credit hours and grading system to the Office of the Registrar.

The Office of the Registrar will create the course in the student information system. Once the course has been created, the Office of the Registrar will contact the education coordinator or course instructor and inform them of the status of the course. The education coordinator or course instructor will inform the student when the course is available, and the student will register for the course using RUConnected.

Nursing students complete an Independent Study Contract Form, which is available in the Office of the Registrar or online at <https://www.rushu.rush.edu/rush-experience/student-services/office-registrar/registrar-forms>. On this form, the objectives of the study are defined and a plan to meet those objectives is described. This form should be completed and approved by the preceptor, the department chair and the program director no later than the first day of the semester in which the independent study is to be taken. The student's preceptor keeps the contract. Health systems management students also complete a separate independent study form, which is available in the Department of Health Systems Management.

### **Registration Process**

Each term, the course schedule is available on the RUConnected student portal.

Classes are filled on a first-come, first-served basis according to the following order of priority:

1. Continuing students
2. New students
3. Students-at-large

It is the responsibility of continuing students to register using RUConnected each term during the designated two-week registration period for continuing students. Late fees may be applied to students who register outside of the designated registration period.

To register for any given term, students cannot have a registration hold (i.e., missing transcripts, missing or out-of-date immunizations, insurance waivers or financial holds). If the hold is removed before the end of the registration period, the student can register himself or herself without penalty. If the hold is not removed by the end of the registration period, the student will need to register as soon as the hold is resolved and will be assessed a late registration fee.

Registration is completed only when tuition and other charges for the term are paid or satisfactory arrangements for payment are made. Tuition is always due on the first day of the term.

Students who register for a class and subsequently decide to withdraw without completing an Add/Drop, Leave of Absence or Voluntary Withdrawal Form will receive a failing grade (F or N) for that course.

### **Withdrawal/Leave of Absence**

#### **Administrative Withdrawal**

Administrative withdrawal refers to a permanent departure from the University that is University-initiated and without expectation of the student's return.

Rush University requires continuous enrollment in most of its programs from the time a student matriculates through a student's graduation. Students are required to be registered each term or on an approved leave of absence. If the student has decided to withdraw from Rush, voluntary withdrawal paperwork must be submitted to the Office of the Registrar before the voluntary withdrawal will become official. A student, who is not registered, is not on an approved leave of absence or has not submitted paperwork to voluntarily withdraw will be

administratively withdrawn from the University at the end of the term in which the student stopped attending. The administrative withdrawal is posted to the student's transcript. Should the student wish to return to Rush in the future, the student will need to apply for readmission.

### **Voluntary Withdrawal**

Voluntary withdrawal refers to a permanent departure from the University that is student initiated and without expectation of the student's return.

After matriculation to Rush University, a student may not arbitrarily cease registration. All students are required to maintain continuous enrollment or risk administrative withdrawal due to unexplained nonregistration.

Any student withdrawing from the University must give formal notification by completing a Petition for Withdrawal or Leave of Absence Form, which requires the student to obtain specific signatures. The Office of the Registrar is the designated office that a student must notify if he or she wishes to withdraw from the University. The Petition for Withdrawal or Leave of Absence Form may be obtained from the Office of the Registrar or online at <https://www.rushu.rush.edu/rush-experience/student-services/office-registrar/registrar-forms>. The official date used in processing the form is the date that the student begins the withdrawal process.

Withdrawal forms submitted during the current term for the next term or during a break period will use the day after the end of the current term as the official withdrawal date that will be used for processing the form.

A student may not withdraw from classes during the last three weeks of any term. A student who submits a voluntary withdrawal form during the last three weeks of the term will receive grades in the courses for which he or she is registered.

Official withdrawal from the University entitles a student to a tuition refund from the first through the fifth weeks of the term. No other fees are refundable. The lower refund percentage is valid beginning the next Monday morning at midnight.

### **Leave of Absence**

After matriculation to Rush University, a student may not arbitrarily cease registration without notice. All students are required to maintain continuous enrollment or risk administrative withdrawal after one term due to unexplained nonregistration. Leaves of absence (LOA) are approved and granted for the term for which the LOA is desired or as otherwise approved by the college.

It is the student's responsibility to communicate directly with his or her college regarding the disposition of the request for the LOA. Students who request a LOA may be displaced into a subsequent cohort, required to take a revised program of study upon return to the University or be delayed in their progression through the program based on availability of courses or clinical placements.

Students may be eligible for a LOA only after they have completed and submitted the Petition for Leave of Absence required by each college or program to the Office of the Registrar. Failure to complete and submit the Petition for Leave of Absence form will make the student ineligible for any refunds and obligate him or her for the full term's insurance charges. The date that the student begins the process of applying for a Leave of Absence is the official date that will be used in processing the form.

The day after the end of the current term will be the official date used in processing a Leave of Absence form submitted during the current term for the next term or during a break period.

For all approved LOAs, the last date of actual class attendance will be the date of record for calculating financial aid disbursements and returns.

A student who initiates a Petition for Leave of Absence form after the first week of the term will receive a withdrawal grade on the transcript for any course work.

No classes may be withdrawn during the last three weeks of any term. A student who initiates a Petition for Leave of Absence form on or after the Monday beginning the last three week of the term will receive grades in the courses for which he or she is registered and will be subject to an academic progression review based upon the assigned grades.

Each degree has a time limit for completion that includes time away on a LOA. The decision to include the LOA in calculating the time limits for completion of the degree is within the discretion of each college. The maximum length of time that will be approved for a single LOA is 12 consecutive months. Each college may have a maximum length of accumulated leave of absence.

Students are responsible for registering themselves for the term in which they are returning from an approved LOA. This registration must occur during the designated priority registration period. Registration outside of this period will result in a late registration fee. It is the student's responsibility to consult with his or her advisor or program director regarding required courses for the term of re-entry. Rush Medical College students should consult with the appropriate Assistant Dean to determine required courses. Students must satisfy the conditions of

the LOA before re-entering and must comply with all policies, requirements and course sequences in effect at the time of re-entry.

A request to extend a LOA requires that a new clearance form be submitted. A request to extend a LOA requires the signatures of the student's program director, advisor or designated administrator of the college. The completed form must be submitted to the Office of the Registrar no later than the first Friday of the term for which the extension is being requested.

Students who cannot return and who do not have an extension of a LOA approved must withdraw from the institution. Students who fail to return from their LOA on the date that was originally approved risk administrative withdrawal.

## **Student Records**

### **Name, Address and Phone Number Changes**

Rush University requires that student academic records exist under the student's legal name.

The Office of the Registrar maintains the current official listing of student names and addresses for Rush University. It is each student's responsibility to keep the Office of the Registrar informed of changes to this information.

Name changes require official documentation verifying the new name at the time of the request. Examples of official documentation verifying a new name include valid driver's license, marriage license (the official government document), passport, Social Security card, court order or dissolution decree.

### **Privacy and Confidentiality of Student Records and FERPA**

Rush University takes seriously its commitment to protect the privacy of its students and their educational records. In addition to upholding the Family Educational Rights and Privacy Act of 1974 (FERPA), Rush University has taken further steps to protect a person's privacy by extending similar benefits afforded to enrolled students under FERPA to individuals who are applying for admission. If a specific privacy or confidentiality question is not answered in this text, please contact the Office of the Registrar at (312) 942-5681.

Nothing in this policy may be construed to prohibit the University from disclosing information provided to the institution under the Violent Crime Control and Law Enforcement Act concerning sex offenders who are required to register.

## **Family Educational Rights and Privacy Act of 1974 (FERPA)**

FERPA is a federal law designed to protect the privacy of students' educational records. Educational records are those that contain information or documentation directly related to a student that is recorded in any way, including records produced by handwriting, computer, email, audio, video, etc. Educational records contain information directly related to a student and are maintained by Rush University or any party acting on its behalf.

FERPA protects the privacy of students' educational records by setting forth strict instructions and limitations governing the release of information about students. Although FERPA contains exceptions for the release of "directory information" without a student's prior written consent, students have the right to request that even such directory information be withheld from disclosure to third parties.

Given the restrictions of FERPA, faculty and staff should assume that all students must provide written consent that follows the format specified in FERPA before any educational records may be released to anyone other than the student. Information cannot be released to any third party, including the students' parents, relatives and friends. Particularly sensitive information includes students' Social Security numbers, race or ethnicity, gender, nationality, academic performance, disciplinary records, financial aid information and grades.

### **Privacy During the Admissions Process**

Rush University has chosen to take additional steps to protect a person's privacy by extending to individuals who are applying for admission similar benefits afforded to enrolled students. This privacy protection covers all applicants and their application materials throughout the admissions process. The application process exists between the applicant and a Rush University admissions office; therefore, any communication about candidates and their application status to parties beyond these entities is not acceptable unless a school official has a legitimate educational interest to know this information in order to fulfill his or her professional responsibilities. All those involved in the admissions process (e.g., admissions committee members, interviewers, admissions staff, etc.) must adhere to these guidelines.

### **Directory Information**

Rush University may establish categories of information known as directory information and release this information without student consent, upon request. Rush University designates the following personally identifiable information contained in a student's educational record as directory information:



- Student's full name
- Address (local and permanent)
- Telephone number (local and permanent)
- Rush pager number (relevant to third and fourth year Rush Medical College students only)
- Rush email address
- Major and minor field(s) of study including the college, division, department or program in which the student is enrolled
- Student's classification (e.g., junior, senior, etc.) or by number referring to such
- Dates of attendance and graduation and degrees received
- Date and place of birth
- Photograph or other electronic images\*
- Honors and awards received
- Previous colleges/universities attended
- Degrees earned at previous colleges/universities
- Rush Medical College postgraduate appointment (program/institution/state)

\* *Rush University records both visually and audibly many campus events and daily activities such as classes, commencement, convocations, student events and other public occasions. These images, as well as other information about students, are published (e.g., print media and on the Rush website) regularly as part of the University's coverage of campus life and portrayal of the University to a variety of audiences. The University's policy is to restrict the use of any photograph or electronic image to the representation, marketing or promotion of Rush activities only.*

Students may restrict the release of their directory information by completing and submitting the Directory Information Restrictions form available in the Office of the Registrar or online at <http://www.rushu.rush.edu/rush-experience/student-services/office-registrar/registrar-forms>.

The decision to restrict directory information will apply to all requests from third parties (other than those who already have legal access to these data elements), including prospective employers. A student must formally rescind a restriction of directory information by submitting a subsequent Directory Information Restrictions form.

### Annual Notification of Student Rights under FERPA

Rush University notifies students annually of their rights under FERPA with respect to their educational records. These rights include the following:

1. **The right to inspect and review the student's educational records within 45 days of the day the University receives a request for access. If an educational record contains information about other students as well, the requesting student may inspect and review only the specific information which pertains to him or her.**

Students should submit to the University registrar, Dean, head of the academic department or other appropriate official, written requests that identify the record(s) they wish to inspect. The University official will make arrangements for access and notify the student of the time and place where the records may be inspected. If the records are not maintained by the University official to whom the request was submitted, that official shall advise the student of the correct official to whom the request should be addressed.

The University may deny a request for copies of educational records when the requestor refuses to furnish proper identification or information required by the University.

2. **The right to request amendment to an educational record the student believes is inaccurate.**

Students may ask the University to amend a record that they believe is inaccurate. They should write the University official responsible for the record, clearly identify the part of the record they want changed, specify why it is inaccurate, and provide the accurate information. If the University decides not to amend the record as requested by the student, the University will notify the student of the decision and advise the student of his or her right to a hearing regarding the request for amendment. Additional information regarding the hearing procedures will be provided to the student when notified of the right to a hearing.

3. **The right to consent to disclosure of personally identifiable information contained in the educational record, except to the extent that FERPA authorizes disclosure without consent.**

One exception, which permits disclosure without consent, is disclosure to school officials with legitimate educational interests. A school official is a person employed by the University in an administrative, supervisory, academic, research or support staff position (including law enforcement unit personnel and health staff); a person or company with whom the University has contracted (such as an attorney, auditor or collection agent); a person serving on the Board of Trustees; or a student serving on an official committee (such as a disciplinary or grievance committee, or assisting another

school official in performing his or her tasks). A school official has a legitimate educational interest if the official needs to review an education record in order to fulfill his or her professional responsibility.

#### **4. The right to file a complaint with the U.S. Department of Education concerning alleged failures by Rush University to comply with the requirements of FERPA.**

The following is the name and address of the office that administers FERPA:

Family Policy Compliance Office  
U.S. Department of Education  
400 Maryland Ave. SW  
Washington, DC 20202-5920

### **Commencement/Graduation Activities**

The Intent to Graduate Form signals that a student is ready to graduate. By signing this form, the student is giving permission to the University to print the following information in any Rush graduation program and to announce this information at any Rush graduation ceremony: the student's name as indicated on the Intent to Graduate Form, any honors or awards received, the Rush degree and major the student is earning, previous colleges or universities attended, and degrees earned at those previous colleges or universities.

If a Directory Information Restrictions Form was previously submitted, the student's signature on the Intent to Graduate Form temporarily releases (for graduation ceremony and program purposes only) the directory information restrictions enacted by the student so that the information can be published in any Rush graduation program and announced at any Rush graduation ceremony. In addition, the student's signature permits Rush University to release the student's name and address to the external photography vendor with whom Rush contracts, and to have the vendor place graduation photographs of the student on its website. The student's signature also allows the University to publish the student's picture in a picture composite and the student's image in a DVD of the Commencement ceremony that is created and distributed. The recording of the graduation ceremony could also appear on the Rush University website and social media sites including YouTube and Facebook. Finally, if

the student is a medical student, the student's signature permits publication of the student's name, photograph, previous degrees earned and other information in the Rush Medical College yearbook.

If there are questions about how the information will be used for graduation or commencement purposes, please speak with the Office of the Registrar before signing and submitting the Intent to Graduate Form.

### **Educational Records**

Rush University does not maintain educational records in one central office. Educational records are maintained in the Office of the Registrar and in the respective college and department offices. Other educational records are maintained in the Office of Student Financial Aid (financial aid information, student employment), Office of Student Financial Affairs (financial account payment information) and other offices. Questions regarding individual student records should be directed to the appropriate location.

Rush University will not issue copies of transcripts received from other institutions to anyone, including the student.

### **Deceased Student Records**

Rush University may, upon the death of a student, release a student's educational records to a third party. This is done at the sole discretion of Rush University.

### **Mailing Lists**

Rush University does not release student directory information in mailing lists, except to comply with the federal Solomon Amendment.

### **Additional Questions**

The Office of the Registrar is the compliance office for FERPA for Rush University. If there are additional questions, please contact the Office of the Registrar:

600 S. Paulina St., Suite 440  
Chicago, IL 60612  
Phone: (312) 942-5681  
Email: registrars\_office@rush.edu



## Tuition and Financial Aid

### Office of Financial Affairs

- Financial Appeals
- Payment of Tuition and Fees
- Student Health Insurance
- Tuition Refund Policy
- Tuition Waivers
- Third-Party Billing

### Office of Student Financial Aid

- Financial Aid Process
- Financial Aid Determination
- Financial Aid Awards
- Veterans Benefits
- Enrollment Status Definitions
- Satisfactory Academic Progress

### Tuition and Fees

### LEAP Benefits



## Office of Financial Affairs

### Financial Appeals

If a student has a concern about his or her financial account, and he or she wishes to appeal the financial decision, the student must file a written appeal with the Office of Financial Affairs within two academic terms from the term in question for the appeal to be considered. The Office of Financial Affairs will investigate the situation and will consult with other offices including the Office of the Registrar, the Office of Student Financial Aid and the student's program, as needed. A decision will be rendered within one month from the time the appeal was received and the student will be notified in writing. If the decision is not in favor of the student, the student may file a written appeal with the Office of the Senior Associate Provost for Educational Affairs. The decision of the Senior Associate Provost for Educational Affairs is final.

### Payment of Tuition and Fees

The following statement represents the payment policy for all Rush University students: Charges can be viewed and payment for tuition, fees and on-campus housing can be completed through RUConnected, the University's online system. Payment can be made by credit card or e-check. If full payment of tuition cannot be made by the first week of class, as listed in the academic calendar, satisfactory arrangements for payment must be made with the Office of Financial Affairs. Students may not attend classes until after registration is complete. Any exception to this policy must be approved in writing by the Senior Associate Provost for Educational Affairs.

Students have the responsibility to complete one or a combination of the following courses of action on or before the first Friday of classes each term:

1. Pay total tuition, fees and on-campus housing charges for the term.
2. Complete a Deferred Payment Plan Contract. This plan requires that the first payment and a \$15 service charge be paid on or before the first Friday of the term. Additional payments are due every four weeks. The length of the contract is dependent on the length of the term. Contact the Office of Financial Affairs to set up a payment plan.
3. Use the pending financial aid payment option. All students who have financial aid pending will be allowed to defer payment of that portion of tuition and fees that is covered by the anticipated aid. In order to use this option, students must have taken all steps required of them to apply for the aid (e.g., the application for a guaranteed student loan program

must have been completed and submitted to the Office of Student Financial Aid). In order to avoid a late fee charge, students must make arrangements for payments of that portion of tuition and fees not covered with pending aid by completing steps one or two above.

Failure to follow one of the steps above will result in a \$100 late fee. Students who choose the deferred payment plan contract and who fail to make a payment by the specified due dates will result in a \$50 late payment fee for each payment date missed.

At the end of the academic term, students who still have outstanding balances with Rush University that are not covered by pending financial aid are subject to the following consequences:

- Not receive transcripts/diplomas
- May be dismissed from on-campus housing
- Lose all university privileges
- Not be allowed to register for the following term

### Student Health Insurance

Rush University requires students to be covered by a health plan in order to promote health and well-being while protecting the individual from undue financial hardship that a medical emergency could cause. Non-Rush Medical College students must provide proof of existing coverage before registering for the fall term each year. Students who do not submit proof and receive confirmation of verification of their coverage will be enrolled in the student health insurance plan and charged for the premiums for the term. To that end, students enrolled in degree programs are eligible for the Student Health Insurance Plan offered by Academic HealthPlans, Inc. and Blue Cross and Blue Shield of Illinois.

For the 2016-2017 school year, the cost of the plan is approximately \$-3,228.00 per academic year for single coverage. Additional coverages are available as follows: each child (additional \$3,228.00 per year), and spouse (additional \$3,228.00 per year). This plan allows students to choose a primary care physician from a large list of members of the Preferred Provider Plan (PPO) in the Greater Chicago area. When using a network provider, there is an annual deductible of \$250 and coverage of 80 percent for most patient services including hospitalization and surgery, as well as outpatient services such as office visits, laboratory and X-ray. Preventive care services are covered at 100 percent. When using a pharmacy in the Prime Therapeutics Network, there is a \$20 co-pay for generic prescriptions, a \$50 co-pay for brand name prescriptions and an \$80 co-pay for brand name prescriptions when generic is available.

An optional dental insurance plan is also available to all Rush University students. Details of the plan are available in the Office of Financial Affairs. Enrollment for the dental plan is available at the beginning of the fall term only. Applications will not be accepted after the start of the fall term.

### Student Insurance Plan Rates for the 2016 - 2017 Academic Year

Medical	Approx. Yearly Rate
Student	\$3,228.00
+Spouse	\$3,228.00
+ Each Child	\$3,228.00
Dental	Approx. Monthly Rate (2016-2017 rates)
Student Plan	\$19.93
Student + One Plan	\$39.06
Family Plan	\$74.50

Details of the plans are available in the Office of Financial Affairs or online at the Rush University Information for Students page located on the Financial Affairs web page at <http://www.rushu.rush.edu/rush-experience/student-services/office-student-financial-affairs>.

A small portion of fees for Rush Medical College students has been allocated to the Medical Student Health Service Program, supported by Lifetime Medical Associates (located at 1645 W. Jackson Blvd., suite 215). The Medical Student Health Service Program is designed to work seamlessly with Rush University health insurance to provide medical students with acute care. By using Rush University health insurance, medical students should experience an enhanced level of service and minimal billing problems, with a \$20 fee per office visit. This will provide the type of student health service with which most students are familiar. Additionally, all Rush Medical College students are covered under a blood and bodily fluids exposure rider. This works as a supplemental policy to any health insurance to cover treatment or medications necessary as the result of a needle stick, splash or potentially contagious diseases exposure. Together with the basic Rush University health insurance policy, the rider will completely cover prophylactic medications or injections.

Rush Medical College students will be assessed a fee for vaccinations and immunizations and documentation. This fee covers

any necessary blood tests, vaccinations or updates, as well as costs associated with maintaining the documentation of their compliance and communicating that information to the Rush system hospitals and any away elective locations that may request certification of immunization and vaccination status.

### Tuition Refund Policy

Official withdrawal or dismissal from a course or from the University entitles a student to a refund of tuition according to the schedule below. Fees are not refundable. A student may receive a 100% refund if withdrawal occurs during the first calendar week in which the term begins. Otherwise, refunds will be made as follows:

- Second week: 80% refund
- Third week: 60% refund
- Fourth week: 40% refund
- Fifth week: 20% refund
- After fifth week: no refund

### Alternate Refund/Grading

This alternate refund/grading policy does not apply to Rush Medical College students.

#### *Pure Compressed Weekend Course*

(Friday, Saturday or Sunday without any pre- or post-class work)

- Before first class meeting: 100% and not transcribed
- After first class meeting: no refund and W grade

#### *Two-Week Course*

- Before first class meeting: 100% and not transcribed
- Week 1: 50% refund and W grade
- Week 2: no refund and the grade earned in the course

#### *Five-Week Course*

- Before or during week 1: 100% and not transcribed
- Week 2: 50% and W grade
- Weeks 3–5: no refund and the grade earned in the course

Refunds will be shown as credits on the student's account. A check for the refund amount, less any amount still owed for other charges, will be sent to the student. Normally, checks are processed within two weeks and mailed to the student's address on RUConnected. Students wishing to appeal the published schedule of refunds must appeal in writing to the Senior Associate Provost for Educational Affairs.

## Tuition Waivers

### Rush Medical College Students Enrolling in Courses Offered by the Graduate College

Rush Medical College students who take a leave of absence from their MD program may enroll in Graduate College classes as part of a formal MS or PhD program, or simply for additional knowledge. Medical students are exempt (tuition waiver) from the additional tuition costs associated with enrollment in these classes.

### Doctoral Students in the Graduate College

The Graduate College offers a full tuition scholarship for students enrolled in a doctoral program in the basic sciences (anatomy and cell biology, biomechanics, biochemistry, immunology/microbiology, medical physics, molecular biophysics and physiology, neuroscience and pharmacology). The scholarship is only for tuition. Health insurance and other fees are the student's responsibility. To receive this scholarship, students must maintain full-time status. A requirement of at least 12 hours per semester is needed to be a full-time student. If a student fails to register for 12 hours each semester, the scholarship is rescinded and the student is billed tuition. In addition, most students accepted by the Graduate College receive a stipend. The stipend awarded to a graduate student is a privilege and is contingent upon policies established by individual divisions.

### Master of Science Students in the Graduate College

Students enrolled in master's programs in the basic sciences (anatomy and cell biology, biochemistry, biomechanics, biotechnology, immunology/microbiology, medical physics, neuroscience and pharmacology) pay tuition and fees. Master's students are generally not eligible for tuition scholarships and are expected to be enrolled full time (12 hours per semester) unless special arrangements have been made.

### Third-Party Billing

If the student will not be personally paying his or her account, it is the student's responsibility to forward any bills to the appropriate party as soon as possible.

## Office of Student Financial Aid

### Financial Aid Process

Instructions for accessing financial aid information on the Rush University website are emailed to all newly accepted students prior to enrollment. The Student Financial Aid website contains in-depth information on policies, procedures and financial aid

awarding methodology. The priority deadline for submission of financial aid application materials is March 1 for continuing students and new students starting in the fall. Students starting in a term other than fall should submit financial aid application materials at least two months prior to their start date. Students must be enrolled at least half time and must be in a degree or approved certificate program to receive financial aid. To receive assistance, all appropriate forms and materials must be on file. Students should expect to receive the majority of assistance in the form of loans. Because of limited institutional funding, financial aid awards will likely contain loans that accrue interest while the student is in school. For students in the Medical College and nursing students in the Generalist Entry Master's (GEM) program, need-based grant assistance is available through the Office of Student Financial Aid. However, the funds are limited and all applicants (with few exceptions) must provide parental data and meet the institutional criteria for eligibility. Refer to the Office of Student Financial Aid website, <http://www.rushu.rush.edu/financial/>, for details.

Undergraduate students who have not received a prior bachelor's degree are more likely to receive grant assistance through federal and state need-based programs. Employment through the Federal Work-Study program may be possible throughout Rush University Medical Center. Depending on a student's academic program, Federal Work-Study assistance may be awarded as part of the financial aid package. It is the student's responsibility to secure employment. The Office of Student Financial Aid assists students in locating jobs within the Medical Center.

### Financial Aid Determination

Financial assistance programs at Rush University are provided to assist students who cannot otherwise afford to pay the full cost of education on their own. In general, financial need is the basic criterion for the awarding of funds. Accordingly, students and their families will be expected to contribute toward educational expenses to the fullest extent possible. The level of the expected contribution is determined by using a standard set of criteria to analyze financial information provided by students and their families. Submission of parental data for institutional grants and loans is required for students in the Medical College and nursing students in the GEM program. Complete information about this policy is found on the Office of Student Financial Aid website at <https://www.rushu.rush.edu/rush-experience/student-services/office-student-financial-aid>. Student Financial Aid counselors are available to consult with students and parents (with the student's authorization) on all matters regarding the financing of a Rush University education. Students and authorized parents are welcomed and encouraged to make use of these services.

## Financial Aid Awards

After evaluating student and family resources and assistance from outside the University, the Office of Student Financial Aid will award federal, state and institutional funds (as appropriate) to students with demonstrated financial need. In varying quantities, a financial aid award may include grants, loans and student employment. In order to distribute the available funds in the most equitable manner, the Office of Student Financial Aid establishes a formula that designates the sequence in which funds are awarded to students and the maximum amount awarded under each program. The formula provides for a specific amount of loans and employment before students are considered for grants. These formulas are applied consistently during any given year among all students at a given class level and in a given college (pending availability of funds). Due to differences in the availability of funds from year to year and changes in eligibility requirements, the formulas are adjusted annually.

## Veterans Benefits

Rush University participates in federal Veterans Education Benefits through the U.S. Department of Veterans Affairs (VA).

### Post-9/11 GI Bill

This bill provides tuition, fees, books and supplies, and housing assistance to eligible veterans. Tuition and fees are paid directly to Rush by the VA. Tuition and fees assistance is capped at the national maximum of \$21,970.46 per academic year. Benefit rates vary based on the veteran's circumstances. Some veterans may be able to transfer their benefits to a dependent.

### Yellow Ribbon Program

Effective with the 2012–2013 academic year, certain colleges within Rush University participate in the Yellow Ribbon Program. Veterans entitled to the maximum benefit rate are eligible to apply for additional tuition and fees amounts if their costs exceed the \$21,970.46 cap. The amount of additional assistance available and the number of students able to be supported is limited and varies by college. Funds will be awarded on a first-come, first-served basis. Students who have received prior assistance will have preference for these funds in future academic years. Details are available on the VA's Yellow Ribbon Program information page at [http://www.benefits.va.gov/gibill/yellow\\_ribbon.asp](http://www.benefits.va.gov/gibill/yellow_ribbon.asp).

### Montgomery GI Bill—Active Duty (MGIB-AD Chapter 30)

Monthly benefit paid directly to the veteran.

### Montgomery GI Bill—Selected Reserve (MGIB-SR Chapter 1606)

Monthly benefit paid directly to the veteran.

### Reserve Educational Assistance Program (REAP Chapter 1607)

Monthly benefit paid directly to the veteran.

### Veterans Educational Assistance Program (VEAP Chapter 32)

Monthly benefit paid directly to the veteran.

### Survivors and Dependents Assistance (DEA Chapter 35)

Monthly benefit paid directly to the survivor or dependent of the veteran.

If a student qualifies for participation in more than one veterans education benefits program, the VA website, [http://www.benefits.va.gov/gibill/comparison\\_tool.asp](http://www.benefits.va.gov/gibill/comparison_tool.asp), provides a comparison tool to help determine which benefits might be appropriate.

Veterans interested in using their benefits at Rush for the first time should do the following:

1. Apply for benefits through the VA: If the veteran has never used veterans' benefits at an institution before, this step must be completed.
2. Submit form 22-1995 or form 22-5495 (as appropriate): If the veteran has used veterans education benefits before, but is a first-time benefits user at Rush University, the appropriate form must be submitted.
3. Provide a copy of their eligibility letter from the VA (as well as any change of program forms from step 2, above) to the Office of Student Financial Aid before benefits can be certified with the VA.

All documents can be mailed, faxed or scanned and emailed to the Office of Student Financial Aid at [financial\\_aid@rush.edu](mailto:financial_aid@rush.edu). Please be sure to indicate name and student ID number (or Social Security number) on all documents.

## Enrollment Status Definitions

Students working toward a degree or certificate and who are enrolled at least half time may be eligible for student financial assistance. These students may also be eligible to have their federal educational loans deferred. Students are considered full time or half time based on the below criteria. Numbers in the chart below are credit hours per academic term.

	Full-time	Half-time
Medical Students	All enrolled students are considered full-time	
Graduate Students	9	4.5
PhD Dissertation Students	2	1
Undergraduate Students	12	6

## Full-Time Registration for PhD Students

A full-time PhD student is one who is matriculated and meets one of the following conditions for each term:

- Registers for nine or more graduate credit hours in an academic term
- Registers for a minimum of two hours of dissertation course work in a fall, spring or summer term. Note that a student may register for additional courses as needed or required, but if registering for less than nine hours, this must include a minimum of two hours in dissertation hours to be considered fulltime.

A student must be registered for one of the above-defined statuses during fall, winter spring or summer term sessions to maintain status as a full-time matriculated student. Individual graduate programs may set guidelines on research enrollments, including which academic milestones should be passed before enrolling in dissertation hours is permitted. Once a student successfully defends a dissertation, no further research enrollments are necessary or allowable, and graduation should not be deferred.

Each student will be allowed one term of enrollment to finalize all work related to the defense of their dissertation. During this term, the student should apply for graduation, and graduation should not be deferred beyond this point.

Effective fall 2015, all dissertation courses will be corrected to be similarly named following University guidelines and hold fixed credit hours starting at a minimum of 2.0, thereby always conferring full-time status.

Students should contact the Office of Financial Aid at [financial\\_aid@rush.edu](mailto:financial_aid@rush.edu) about full-time status for financial aid purposes.

## Satisfactory Academic Progress

The Higher Education Act of 1965 as amended by Congress mandates institutions of higher education to establish minimum standards of satisfactory progress for students receiving federal financial aid. These standards apply to all Federal Title IV aid programs including the Federal Pell Grant, Federal Supplemental Educational Opportunity Grant, Federal Perkins Loan, Federal Stafford Loan, Federal PLUS Loan and Federal Work-Study programs.

Accordingly, the Department of Education regulations require that Rush University's Office of Student Financial Aid monitor the academic progress of all financial aid recipients toward the completion of their degree. This process is called Satisfactory Academic Progress (SAP).

This SAP policy is enforced in conjunction with all other institutional policies and procedures, including the academic progressions policies of Rush University's colleges and academic programs. For undergraduate and graduate students, the below criteria are checked at the end of each term. For medical students, the below criteria are checked annually at the end of spring term.

## Enforcement

The Office of Student Financial Aid shall have primary responsibility in enforcing the SAP policy. The Office of the Registrar and other Rush University offices that maintain student information relevant to the SAP policy shall provide such information, as requested by the Office of Student Financial Aid.

## SAP Requirements

SAP requirements vary by academic level (undergraduate, graduate and medical students). Please refer to the appropriate section to find the requirements that fit your academic program.

### UNDERGRADUATE STUDENTS

SAP for undergraduate students is monitored using three factors: maximum time frame measurement, pace of completion and cumulative grade point average (GPA). SAP is measured at the end of each academic term once final grades are submitted.

#### *Maximum Time Frame Measurement*

Students may attempt up to 150 percent of the credits it normally takes to complete the program. The total allowable attempted hours are calculated by multiplying the hours required to complete the degree at Rush (excluding the general education courses required prior to entry in the program) by 1.5 and rounding down to the nearest whole number. For example, for a program that requires 107 credit hours to receive a degree at Rush (not including the general education courses required prior to entry in the program), a student may attempt up to 160 hours.

#### *Pace of Completion*

Students must successfully complete at least 67% of the courses they attempt. This measure will be measured cumulatively over the course of the student's program. For the purpose of this measurement, all of the following are applicable:

- Successful completion is defined as a grade of A, B or C for a letter grade course, or a grade of P for a course that is pass/fail or pass/no pass. These courses are counted in both the attempted and completed hours totals.
- Proficiency credit (K grades) is counted in both the attempted and completed hours totals.



- All other grades (including incomplete grades) are counted in the attempted hours total, but not in the completed hours total. If an incomplete grade is later converted to a grade that is considered to be a successfully completed grade, the pace of completion percentage can be recalculated. It is the student's responsibility to notify the Office of Student Financial Aid when an incomplete grade has been converted.
- Students who drop courses but who remain enrolled at the University will not have those dropped courses counted in the attempted hours total if they are dropped prior to the census date. Dropped courses after the census date will be counted in the attempted hours total.
- Repeated courses are counted as attempted hours during all attempts.
- Transfer credits that count toward the student's current academic program count as both attempted and completed hours.
- Students who change majors will only have hours that were previously attempted counted in their cumulative totals if they are applicable to the new academic program.

#### ***Cumulative Grade Point Average***

Undergraduate students must maintain a minimum cumulative GPA of 2.0. Students who have a term GPA of less than 1.0 after their first term at Rush will be immediately placed on financial aid suspension.

#### ***GRADUATE STUDENTS***

SAP for graduate students is monitored using three factors: maximum time frame measurement, pace of completion and cumulative grade point average (GPA). SAP is measured at the end of each academic term once final grades are submitted.

#### ***Maximum Time Frame Measurement***

Students may attempt up to 150 percent of the credits it normally takes to complete the program. The total allowable attempted hours are calculated by multiplying the hours required to complete the degree at Rush by 1.5 and rounding down to the nearest whole number. For example, for a program that requires 113 credit hours to receive a degree at Rush, a student may attempt up to 169 hours.

Please note: nondegree certificate programs are approved by the U.S. Department of Education for financial assistance at a specific number of credit hours. Regardless of a student's actual plan of study, maximum time frame is calculated using the number of hours for which the program was approved with the U.S. Department of Education.

#### ***Pace of Completion***

Students must successfully complete at least 67% of the courses they attempt. This will be measured cumulatively over the course of the student's program. For the purpose of this measurement, all of the following are applicable:

- Successful completion is defined as a grade of A or B for a letter grade course, or a grade of P for a course that is pass/fail or pass/no pass. These courses are counted in both the attempted and completed hours totals.
- Proficiency credit (K grades) is counted in both the attempted and completed hours totals.
- All other grades (including incomplete grades) are counted in the attempted hours total, but not in the completed hours total. If an incomplete grade is later converted to a grade that is considered to be a successfully completed grade, the pace of completion percentage can be recalculated. It is the student's responsibility to notify the Office of Student Financial Aid when an incomplete grade has been converted.
- Students who drop courses but who remain enrolled at the University will not have those dropped courses counted in the attempted hours total if they are dropped prior to the census date. Dropped courses after the census date will be counted in the attempted hours total.
- Repeated courses are counted as attempted hours during all attempts.
- Transfer credits that count toward the student's current academic program count as both attempted and completed hours.
- Students who change majors will only have hours that were previously attempted counted in their cumulative totals if they are applicable to the new academic program.

#### ***Cumulative Grade Point Average***

Graduate students must maintain a minimum cumulative GPA of 3.0. Students who have a term GPA of less than 2.0 after their first term at Rush will be immediately placed on financial aid suspension.

#### ***RUSH MEDICAL COLLEGE STUDENTS***

SAP for Rush Medical College students is monitored using three factors: maximum time frame measurement, pace of completion and grade requirements. SAP is measured at the end of each academic year once final grades are in and at the time of awarding.

#### ***Time Limits on Financial Aid Eligibility***

The normal time frame for completion of required course work for the MD degree is four academic years. Due to academic or personal difficulties, a student may require additional time.

In such situations, the Rush Medical College Committee on Student Evaluation and Promotion (COSEP) may establish a schedule for the student that departs from the norm and that may require repeating a year of study. For the purposes of this financial aid policy, no more than three years may be devoted to the first- and second-year curriculum and no more than three years may be devoted to the third- and fourth-year curriculum, for a maximum total time frame of six years. Summer enrollment, if required, is considered part of the academic year for the purposes of this measure. Approved leaves of absence do not count in this measure.

#### ***Completion of Requirements and Pace of Completion***

1. First-year students must complete at least 66% of their first-year curriculum with a grade of "Pass" or better between the start of the year and the last day of spring quarter exams. This includes repeated courses.
2. To advance to the second year, students must complete all first-year courses with a grade of "Pass" or better by the start of the second year.
3. Second-year students must complete at least 66% of their second-year curriculum with a grade of "Pass" or better between the start of fall quarter and the last day of spring exams. This includes repeated courses.
4. To advance to the third year, students must complete all second-year courses with a grade of "Pass" or better by the start of the Clinical Resources and Skills for the Hospital (CRASH) course.
5. A student who is repeating/splitting the first or second year according to a COSEP schedule is considered to be making SAP.
6. Third-year students must complete at least 66% of the clerkships they attempt with a grade of "Pass" or better.
7. To advance to the fourth year, students must complete all core clerkships with a grade of "Pass" or better.
8. A student who is repeating the third or fourth year according to a COSEP schedule is considered to be making SAP.

#### ***Grade Requirements***

Academic progress in Rush Medical College is measured in terms of Honors, High Pass, Pass and Fail grades. A student must complete each required course or clerkship with a grade of "Pass" or better in order to graduate. A student who fails a course must retake it and earn a grade of at least "Pass." A student who receives an Incomplete in a course must complete the course and earn at least a "Pass."

#### **Financial Aid Warning**

Undergraduate and graduate students are allowed a financial aid warning period. Professional students (Rush Medical College) are not allowed a financial aid warning period.

Undergraduate or graduate students who fail to meet the requirements of this satisfactory academic progress policy will be placed on financial aid warning for one additional term (with the exception of undergraduate students who have a first-term GPA of less than 1.0 and graduate students who have a first-term GPA of less than 2.0; in this case, that student would immediately be placed on financial aid suspension). Students will be allowed to continue on financial assistance during the warning period. Students placed on financial aid warning will be sent notification by hard-copy letter (through the U.S. Postal Service) and through their Rush email account. The notification will include SAP requirements, steps necessary to meet SAP in the upcoming term and the consequences for failing to meet SAP requirements by the end of the warning period.

Students will be placed on financial aid suspension if they fail to meet the standards of this SAP policy after the one-term financial aid warning period.

#### **Suspension of Financial Aid Eligibility**

- Professional students (Rush Medical College) who fail to meet the requirements of this SAP policy will be placed on financial aid suspension.
- Undergraduate students who have a first-term GPA of less than 1.0 and graduate students who have a first-term GPA of less than 2.0 will be placed on financial aid suspension.
- Students who still fail to meet the requirements of this policy after their single term on financial aid warning will be placed on financial aid suspension.

Students who are suspended from financial aid eligibility will be notified by hard-copy letter (through the U.S. Postal Service) and through their Rush email account.

#### **Appealing Suspension of Financial Aid Eligibility**

A student may appeal the suspension of financial aid eligibility for extenuating circumstances. Appeals from other parties on behalf of the student will not be accepted. All appeals should be submitted in writing to the Director of Student Financial Aid, Armour Academic Center, suite 440, 600 S. Paulina St, Chicago, IL 60612. Each appeal must include the following:

1. The reasons why the standards of this policy were not met
2. What has changed in the student's situation that will allow the student to make satisfactory progress during the next evaluation

- An academic plan for the remainder of the student's studies.

Documentation of any statements made in the appeal should be included, as appropriate. *All appeals must be submitted within 10 business days of receipt of a suspension notice.*

The Director of Student Financial Aid will review the appeal and will respond to the student within 10 business days from the receipt of the appeal. Students whose appeals are approved will be placed on a financial aid probationary period for one term or for the duration of an academic plan developed by the student's advisor, as appropriate. The probationary period will be defined to include checkpoints that must be

achieved in order for the student to remain eligible for financial assistance. Students failing to abide by the terms of their probationary period will be suspended from financial aid after their probationary period.

The decision of the Director of Student Financial Aid is final, binding and not subject to further appeal.

### Reinstatement of Financial Aid Eligibility

A student's eligibility for financial aid will be reinstated at such time as the student successfully meets the standards of the SAP policy. It is the student's responsibility to present evidence to the Student Financial Aid Office at the time the student meets the requirements for reinstatement.

## Tuition and Fees (2016-2017)

Tuition and fees for the 2016-2017 academic year are listed below. For estimates of other expenses, see the Office of Student Financial Aid website at <https://www.rushu.rush.edu/rush-experience/student-services/office-student-financial-aid>.

College of Nursing	Flat Rate (per term)	Per-Credit Rate
Tuition, GEM	N/A	\$995
Tuition, All other programs	N/A	\$1,050

The Graduate College	Flat Rate (per term)	Per-Credit Rate
Biotechnology	\$16,000	N/A
Health Sciences (PhD)	N/A	\$600
Nursing (PhD) – Trimester	\$11,361 (12+ credits)	\$999 (1–11 credits)
Clinical Research	N/A	\$1,000
Integrated Biomedical Sciences, MS	\$9,000	N/A
Integrated Biomedical Sciences, PhD	N/A	\$1,000

College of Health Sciences	Per Credit Rate (Unless Otherwise Noted)
Undergraduate Programs	
Health Sciences	\$500
Imaging Sciences	\$562
Medical Laboratory Science	\$533
Perfusion Technology	\$601
Respiratory Care	\$574
Vascular Ultrasound	\$576

<b>College of Health Sciences</b>	<b>Per Credit Rate (Unless Otherwise Noted)</b>
<b>Graduate Programs</b>	
Audiology	\$623
Clinical Laboratory Management	\$592
Clinical Nutrition	\$713
Health Systems Management	\$720
Health Sciences	\$600
Medical Laboratory Science	\$592
Occupational Therapy	\$596
Perfusion Technology	\$645
Physician Assistant Studies (1st Year Students)	\$12,000/term
Physician Assistant Studies (2nd Year Students)	\$7,913/term
Physician Assistant Studies (3rd Year Students)	\$6,330/term
Research Administration	\$592
Respiratory Care	\$592
Specialist in Blood Bank	\$592
Speech-Language Pathology	\$623

<b>Rush Medical College</b>	<b>Per Term</b>	<b>Per Year</b>
M1	\$25,653	\$51,306
M2	\$65,395	\$50,790
M3	\$25,395	\$50,790
M4	\$25,395	\$50,790

<b>Students-at-Large</b>	<b>See per-credit rates listed above</b>
<b>Continuous Enrollment Fee</b>	<b>Per Term</b>
<b>Continuous Enrollment Fee</b>	<b>Per Term = \$12,698</b>
<b>Summer 2017 (M3 and M4)</b>	<b>\$8,465</b>
<b>All Other Programs</b>	<b>Students are charged at the per-credit rate equivalent to one quarter hour for their programs.</b>

### Admissions Fee

A non-refundable application fee is required of all applicants to offset the expense of processing the application, evaluating credentials and maintaining a library of evaluation aids. This fee does not apply to any other charges such as tuition.

### Enrollment Deposit

The enrollment deposit fee holds a place for the student in the entering class. The deposit is non-refundable and is applied toward payment of the first term tuition. A \$250 enrollment deposit is required for students in the College of Health Sciences. Rush Medical College students are required to pay

\$100 prior to matriculation. College of Nursing students and affiliated students must deposit \$350 prior to matriculation. The enrollment deposit for PhD in nursing students is \$350. The enrollment deposit for all basic sciences and biomedical research programs within the Graduate College is \$250.

### Late Registration Fee

Continuing students must register during the official two-week registration period. Students registering after the registration period ends will incur the \$50 late registration fee. An additional \$50 late registration fee will be applied to the student's financial account if the student has not registered by the end of the first day of the term.

A student who feels that there are mitigating circumstances as to why the late registration fee should not be applied must first appeal to his or her advisor. If the advisor deems that the information warrants repealing the late registration fee, the advisor must speak with the program director. If the program director concurs with the advisor, the program advisor will notify the Office of the Registrar in writing and the late fee will be removed from the student's financial account by the Office of Financial Affairs.

### Continuous Enrollment Fee

Students enrolled in a noncredit residency or academic enrichment program prior to receipt of their degree must be registered for Continuous Enrollment in order to retain their student status. Any degree or certificate student not taking courses but needing to replace an outstanding incomplete grade must register for Continuous Enrollment until the grade is satisfied. This fee also applies to graduate students who have completed all courses but have not had the dissertation accepted. Hospitalization or physician fees are not covered in this fee. Students auditing a course may be required to register for the continuous enrollment course (see the Auditing a Course section below).

### Returned Checks

If a student gives the University a check that is returned by the bank upon which it was drawn, marked "not sufficient funds," "payment stopped," or "account closed," a \$25 charge will be assessed for each occurrence.

### Rush Medical College Students and Tuition Charges

Rush Medical College students are charged for a maximum of four years of full-time tuition. Medical students needing additional terms to complete degree requirements will be charged the continuous enrollment fee. Although it may be possible for a medical student to complete all degree requirements prior to the spring term of his or her fourth year, a full four years of tuition charges must be paid prior to graduation.

### Auditing a Course

Students who are registered in classes for credit and who wish to audit a separate class or classes will not be charged for the audited course(s). If the student only wishes to audit one or more classes and will not be registered in any classes for credit for that term, the student must register in continuous enrollment, at which point one credit hour of charge will be assessed at the student's normal tuition rate.

## LEAP Benefits

### Tuition Benefits Programs

As part of its commitment to employee development and education, Rush University Medical Center offers tuition assistance to employees who want to take health care, business or vocational courses, as well as many onsite development programs.

Benefits include the following:

- Tuition reimbursement at Rush University
- Tuition reimbursement for coursework taken at other accredited institutions
- Tuition reimbursement for attendance at outside conferences
- Tuition reduction at Rush University for spouses and dependents

### Eligibility Requirements

All benefits-eligible employees can participate in the tuition reimbursement programs, once they satisfy one of the following length of employment requirements:

- Participants in the Employee Enhance Program must be employed by Rush for at least three months.
- Participants in the internal and external tuition programs must be employed by Rush for at least one year. (Although employees hired or with job offers dated before January 11, 2016 must be employed by Rush for only three months.)
- Employees with spouses, civil union partners or dependent children participating in the spouse or dependent tuition program must be employed by Rush for at least one year.

### Employee Enhancement Tuition Reimbursement Program

The Employee Enhancement Tuition Reimbursement Program provides tuition assistance to Rush employees who desire to enhance their skills while supporting the Medical Center's business and clinical needs.

### Program Details

Reimbursement Amount

- There is a benefit cap of \$1,000 per calendar year for full-time employees (more than 72 hours per pay period) and \$500 for part-time employees (between 40 and 71 hours per pay period).
- Eligible costs are reimbursed at 90 percent. Employees are responsible for the 10 percent difference and for all non-eligible costs.

- To receive reimbursement, an employee must obtain a grade of C or better, or a pass grade for a class with pass/fail grading.
- Employees must be active employees when incurring expenses and submitting for reimbursement.

### Eligible Expenses

Employees can receive up to a 90 percent reimbursement for the following:

- Tuition, registration fees, lab fees, classroom fees and cost of required text book(s) for one-time, job enhancement classes (i.e., classes not taken in anticipation of applying towards a degree program)
- Registration cost (only) for workshops, seminars, symposiums and conferences
- Classes or tests for board exams
- Job-related review courses, review study materials associated with job-related exams and certifications
- Basic skills (reading, writing, math, English as a Second Language or any second language)
- High school equivalency or GED coursework
- Courses leading to professional certificates (e.g., LPN, CAN, specialty certification or computer-related courses)
- Fees for initial certifications, re-certifications or board certifications
- Accredited correspondence or online courses and other distance learning options in business or medical fields

**Please note:** all job required CPR, ACLS, BLS, PALS, and food sanitation certificates will be reimbursed at 100 percent.

### Non-eligible expenses

The following expenses are not eligible for reimbursement under the Employee Enhancement Tuition Reimbursement program:

- Courses not related to the needs of the Medical Center and all courses involving sports, games or hobbies
- Travel, food, accommodations, parking, gas, mileage or any materials sold at conferences or symposiums
- Reference books, videos, CDs or DVDs
- Exam preparation classes (such as classes preparing for the GRE or MCAT)
- Memberships, journals and subscriptions
- Late fees as a result of late registration
- Sales taxes or shipping and handling costs
- Fees for initial or renewal of professional licenses

### Reimbursement Deadline and Other Requirements

Email the following materials to [enhancement@rush.edu](mailto:enhancement@rush.edu) within 30 days of the end of each event or term:

- A completed and manager-approved Enhancement Option Program Tuition Reimbursement Form
- Copies of all paid receipts or statements for the following:
  - Tuition or cost of class
  - Registration fee for school, class, workshop, seminar, symposium or conference
  - Any separate lab or classroom fees
  - Cost of required textbooks (only)
  - Proof of attendance, such as, class final grade, completion certificate, CEU or copy of event name badge (registration documents are not accepted as proof of attendance)

No reimbursement forms will be accepted after the 30-day deadline.

Employees must be employed for at least three months to be eligible for the Employee Enhancement Reimbursement Program.

### Rush University Internal Degree Prepaid Tuition Program Information

Rush provides employees with prepaid tuition benefits for those enrolled as students in one of the colleges of Rush University.

#### Eligibility

- Full-time employees (those who work at least 72 hours per pay period) can receive prepaid tuition for up to 9 credit hours per quarter or semester.
- Part-time employees (those who work between 40 and 71 hours per pay period) can receive prepaid tuition for up to 6 credit hours per quarter or semester.

(These limits include credit hours associated with prerequisites required for a student-at-large of Rush University.)

#### Please note:

- Prerequisites and required courses taken externally are subject to the External Degree Program eligibility criteria and cannot be taken concurrently with Rush University classes.
- If the cost for the classes exceeds \$5,250 per year, you must also complete the tuition assistance tax exemption form for these classes to be considered job-related and tax-exempt.
- A passing grade (a C grade or better for each class for undergraduates and a B grade or better for each class for graduates) must be obtained to continue receiving tuition prepayment benefits. Students who do not receive a passing

grade will not receive tuition prepayment benefits for the following quarter or semester. Dropped classes also result in the forfeiture of reimbursement funds.

- The Doctor of Medicine degree at Rush University is not eligible for prepaid tuition benefits.

### New Students

In order to receive prepaid tuition benefits, new students must first complete the Internal Degree Form and the Tuition Assistance Tax Exemption Form. These forms must be emailed to [internal\\_tuition@rush.edu](mailto:internal_tuition@rush.edu), by the deadlines listed below.

### Returning Students

Returning students must complete the Internal Degree Form and the Tuition Assistance Tax Exemption Form and email them to [internal\\_tuition@rush.edu](mailto:internal_tuition@rush.edu), by the deadline listed below.

### Submission Deadlines

Students must email their forms to [internal\\_tuition@rush.edu](mailto:internal_tuition@rush.edu), by the following deadlines:

#### College of Nursing

Fall 2016	July 29, 2016
Spring 2017	Nov. 4, 2016
Summer 2017	March 10, 2017

#### College of Health Sciences

Summer 2016	April 29, 2016
Fall 2016	July 29, 2016

#### The Graduate College

Fall 2016	July 29, 2016
Spring 2017	Nov. 4, 2016

*Forms will not be accepted or processed after the deadline date. Any financial liability is the responsibility of the employee.*

### Important imputed tax rules governing prepaid tuition benefits

Federal tax law mandates that prepaid tuition for degree-level course work in excess of \$5,250 be considered additional taxable earnings in the calendar year in which it was received. The amount of prepaid tuition benefits that exceeds \$5,250 will be added to the employee's biweekly earnings and taxed based on the employee's payroll tax elections.

Students who expect to receive more than \$5,250 prepaid tuition benefits for job-related courses (which are not subject to taxes), should complete the Tuition Assistance Tax Exemption Form for each course and submit them to [internal\\_tuition@rush.edu](mailto:internal_tuition@rush.edu).

edu] by the listed deadline. (Note: this does not guarantee that the tuition benefit you receive for the course will be treated as excludable from your taxable income.)

### External Degree Program

The External Degree Program offers tuition reimbursement to eligible employees pursuing a degree at an accredited college or university recognized by either the North Central Association of College and Secondary Schools or National Association of Trade and Technical Schools. (Please note: medical doctorate degrees and associated prerequisites are not eligible for reimbursement.)

All other prerequisites for a degree program taken at externally recognized institutions will be processed under the External Degree Program guidelines. If there is any question that an external class will be reimbursed, please email [external\\_tuition@rush.edu](mailto:external_tuition@rush.edu) prior to enrolling in the class.

### Benefit Amounts

The External Degree Program will provide the following amounts per calendar year:

- Up to \$5,000 tuition reimbursement for full-time employees (72 hours or more per pay period)
- Up to \$2,500 for part-time employees (between 40 and 71 hours per pay period).

#### Please note:

- Books and fees are not reimbursable. Only tuition will be reimbursed.
- Pell grants, scholarships or any awarded money towards tuition will be deducted from the overall tuition reimbursement.
- Employees will receive a 75 percent reimbursement of all eligible tuition at the end of each term. The remaining 25 percent (from each term) will be reimbursed to employees one year after they have received their degree and emailed a copy of the degree to [external\\_tuition@rush.edu](mailto:external_tuition@rush.edu), providing they are still employed by Rush.
- The annual benefit maximums (\$5,000 for full time, \$2,500 for part time) include both the 75 percent reimbursement and the 25 percent deferred amounts.
- Employees must be employed by Rush for at least one year to be eligible for tuition reimbursement.

### Deadlines And Submission Guidelines

Forms received by Dec. 9, 2016 will be reimbursed with 2016 funds. Forms received after Dec. 9, 2016 will be reimbursed with 2017 funds. Forms received more than 30 days after the end of

term will not be eligible for reimbursement. Students who have not received their grades by the deadlines may submit a letter from their school or professor stating their projected grade for the class.

To receive tuition reimbursement, each employee must email [external\\_tuition@rush.edu](mailto:external_tuition@rush.edu) the following information within 30 days of the end of each term:

- A completed External Degree Program Form, signed by the employee's supervisor.
- Documentation of tuition cost for claimed course(s) (if other fees are bundled with tuition costs, please provide official school documentation showing tuition cost by credit hour.)
- Copy of the final passing grade (C or better for undergraduates, B or better for graduates) report. In a pass/fail class, the employee must pass. If a grade of Incomplete is received, the employee will not be reimbursed.

### Important Imputed Tax Rules Governing External Degree Program Benefits

Federal tax law mandates that tuition assistance for degree level course work in excess of \$5,250 be considered additional taxable earnings in the calendar year in which it was received. Please email [external\\_tuition@rush.edu](mailto:external_tuition@rush.edu) with any questions.

### Rush University Tuition Reduction Program For Spouses And Dependents

The spouse, civil union partner and dependent children of full-time employees are eligible for prepaid tuition benefits when they pursue a degree at the Rush College of Nursing, Rush Graduate College or Rush College of Health Sciences.

**Please note:**

- Participants must be accepted into a degree program prior to making a tuition remission request.
- Tuition assistance can only be given to one member of a household at a time.
- Employees may not attend Rush University and receive prepaid tuition or request reimbursement from the External Degree Program at the same time that their spouse, domestic partner or dependent child is receiving tuition remission from Rush University.
- The program will prepay tuition for up to nine credit hours per quarter for the spouses, civil union partners or dependents of full-time employees.

- A passing grade (C or better for undergraduates, B or better for graduate students) must be obtained to continue receiving tuition remission benefits. Students who do not receive a passing grade will not receive tuition benefits in the following quarter. Dropped or incomplete classes also result in a forfeiture of tuition remission funds.
- The spouses, civil union partners and dependents of part-time employees are not eligible to participate in this program.

### New Students

In order to receive tuition remission benefits, new students must first complete the Tuition Reduction Program forms. These forms must be submitted by the deadline listed below.

### Returning Students

Returning students should simply complete the Tuition Remission Program Form and email it to [internal\\_tuition@rush.edu](mailto:internal_tuition@rush.edu) before the deadline listed below.

### Submission Deadlines

Students must email their forms to [internal\\_tuition@rush.edu](mailto:internal_tuition@rush.edu) by the following deadlines:

#### *The College of Nursing*

Fall 2016	July 29, 2016
Spring 2017	Nov. 4, 2016
Summer 2017	March 10, 2017

#### *The College of Health Sciences*

Summer 2016	April 29, 2016
Fall 2016	July 29, 2016

#### *The Graduate College*

Fall 2016	July 29, 2016
Spring 2017	Nov. 4, 2016

### Important Imputed Tax Rules Governing Pre-Paid Tuition Benefits

Federal tax law mandates that prepaid tuition for degree-level course work in excess of \$5,250 be considered additional taxable earnings in the calendar year in which it was received. The amount of prepaid tuition benefits that exceeds \$5,250 will be added to the employee's biweekly earnings and taxed based on the employee's payroll tax elections.

- Taxable income less than \$999 will be prorated and applied over two consecutive payroll periods.
- Taxable income more than \$1,000 will be prorated and applied over four consecutive payroll periods.





RUSH UNIVERSITY

## Rush Medical College



## Welcome to Rush Medical College

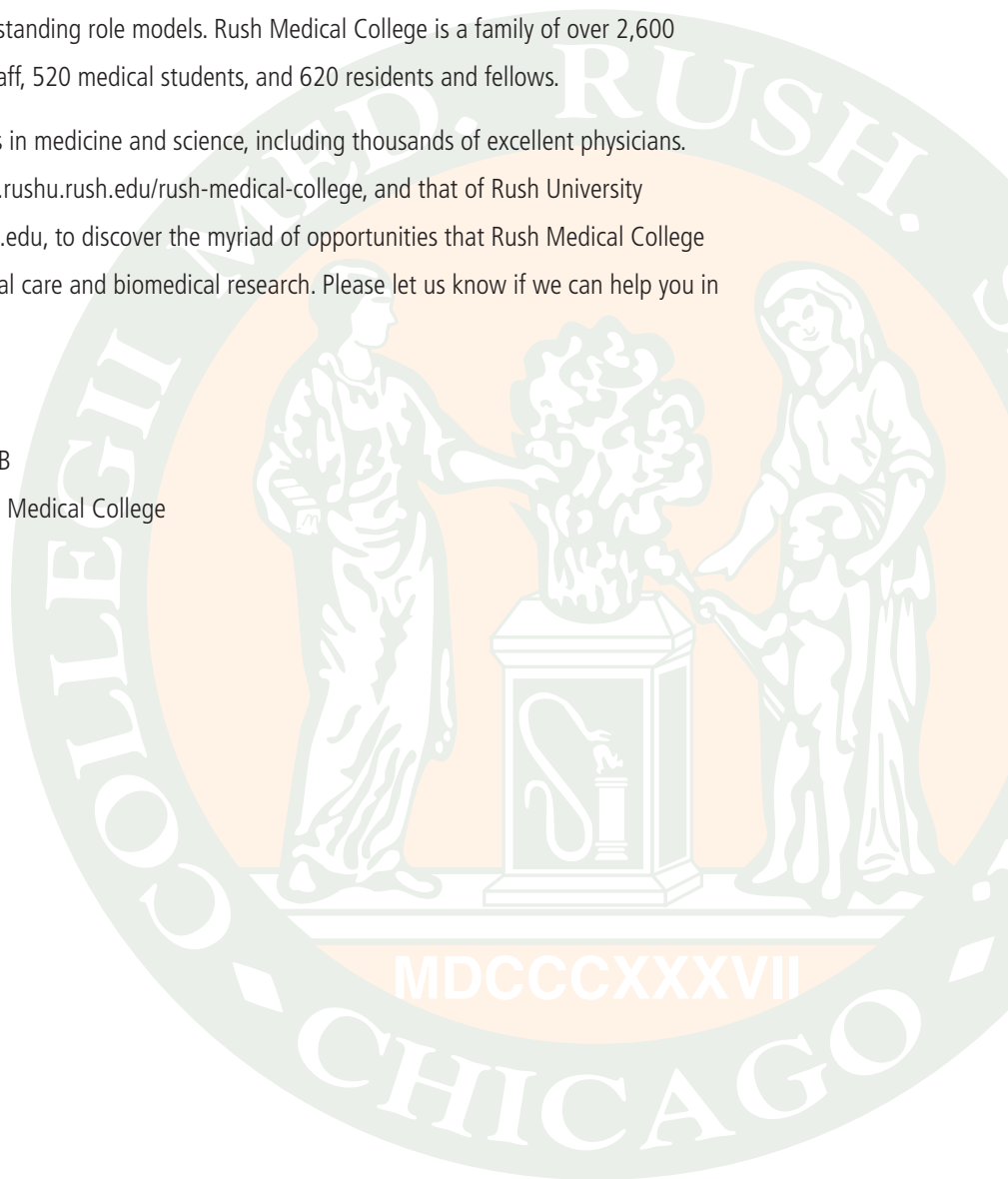


As a student at Rush, you have joined a historic institution which has contributed greatly to the development of medicine and health care. Rush is a caring institution that serves the needs of patients, students, faculty, staff and our community. Rush is committed to excellence in all that it does.

Chartered in 1837, Rush Medical College has been a part of the Chicago landscape longer than any other health care institution. Since then, times have changed and medicine and health care have evolved, Rush's best traditions continue: hands-on learning, an unparalleled commitment to community service, and experiences supported by outstanding role models. Rush Medical College is a family of over 2,600 faculty and staff, 520 medical students, and 620 residents and fellows.

Rush has produced skilled leaders in medicine and science, including thousands of excellent physicians. Explore our website, <https://www.rushu.rush.edu/rush-medical-college>, and that of Rush University Medical Center, <https://www.rush.edu>, to discover the myriad of opportunities that Rush Medical College offers in medical education, clinical care and biomedical research. Please let us know if we can help you in any way.

K. Ranga Rama Krishnan, MB, ChB  
Henry P. Russe, MD, Dean of Rush Medical College



## Vision for Rush Medical College Educational Programs

Rush Medical College will be the global leader in student-centered, future-oriented medical education.

## Mission for Rush Medical College Educational Programs

Through a supportive and dynamic learning community, Rush Medical College nurtures the development of empathic, proficient physicians dedicated to continuous learning, innovation and excellence in clinical practice, education, research and service.

## Rush Medical College: Terminal Objectives

The Rush Medical College terminal objectives are key learning objectives that students achieve by the time of graduation from the medical college program.

Terminal objectives illustrate Rush Medical College's commitment to its students and are written as outcome statements of competencies deemed critical to a successful physician. The terminal objectives direct all curriculum and assessment, as all course and session objectives ultimately serve the terminal objectives.

The terminal objectives are grouped under six domains which parallel those used by the Accreditation Council for Graduate Medical Education (ACGME). The domains and terminal objectives include the following:

### 1. Patient care

*In their patient care, students must do the following:*

- Complete comprehensive evaluations
- Develop appropriate treatment plans
- Apply the principles of health promotion

### 2. Medical knowledge

*Students must do the following:*

- Demonstrate knowledge of the basic, clinical and social sciences related to medical practice
- Apply the knowledge of basic, clinical and social sciences to patient care

### 3. Interpersonal and communication skills

*Students must do the following:*

- Communicate and collaborate effectively with patients, families and other health care providers
- Function as a member of the health care team

### 4. Putting care in a practical context

*Students must do the following:*

- Be respectful of the diversity of patient backgrounds, beliefs and values
- Analyze the environmental and contextual factors that influence a patient's health, disease and access to health care
- Engage the resources of the health care system to enhance patient care

### 5. Self-directed and lifelong learning

*Students must do the following:*

- Address personal learning needs
- Appraise scientific evidence that supports patient care practices

### 6. Professionalism

*Students must do the following:*

- Display compassion and empathy when interacting with patients and their families
- Adhere to the professional responsibilities outlined by Rush Medical College
- Demonstrate the professional values of medical practice

The terminal objectives are supported by year-specific objectives so that course work in each year of the curriculum builds upon skills, knowledge and attitudes needed to achieve the terminal objectives. A review of the terminal objectives can help students gauge their progress in the curriculum and potentially guide elective selection when the time comes.

## Rush Medical College: Admissions Process

### Applying to Rush Medical College

Rush Medical College utilizes the American Medical College Application Service (AMCAS), for its primary application. Detailed information and application materials are available on the Association of American Medical Colleges website (<https://www.aamc.org/students/applying/amcas/>). Each applicant who submits an AMCAS application to Rush Medical College will receive a secondary application invitation by email. The secondary application requires a nonrefundable fee of \$100 and must be submitted in its entirety no later than Dec. 15.

### Required Criminal Background Check

As a medical school located in Illinois, Rush Medical College will enforce the Medical School Matriculant Criminal History Records Check Act, which states the following: a medical school located in Illinois must require that each matriculant submit to a fingerprint-based criminal history records check for violent

felony convictions and any adjudication of the matriculant as a sex offender conducted by the Department of State Police and the Federal Bureau of Investigation as part of the medical school admissions process.

Each year beginning Jan. 1, an applicant screening provider will procure a background check on applicants at the point of their first acceptance. Upon completion of this process, the report procured during the process will be released to Rush Medical College.

### Required Drug Screening

In preparation for clinical rotations at John H. Stroger, Jr. Hospital of Cook County, all Rush Medical College students are required to submit a urine sample under conditions arranged by Rush Medical College for a drug screening (effective with the first year class entering in 2015). First-year students will be tested during orientation through a process coordinated by the Student Health Service (Lifetime Medical Associates). Upon completion of the testing process, a report will be released to Rush Medical College.

A positive result from the criminal background check, the sex offender assessment, or the drug screen will result in the applicant's file being presented to the Committee on Student Evaluation and Promotion (COSEP) for review and action. If the COSEP verifies that there is a positive result on these items, Rush Medical College may rescind the student's acceptance.

For additional information, visit the Rush Medical College Admissions website at <https://www.rushu.rush.edu/rush-medical-college/doctor-medicine-md-program/admission-requirements>.

## Rush Medical College: Diversity and Inclusion Statement

Rush Medical College embraces the Rush University Medical Center Diversity Leadership Council vision for diversity and the American Association of Medical Colleges' commitment to increasing diversity in medical schools. Recognizing that diversity and inclusion enhance the medical education environment and ultimately the overall health of our community, Rush Medical College seeks to create and support an environment in which faculty, staff and medical students combine their differing backgrounds, diverse perspectives, and unique skills as they work with peers to solve problems, enhance their ability to work with patients, and develop new, effective ways to manage health, conduct research and deliver care.

Rush Medical College strives to enroll a highly qualified and richly diverse student body through holistic review and individual consideration of the potential contributions that applicants with

different backgrounds, cultures, perspectives, races, ethnicities, characteristics and personal experiences would make to the educational experience of all students and to the school's cultural, social and learning environment. Rush Medical College seeks to attain a learning environment that better reflects its community through increased representation of groups that are underrepresented in medicine in Rush Medical College's surrounding communities. Along with remaining committed to applicants from backgrounds traditionally underrepresented in medicine, Rush Medical College considers diversity in economic, geographic, gender, age, sexual orientation, racial and ethnic backgrounds as important factors in not only creating a diverse community but also influencing an applicant's potential to succeed as a physician in our rapidly changing and diverse society.

To this end, the Rush Medical College Committee on Admissions annually identifies factors for consideration in building a diverse student body. Further, Rush Medical College's Faculty Council, utilizing information provided by the Committee on Admissions and other data, is committed to implementing programs and initiatives designed to meet these stated diversity goals.

## Technical (Non-academic) Standards for Admission and Promotion

*Reviewed by Committee on Admissions, 2012*

*Reviewed by Legal Affairs, 2012*

*Reviewed and Approved by the COSEP, May 2, 2012*

*Final Document Reviewed by Committee on Admissions, May 9, 2012*

The following technical guidelines have been adopted by the Rush Medical College Committee on Admissions. A candidate for the MD degree must have abilities and skills in the areas of observation; communication; sensory and motor coordination and function; intellectual-conceptual, integrative and quantitative abilities; and behavioral and social attributes as described below.

**Observation.** Students should be able to observe demonstrations and experiments in the basic sciences. Students should be able to observe a patient accurately at a distance and close at hand. Observation necessitates the functional use of vision, auditory and somatic sensation. It is enhanced by the functional use of the sense of smell.

**Communication.** Students should be able to speak and hear English and to observe patients in order to elicit information, describe changes in mood, activity and posture, and perceive nonverbal communications. Students should be able to communicate effectively and sensitively with patients, their family, health care team members, their peers, faculty and the public.

Communication includes not only speech but also reading and writing. Students should be able to communicate effectively and efficiently in oral and written forms of English with all members of the health care team.

**Motor.** Students should have sufficient motor function to elicit information from patients by palpation, auscultation, percussion and other diagnostic maneuvers. Students should be able to perform basic laboratory tests, carry out diagnostic and therapeutic procedures, and read graphic images. Students should be able to execute motor movements required to provide general care to patients, and to either provide or direct the provision of emergency treatment of patients. Such actions require coordination of both gross and fine muscular movements, and functional use of the senses of touch and vision.

**Intellectual, Conceptual, Integrative, and Quantitative Abilities.** Students should be able to engage in problem solving, the critical skill demanded of physicians, which requires the intellectual abilities of measurement, retrieval, calculation, reasoning, analysis and synthesis. In addition, students should be able to comprehend three-dimensional relationships and to understand the spatial relationships of structures and to adapt to different learning environments.

**Behavioral and Social Attributes.** Students should possess the emotional health required for full utilization of their intellectual abilities, the exercise of good judgment, the prompt completion of all responsibilities attendant to the diagnosis and care of patients, and the development of mature, sensitive and effective relationships with patients, fellow students, faculty and staff. Students should be able to tolerate physically taxing workloads and to function effectively under stress. They should be able to adapt to changing environments, to display flexibility and to learn to function in the face of uncertainties inherent in the clinical problems of many patients. Compassion, integrity, concern for others, interpersonal skills, interest and motivation are all personal qualities that are assessed during the admissions and education processes.

**Ethics and Professionalism.** Students should maintain and display ethical and moral behaviors commensurate with the role of a physician in all interactions with patients, faculty, staff, students and the public. Students should understand the legal and ethical aspects of medical practice and strive to abide by these principles throughout their time in training.

Requests for accommodation by individuals with a disability as defined by the Rehabilitation Act of 1973 or the Americans with Disability Act will be considered on the basis of their abilities and the extent to which reasonable accommodation, if required, can be provided. Students who may need special

accommodations can access this information at <https://www.rushu.rush.edu/students-disabilities>.

## Graduation Requirements

The following are prerequisites to the granting of the degree of Doctor of Medicine (MD) by Rush University for students graduating in 2016. Each student's progress in each year of the Rush Medical College curriculum will be evaluated by the Committee on Student Evaluation and Promotion (COSEP).

- Successful completion of the first and second year curricula in accordance with COSEP Policies and Procedures.
- Pass United States Medical Licensing Examination (USMLE) Step 1 per the dates set by the Office of Medical Student Programs (OMSP) guidelines.
- Pass USMLE Step 2 Clinical Knowledge and Clinical Skills per the dates set by the OMSP guidelines.
- Attend and complete the Clinical Resources and Skills for the Hospital (CRASH) course prior to beginning the third year.
- Pass all required third year core clerkships.
- Pass all required fourth year clerkships.
- Pass all fourth year electives.
- Be scheduled for completion of all elective clerkship requirements by the beginning of the second semester of the student's fourth year in order to graduate in the next calendar year.
- Successfully complete the clinical skills assessment.
- Successfully complete the capstone project.
- Successfully complete the Rush Medical College service learning requirement.
- Successfully complete all additional weeks of instruction required by the COSEP depending upon the progress made by the student.
- Attain the level of achievement required by the faculty for the degree of MD within 60 months from matriculation.

## Graduation Requirements and the National Resident Matching Program

The Office of Medical Student Programs (OMSP) will immediately notify future residency program directors when a student who has matched will not complete graduation requirements by the graduation date. If the inability to graduate is determined prior to the match, the student and the OMSP must immediately notify the National Resident Matching Program that the student is withdrawing from the match. The student must notify all of the programs to which the student applied that the student is withdrawing from the match.

## Rush Medical College: Academic Program

### Curriculum: First and Second Years

#### Curriculum: First Year

The first year basic science content is integrated into seven blocks taught in sequence through the academic year.

Elective courses may be taken in parallel with the required first year curriculum. Four first year electives are offered: Humanities in Medicine, Basic Biomedical Research, Sonographic Anatomy, and Medical Spanish. Due to limited enrollment for these courses, registration is determined through a lottery.

First Year Course Title	Course Number	Graduation Credit
Cell and Molecular Biology	RMD-510	1
Immunology and Hematology	RMD-511	1
Musculoskeletal System	RMD-512	1
Cardiovascular and Pulmonary Systems	RMD-513	1
Gastrointestinal System and Metabolism	RMD-514	1
Genitourinary Systems	RMD-515	1
Central Nervous System/Head and Neck	RMD-516	1
Physicianship Program I	RMD-531	1
Physicianship Program II	RMD-532	1
Capstone I	RMD-517	0
Capstone II	RMD-518	1
		<b>TOTAL 10</b>

#### Curriculum: Second Year

The second year basic science content is integrated into blocks taught in sequence through the academic year that focus on the study of the causes and effects of disease and therapeutics. Second year students also complete two Evidence-Based

Medicine courses, which focus on epidemiology, biostatistics and the evidence-based practice of medicine. The Physicianship and Capstone Programs continue in the second year to complement the courses listed.

Second Year Course Title	Course Number	Graduation Credit
Mechanisms of Disease	RMD-523	1
Diseases of the Cardiovascular and Respiratory Systems	RMD-524	1
Diseases of the Genitourinary Systems	RMD-525	1
Diseases of the Central Nervous System	RMD-526	1
Gastrointestinal, Liver and Metabolic Diseases	RMD-527	1
Hematology, Dermatology and Musculoskeletal Disease	RMD-528	1
Evidence-Based Medicine I	RMD-529A	0
Evidence-Based Medicine II	RMD-529B	1
Physicianship Program III	RMD-533	1
Physicianship Program IV	RMD-534	1
Capstone III	RMD-519	0
Capstone IV	RMD-520	1
		<b>TOTAL 10</b>

## Grading - First and Second Years

Students in the first and second years will receive a grade of honors, pass, fail or incomplete for each of the blocks. The Physicianship and Capstone Programs are graded pass/fail or incomplete.

## USMLE Step 1

Prior to the start of the third year, students must take the United States Medical Licensing Examination (USMLE) Step 1. Students who do not pass USMLE Step 1 are required to discontinue the third year curriculum for remediation (please refer to the section on USMLE Step 1 failure for additional information).

## Curriculum: Third and Fourth Years

The curricula of the third and fourth years provide students with additional training in clinical skills, diagnosis and patient management in a variety of patient care settings.

Prior to the start of the third year, students participate in the Clinical Resources and Skills for the Hospital (CRASH) course, which is an intensive review of clinical skills.

Clinical experiences primarily take place at Rush University Medical Center and the John H. Stroger, Jr. Hospital of Cook County. Students request a schedule of the third year required clerkships and electives through a lottery toward the end of the second year and request a schedule of the fourth year required clerkship, sub-internship and electives through a lottery toward the end of the third year.

## Curriculum: Third Year

The third year involves 42 clinical weeks in required core clerkships in internal medicine, neurology, pediatrics, psychiatry, obstetrics/gynecology, surgery and primary care. The final two courses of the Capstone Program sequence are also taken during this year.

There are six weeks of time (four before or after the primary care clerkship and two following the obstetrics and gynecology clerkship) which students may use to take certain elective courses.

Third Year Course Title	Course Number	Graduation Weeks
Internal Medicine: Core Clerkship	MED 703	8
Neurology: Core Clerkship	NEU 701	4
Obstetrics and Gynecology: Core Clerkship	OBG 703	6
Pediatrics: Core Clerkship	PED 701	8
Primary Care: Core Clerkship	RMD-701	4
Psychiatry: Core Clerkship	PSY 701	4
Surgery: Core Clerkship	SUR 701	8
		<b>TOTAL 42</b>
Course Title	Course Number	Graduation Credit
Capstone V	RMD 550	0
Capstone VI	RMD 551	1
		<b>TOTAL 1</b>

## Curriculum: Fourth Year

The fourth year involves a required emergency medicine core clerkship, a required senior sub-internship and a series of elective clerkships which ultimately comprise a minimum of 36 total weeks.

Fourth Year Course Title	Course Number	Graduation Weeks
Emergency Medicine: Core Clerkship	EMD 703	4
Sub-internship (Choice of Family Medicine, Internal Medicine, Pediatrics or Surgery)	FAM 710, or MED 710, or PED 710, or SUR 710	4
Clinical Bridge Course	RMD 722	4
Electives		32
<i>Faculty may recommend that students take additional elective weeks to enhance their preparation for residency.</i>		
		<b>TOTAL 44</b>

Required senior core clerkships total 12 weeks. The remaining 32 weeks required of the fourth year consist of elective study in areas of special interest to each student. The choice of electives is guided by the goal of an educationally balanced undergraduate experience. Of the 32 weeks of required student-chosen electives, up to 12 weeks of elective study may take place at other Liaison Committee on Medical Education (LCME) — or Accreditation Council for Graduate Medical Education (ACGME)-accredited institutions, and a maximum of eight weeks of elective rotations may be taken in a single subspecialty. Faculty may recommend that students take additional elective weeks to enhance their preparation for residency.

### Grading - Third and Fourth Years

In the third and fourth years, students will receive a grade of honors, high pass, pass, fail or incomplete for each of the clerkships and electives.

### Clinical Skills Assessment

In preparation for the USMLE Step 2 Clinical Skills exam, fourth-year students complete the Clinical Skills Assessment (CSA) with standardized patients at the start of the fourth year. This experience is designed to aid in self-evaluation of one's clinical skills (communication and interpersonal skills, attitudes and procedural skills). Successful completion of the CSA is a graduation requirement.

## Academic Policies

### Definition of Student Status

The status of a student shall be determined in accordance with the Committee on Student Evaluation and Promotion (COSEP) Policies and Procedures.

**Full-time Student.** Any student enrolled in Rush Medical College, paying tuition or appropriate fees and scheduled to take courses leading to the MD degree is a full-time student. Rush Medical College does not have a part-time student option available.

**Leave of Absence.** A student who, for a predetermined period of time, is not paying tuition and not actively enrolled at Rush Medical College will be on a leave of absence (LOA).

**Dismissal.** Dismissal is the permanent administrative termination of a student.

**Withdrawal.** Withdrawal is the voluntary termination of enrollment by a student.

1. A student who withdraws from the college and subsequently seeks reinstatement must submit a written petition for reinstatement to the Committee on Admissions of the college if withdrawal took place before the completion of the student's first term of enrollment. If the student withdrew subsequent to the first term, the student must submit a written petition to the COSEP for reinstatement.
2. A student who fails to engage in registration for courses or who fails to engage in a course according to the policies of the college will be considered to have withdrawn. A student



withdrawing under this provision may submit a written petition to the Office of Medical Student Programs (OMSP) for reinstatement. The OMSP shall determine whether special circumstances existed which justified the student's failure to engage or whether the student's petition should be forwarded to the COSEP.

Please see the COSEP Policies and Procedures for full details about student status.

### **Course Credit**

Rush Medical College assigns no credit hour value to its courses. First- and second-year courses are recorded on the transcript according to the semester in which the courses are given; clinical courses and clerkships are recorded on the transcript according to the dates when the course is taken.

### **Grades and Examinations**

The grading system for Rush Medical College shall be established by the COSEP and adhered to by course directors. Please see the COSEP Policies and Procedures for details about course grading.

### **Recording and Notification of Grades**

Please see the COSEP Policies and Procedures for details about notification about grades.

### **Student Performance Assessment in a Course**

Please see the COSEP Policies and Procedures for details on the following:

- Performance evaluation
- Absences from examinations
- Failed courses
- Status of students with course failures

### **Academic Dismissal**

Grounds for dismissal are outlined in the COSEP Policies and Procedures.

## **Remedial Programs**

### **Failure in First or Second Year Curriculum**

The Committee on Student Evaluation and Promotion (COSEP) establishes requirements for remedial work for students with more than one outstanding course failures in the first or second year. Remedial work requirements will be reasonably related to the seriousness of the student's deficiencies. Such requirements

may include but need not be limited to the following: study with re-examination, retaking failed courses during the next academic year and retaking all courses including those satisfactorily passed.

### **Failure in Third or Fourth Year Curriculum**

A failure in a required clerkship must be remediated in a manner prescribed by the course director in consultation with the Office of Medical Student Programs (OMSP), approved by the COSEP, and consistent with the reasons for the student's failure. A student required to repeat any component(s) of a required clerkship must complete the failed course prior to beginning another core rotation. In developing requirements, the COSEP will consider the needs of the individual student and will endeavor to develop a program that, if successfully completed, will strengthen the student's prospects for successfully completing the program.

## **United States Medical Licensure Examinations**

### **USMLE - Step 1**

All students must take and pass USMLE Step 1 at the completion of the second year curriculum. Permission to defer taking this examination must be granted by the OMSP. Students who defer Step 1 beyond the established deadline must take the exam within nine months of completing the second year and defer clinical rotations until a passing score is achieved. Students who fail the USMLE Step 1 are removed from clinical rotations and placed on a leave of absence until a passing score is achieved. Students who fail the USMLE Step 1 three times are recommended to the COSEP for dismissal.

### **USMLE - Step 2**

All students must take and pass both the Clinical Knowledge and Clinical Skills components of USMLE Step 2 during the student's fourth year by a date determined by the OMSP. Failures on either component are reported to the COSEP. Students who fail either component of the USMLE Step 2 three times are recommended to the COSEP for dismissal.

## **Advisor Program**

Incoming Rush Medical College students are assigned to faculty advisors who will provide support and guidance throughout their academic careers. Small groups of students work with pairs of advisors, creating an opportunity to develop meaningful longitudinal relationships. Students meet with their advisors regularly, both as groups and individuals. Early on, advisors

assist students with all aspects of their transition to medical school. During the second and third years, the focus shifts to guidance regarding career exploration and career choice. In the fourth year, advisors support students in developing a plan for residency specialty choice and preparing for the residency match. Advisors also serve as professional role models and sounding boards, and they are available to guide students to medical college resources and support services when needed. New students are also assigned a group of peer advisors from the second, third and fourth year students who work with the faculty advisors to provide advice, provide a student perspective about life, ensure student success and enhance student learning.

## **Student Research Opportunities**

Students are encouraged to pursue additional research experience beyond their work on their capstone projects. Research opportunities range from laboratory experiences in the biomedical sciences to clinical investigation and field work in epidemiology, preventive medicine and primary care. Such research can be carried out during the summer between the first and second years or during the time allotted for elective experiences in the fourth year.

The Dean's Office Summer Research Fellowships are offered on a competitive basis to students between the first and second years to work on research projects with Rush faculty in basic science, clinical research and community service arenas. Students accepted in the program are provided a paid position to work full time during the summer before the second year on their research project. Many students continue to participate in these projects after the summer.

First-year medical students have the opportunity to enroll in the elective course, Introduction to Biomedical Research. This is a year-long course consisting of lectures, a journal club and one-on-one work with a faculty mentor to develop a research proposal.

Students who are interested in a more in-depth research experience may request a leave of absence from the Medical College curriculum to pursue an MS or PhD degree.

## **Rush Medical College Committees**

Committees exist within the structure of Rush Medical College to assure the appropriate involvement of faculty and students in the various activities of the College. Except for the Rush Medical College Student Council, each committee includes representation from both faculty and students.

### **Faculty Council**

This committee is the senior representative body within Rush Medical College. The membership includes professors, associate professors, assistant professors, instructors or assistants and one student from each of the four classes, each chosen by vote of the corresponding constituency.

### **Committee on Committees**

This committee has as its primary responsibility the nomination of individuals to serve on the various standing committees of Rush Medical College. The committee is also responsible for dealing with grievances presented by members of the Rush Medical College community.

### **Committee on Admissions (CoA)**

Members of this committee are responsible for admissions to the Rush Medical College. The duties of the committee members include setting the admissions criteria that will enhance academic excellence, interviewing candidates and selecting the applicants who will be offered acceptance to Rush Medical College.

### **Committee on Curriculum and Evaluation (CCE)**

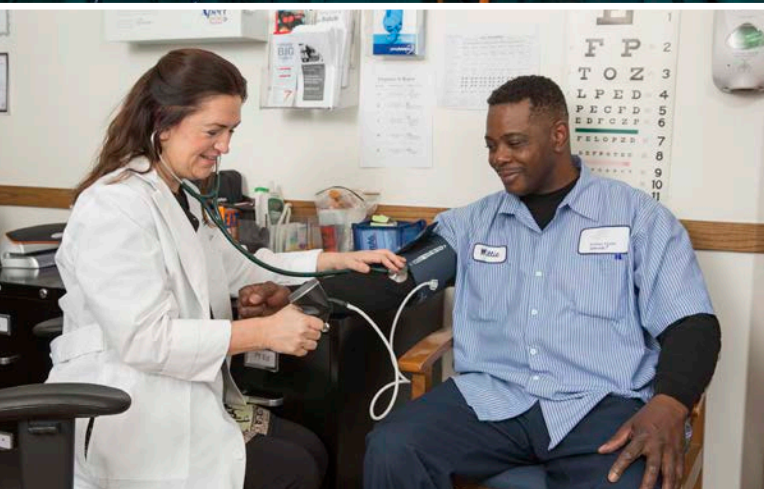
This committee is responsible for the design, content and evaluation of the courses and curriculum. With the assistance of course directors, the committee administers surveys to the students that evaluate course content, delivery and faculty performance.

### **Committee on Senior Faculty Appointments and Promotions (COSFAP)**

The function of this committee is to review recommendations submitted by chairpersons for appointments or promotions of faculty members to academic ranks of indefinite terms in Rush Medical College. Recommendations for appointments or promotions are then submitted to the Office of the Dean for further action.

### **Committee on Student Evaluation and Promotion (COSEP)**

This committee is responsible for developing policies concerning student status, evaluation and promotion; reviewing the academic performance of Rush Medical College students; making recommendations to the Faculty Council and dean concerning promotion, graduation and dismissal of students; and determining requirements for remedial action for students who have failed medical college courses.



RUSH UNIVERSITY

## College of Nursing



## Welcome to the College of Nursing

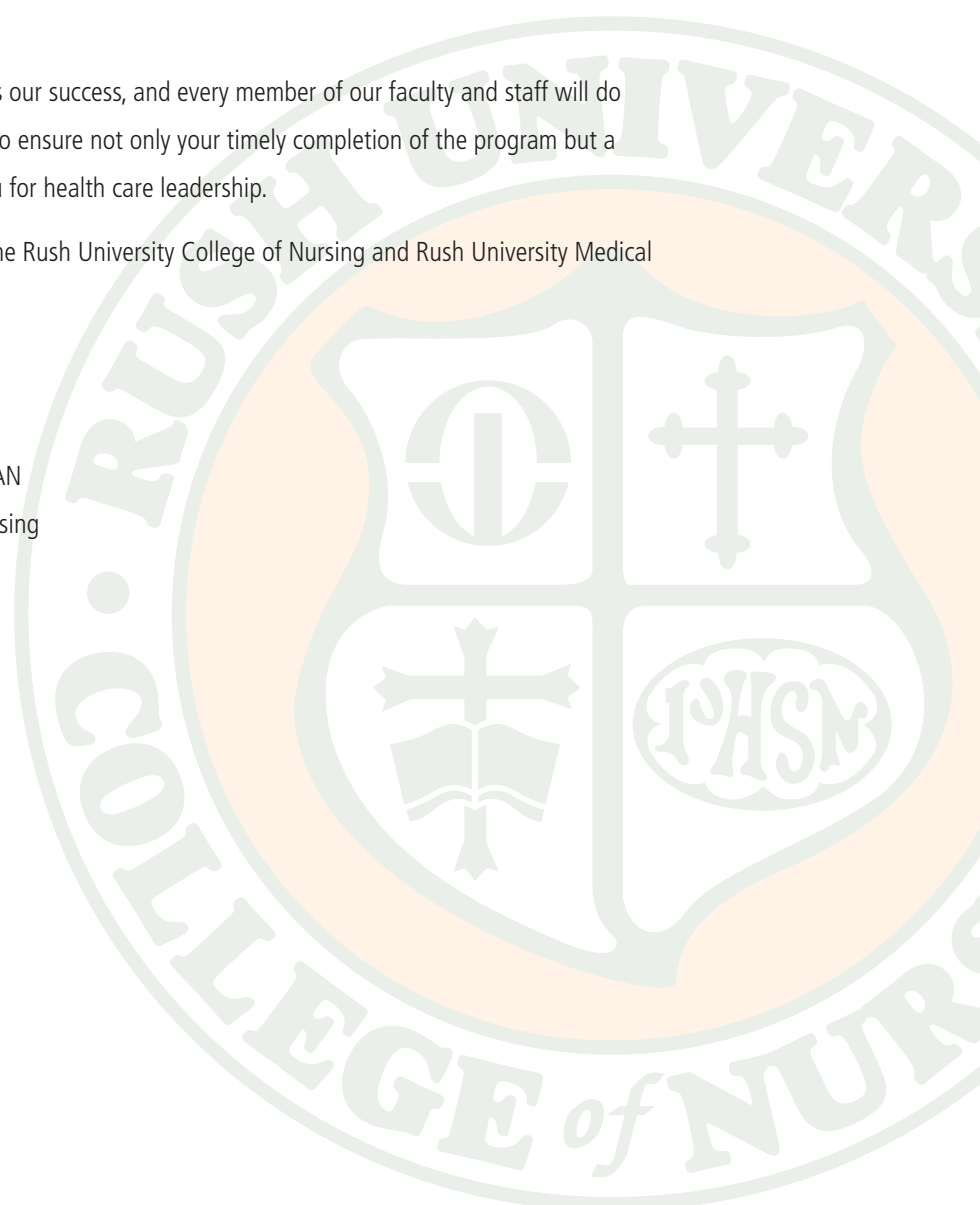


On behalf of the faculty of Rush University College of Nursing, I extend to you our warmest welcome. We are both pleased and honored that you have chosen to further your education at Rush and are committed to having the degree that best prepares you for a rich and fascinating career in nursing and health care. Rush is renowned for its integration of education and practice, and you will have the opportunity to work with extraordinary scholars and clinicians throughout your journey in the College of Nursing. Please know that you can feel comfortable calling on me and any other member of the faculty to meet your personal learning needs.

Your success is our success, and every member of our faculty and staff will do what it takes to ensure not only your timely completion of the program but a quality degree that will groom you for health care leadership.

Again, our warmest welcome to the Rush University College of Nursing and Rush University Medical Center.

Sincerely,  
Marquis D. Foreman, PhD, RN, FAAN  
Acting Dean of the College of Nursing



## College of Nursing Description

Rush University College of Nursing is a private non-profit graduate college of nursing. It currently comprises three degree programs — Master of Science in Nursing (MSN), Doctor of Nursing Practice (DNP), and Doctor of Philosophy in Nursing Science (PhD) — and a postgraduate certificate program. The College of Nursing faculty thoroughly prepares students to advance the quality of patient care and nursing practice in a multitude of health care environments and to be leaders focused on improving health outcomes, whether at the bedside, in a research setting, or directing an organization.

The education and preparation of students to meet the health needs of a culturally diverse society is facilitated at Rush by the integration of academic, research, and clinical practice components. Rush students have the advantage of attending a private university that is a vital part of a nationally recognized academic medical center. This unique integration stimulates excellence in education, practice, scholarly activities and professional leadership by the faculty and the graduates of the College of Nursing.

The master's degree in nursing and the Doctor of Nursing Practice programs at Rush University College of Nursing are accredited by the Commission on Collegiate Nursing Education (<http://www.aacn.nche.edu/ccne-accreditation>).

## College of Nursing Mission

The mission of the Rush University College of Nursing is to protect the health of the public through the preparation of the future leaders in nursing practice, education and research.

## College of Nursing Vision

Lead health care transformation through innovative nursing education, practice, research and scholarly inquiry.

## Philosophy

The College of Nursing philosophy expresses the beliefs of the faculty regarding the meta-paradigm of nursing and nursing education.

## Person

The faculty believes that a person is a unique being who possesses innate dignity and worth with the right to self-determination. Persons live as individuals and as members of families, communities, and national and global societies.

## Environment

The environment includes the multiple systems in which persons interact. This environment includes personal, physical, family, community, societal, economic, cultural and political systems. Persons influence and are influenced by their environments.

## Health

Health is a dynamic state of well-being that interacts with personal factors and the environment. It is perceived in the context of a multisystem environment.

## Nursing

Nursing is both a discipline and a profession. The focus of the discipline is the generation of knowledge related to persons and their environments for the purpose of maximizing the well-being of individuals, families, communities and society through health promotion, restoration and maintenance. The focus of the profession is the care of individuals, groups and communities through application of discipline-specific and discipline-related knowledge. Nurses contribute both individually and collaboratively with other professionals to promote positive health outcomes. Nurses apply a professional code of ethics and professional guidelines to clinical practice and demonstrate compassion, advocacy and cultural sensitivity.

## Nursing Education

The education of nurses is a process by which the knowledge, skills, values and culture of nursing are transmitted to the learner. The faculty believes that professional nursing education is accomplished in a university setting and in an environment where nursing education, practice and research are integrated. Nursing education is built upon knowledge from the sciences, arts and humanities so that students understand and value the human experience and its relationship to health. Nursing faculty members foster student growth by providing learning experiences in a variety of health care settings so that students can understand the complexity of health care and learn the nursing role. The education of nurses is an interactive process whereby students are actively engaged learners who take responsibility for their education and practice. The curricula of the College of Nursing are designed to produce nurses who are the following: 1) competent, caring practitioners; life-long learners that value scholarship; collaborative members of interprofessional teams; and leaders in the profession; and 2) clinical scholars who contribute to the scientific basis of nursing practice, improve clinical outcomes through evidence-based practice, and positively influence the profession and the health care system.

## Programs

The College of Nursing offers graduate nursing education that allows the student to exit with one of the following degrees:

- Master of Science in Nursing (MSN)
- Doctor of Nursing Practice (DNP)
- Doctor of Philosophy in Nursing Science (PhD)

A set of core courses (or its equivalent) is required for every student. Advanced clinical specialty courses are required as determined by an area of advanced practice concentration. Cognate courses representing course work from the biological, behavioral and organizational sciences may also be required by each degree.

## Admission Entry Points

Several entry points are available depending on the educational goals and academic background of the applicant.

1. Students with a baccalaureate degree in another field may apply for the Generalist Entry Master's (GEM) program.
2. RNs with a baccalaureate degree in a field other than nursing may apply directly for the Clinical Nurse Leader MSN degree.
3. RNs with a baccalaureate degree with an upper division major in nursing may apply directly for the Clinical Nurse Leader MSN, advanced practice DNP or PhD degree options.
4. RNs with a master's degree in nursing may apply for DNP or PhD degree options.
5. RNs who already have an advanced practice graduate degree in nursing (MSN or DNP) and who wish to specialize in a different clinical area may apply for a non-degree postgraduate certificate in selected specialty areas.
6. Non-nurses who hold a graduate degree in a health-related field will be considered for admission to the PhD program.

## Master of Science in Nursing

### Direct Entry Master of Science in Nursing (MSN) for Non-Nurses: Generalist Entry Master's (GEM) Clinical Nurse Leader (CNL) Program

The GEM program comprehensively prepares students, in a two-year full-time curriculum, to be a graduate (MSN) registered nurse (RN) clinician with a focus in clinical leadership. Graduates are prepared to function at a high level in inpatient, outpatient and community settings. The GEM program gives students a broad overview of all of the major specialties in which nurses

work, as well as a variety of settings across the health care continuum. In the GEM program, students take core graduate courses that are applicable in their progression to doctoral education in either a Doctor of Nursing Practice (DNP) specialty or the Doctor of Philosophy in Nursing Science (PhD) program.

Students are considered for admission to the GEM program after completing baccalaureate education at another accredited college or university. The GEM curriculum consists of 74 trimester hours of graduate course work in nursing and related sciences. Students are eligible to take the National Council Licensure Examination (NCLEX) for RN licensure and Clinical Nurse Leader certification examination upon graduation. GEM students are expected to complete the MSN requirements on a full-time basis in six terms.

## Required Prerequisite Courses

As a profession and a discipline, nursing promotes and protects human health and well-being and is grounded in a strong liberal arts, undergraduate education that includes the arts and humanities, as well as the behavioral, social and physical sciences. Recognizing that different undergraduate majors have varying requirements, applicants will be evaluated both on their success in meeting the requirements of their undergraduate programs and on the breadth and depth of their educational preparation for entry into nursing.

Nursing practice and scholarship have great application in our society, ranging from the acute care of individuals to the management and promotion of the health of whole communities and even nations. The College of Nursing welcomes and is enriched by applicants from a spectrum of disciplines and professions.

### *Physical and biological sciences\*:*

This category of requirements includes successful completion of specific physical and biological courses. The following courses are required, minimally, to meet this criterion:

- Anatomy\*\* (laboratory component strongly recommended)
- Physiology\*\* (laboratory component strongly recommended)
- Microbiology with a laboratory component\*\*
- Chemistry with a laboratory component\*\*\*

\*\*Anatomy and physiology may be taken as two separate courses or as Anatomy and Physiology I and Anatomy and Physiology II.

\*\*\*General chemistry, inorganic, organic or biochemistry courses with a lab are all acceptable to meet the chemistry requirement.

**It is strongly discouraged to take anatomy and physiology online. The required prerequisite courses may be taken at any accredited university or community college.**

All required prerequisite courses must be completed, with a grade of C or better, prior to the application deadline for which the student is applying. Science courses should be taken with a laboratory component whenever possible. It is highly recommended to have taken human anatomy and physiology within the last three years.

### **MSN for RNs: Clinical Nurse Leader**

The master's-prepared clinical nurse leader (CNL) is responsible for clinical management of comprehensive client care for individuals and clinical populations across the continuum of care, and in multiple settings. The CNL assumes leadership and accountability for health outcomes for a specific group of clients within a unit or setting through the assimilation and application of research-based information to design, implement and evaluate plans of care. The clinical nurse leader is also responsible for the coordination and planning of care team activities and functions. Health promotion, risk reduction, and improvement in point-of-care outcomes are critical elements in the role of the clinical nurse leader.

RN applicants to the postlicensure CNL program must have earned a baccalaureate degree from an accredited university. The program is six terms in length and offered as a part-time program of study. The majority of the CNL program is offered online, but students are required to come to campus for NSG 625L: Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan: Lab. This is a live, on-campus compressed (three to four day) format course. There is a clinical residency requirement that may be completed at the student's place of employment.

All MSN students are expected to complete their degree requirements in no more than five years.

### **Terminal Objectives**

Both the prelicensure and postlicensure MSN programs comprehensively prepare students to be graduate nurse clinicians with a focus in clinical leadership.

To achieve quality patient (client/population/cohort of clients) outcomes, the clinical nurse leader will do the following:

- Deliver holistic, competent and contextually appropriate patient/family/population-centered nursing care

- Synthesize scientific evidence and innovative technologies to guide nursing practice in dynamic care environments
- Develop collaborative, interdisciplinary and multisector relationships to ensure improved health care
- Demonstrate leadership behaviors within and across systems at all levels of prevention
- Manage the structure and processes of the care environment, incorporating policy, fiscal and macrosystem concepts
- Demonstrate professional values in nursing practice
- Employ therapeutic use of self and intentional presence to protect the value of the human relationship

### **Graduation Requirements**

#### **Direct Entry Master's (MSN) for Non-Nurses: Generalist Entry Master's (GEM) Clinical Nurse Leader (CNL)**

**Program** requires a minimum of 74 trimester hours of didactic and 1068 clock hours of clinical instruction. Candidates are given a comprehensive examination in the final term of the program in preparation for the National Council Licensure Examination for Registered Nurses (NCLEX). Graduates are eligible to sit for the NCLEX and the CNL certification exam.

**MSN for RNs: Clinical Nurse Leader (CNL)** requires a minimum of 37 credit hours and 400 clock hours of clinical instruction. Graduates are eligible to sit for CNL certification.

### **Doctor of Nursing Practice (DNP)**

Students are considered for admission to the DNP program with one of the following areas of focus:

#### **Doctor of Nursing Practice with Clinical Specialty Certification**

Students enter the DNP program with a specific clinical specialty focus after completing a BSN or MSN degree. Students select an area of specialization in one of the following roles and populations:

- Nurse Practitioner:
  - Adult-Gerontology Acute Care (AGACNP)
  - Adult-Gerontology Primary Care (AGPCNP)
  - Family (FNP)
  - Neonatal (NNP)
  - Pediatric Primary Care (PNP)
  - Pediatric Acute Care (ACPNP)
  - Psychiatric-Mental Health (PMHNP)

- Clinical Nurse Specialist:
  - Adult-Gerontology Primary Care (AGCNS)
  - Adult-Gerontology Acute Care (AGACCNS)
  - Neonatal (NCNS)
  - Pediatric (PCNS)
- Advanced Public Health Nursing (APHN)
- Nurse Anesthesia (CRNA)

Some areas of concentration have RN practice requirements that must be met prior to enrollment in the program. These program-specific requirements are delineated below.

Depending upon the area of specialization, most BSN-DNP options range between 62 and 69 credit hours. MSN-DNP options require a minimum 30 credit hours of course work. All specialty areas provide the requisite didactic and clinical course work to sit for certification. Course requirements vary in each area of concentration.

### Doctor of Nursing Practice: Systems Leadership

This area of focus is a postmaster's practice doctorate that prepares graduates for systems-level leadership and improving outcomes in a variety of settings. Students considered for admission should have potential or demonstrated leadership ability.

### Doctor of Nursing Practice: Leadership to Enhance Population Health Outcomes

This area of focus is on the development of population-based knowledge and skills to enhance clinical health outcomes for patient aggregates, communities and populations. Students with an MSN in a primary care specialty, as well as non-APRN MSNs, will be considered for admission to the Leadership to Enhance Population Health Outcomes option.

### Terminal Objectives

The DNP degree is designed to prepare graduates to function as highly developed clinicians and leaders in advanced nursing practice or systems of care. Graduates will be prepared to practice in a variety of complex clinical, organizational and educational systems with diverse populations and will be able to affect changes in health care outcomes through evidence-based decision making and system redesign.

- Integrate science-based theories and data-based concepts to develop, critically appraise and implement practice approaches that improve health care and health care systems
- Apply organizational theories and systems thinking to improve the quality, cost-effectiveness and safety outcomes of practice decisions and initiatives

- Apply effective strategies for managing the ethical dilemmas inherent in patient care, the health care organization and research
- Apply knowledge of informatics to monitor and improve outcomes, programs and systems of care
- Provide leadership in influencing policies on the financing, regulation and delivery of health care
- Lead interprofessional teams to improve patient and population health outcomes
- Function independently in an advanced nursing role to improve health outcomes in a specialty area of practice

### Graduation Requirements

The DNP degree requires a minimum of 62 trimester hours of postbaccalaureate or 30 trimester hours of postmaster's study. All Doctor of Nursing Practice students must complete degree requirements within five years.

### PhD in Nursing Science

Students may enter the PhD program with a BSN or MSN degree. Non-nurses with a graduate degree in a health-related field may also apply for admission to the PhD program.

### Terminal Objectives

Graduates of the PhD program develop the skills of a clinical researcher. These skills are based on the integration of knowledge from biological, behavioral and clinical sciences. Their clinical research skills contribute to the scientific basis of care provided to individuals across the life span and in any setting where care is provided. Graduates also have leadership skills necessary to serve as senior academicians and influence health care systems and policy.

- Synthesize and apply theoretical and research-based knowledge in the investigation of clinical phenomena
- Test and integrate disciplinary knowledge in models of clinical practice across the levels of prevention
- Generate and disseminate research-based, clinical knowledge
- Analyze health care trends to influence health and social policy for diverse client populations
- Participate in collaborative interprofessional practice and research
- Assume faculty responsibilities within a senior academic environment
- Function as a clinical scientist



## Graduation Requirements

Divisional graduation requirements require completion of the approved individual program of study. For MSN to PhD students, course work for the PhD must be the equivalent of at least 52 trimester hours of graduate credit in addition to the completed dissertation. BSN to PhD students must complete at least 60 trimester hours of graduate credit in addition to the dissertation. Students have a maximum of eight years to complete degree requirements.

**Please see the Graduate College section of the catalog for program curriculum information.**

## Postgraduate Non-Degree Certificate

The postgraduate non-degree certificate is intended for nurses who already have an advanced practice graduate degree in nursing (MSN or DNP) and who wish to specialize in a different clinical area. In addition to the graduate core courses, it is expected that the following courses or their equivalents are completed prior to admission to the postgraduate certificate program: Advanced Health Assessment Across the Lifespan, Physiology and/or Pathophysiology, Advanced Pharmacology, APRN Role and Diagnostics for the APRN. Review of these courses for equivalence and transfer credit will be done upon admission into the program.

Postgraduate Advanced Practice Certificate Options:

- Neonatal
- Pediatric Acute Care

**Prior to or during a student's matriculation, the College reserves the right to modify course requirements in consideration of overall curricular goals and design and accreditation and certification standards.**

## College Admission Requirements

All applicants applying to Rush University College of Nursing do so through a centralized application system, NursingCAS. Application materials (essay, references, transcripts, etc.) are submitted directly to NursingCAS. Official GRE and TOEFL scores, if required, are submitted to University Enrollment Services prior to the application deadline. Applicants will be invited to submit a supplemental application directly to the college upon receipt of their NursingCAS application.

## Admission/Application Guidelines

All applicants will be evaluated on the following:

- A minimum of a bachelor's degree from an accredited institution\*
- All calculated GPAs of 3.0 or higher (on a 4.0 scale)\*\*
- A completed application submitted to NursingCAS
- A brief Rush supplemental application
- Official transcripts from all accredited institutions of higher education attended, regardless of whether a degree was earned
- A current resume or CV
- Substantive personal essay statement
- RN licensure in the United States (for advanced practice postlicensure programs)
- Three letters of recommendation from faculty or work managers (for postlicensure applicants, at least one letter must come from a current or recent employer). Relationship of recommenders to you must be in a supervisory capacity. Recommendations from friends, relatives or co-workers will not be accepted and will cause your application to be delayed or denied. Please refer to the College of Nursing website admission guidelines for your specific program for more detailed recommender information.
- GRE (Graduate Record Examination) scores, if required
  - The GRE is required for all applicants to the Nurse Anesthesia and PhD programs and cannot be waived.
  - The GRE can be waived for other programs under the following conditions\*:
    1. For the Direct Entry Master's: Generalist Entry Master's (GEM), a cumulative GPA of 3.25 or higher.
    2. For the MSN and DNP post-licensure programs, a cumulative GPA of 3.25 or higher; a pre-licensure nursing GPA of 3.0 or higher; a graduate GPA (of a completed degree) of 3.5 or higher.
  - Postgraduate certificate students are not required to take the GRE.
- TOEFL (Test of English as a Foreign Language) scores, if required
  - TOEFL is required for applicants who are non-native speakers of English. This requirement may be waived if the applicant has completed a minimum of three years of higher education and received a baccalaureate degree in the United States.

- All foreign institutions attended require course-by-course ECE, WES, or CGFNS transcript evaluation.

\*Eligible applicants to the CNL program include Associate Degree in Nursing (ADN) graduates who have a bachelor's degree in another area.

\*\*Cumulative GPA calculated for all applicants; prerequisite science GPA for GEM applicants only; prelicensure nursing GPA for all graduate programs except GEM.

## Program-Specific Requirements

### Direct Entry Master's (MSN) for Non-Nurses: Generalist Entry Master's (GEM) Clinical Nurse Leader (CNL)

All prerequisite courses must be completed by the application deadline.

#### Advanced practice applicants must have the following experience by the application deadline:

- **Adult-gerontology acute care** – minimum of six months of recent adult critical care or adult acute care nursing experience
- **Adult-gerontology primary care** – minimum of six months of recent nursing experience
- **Family** – minimum of six months of recent nursing experience
- **Neonatal** – minimum of six months of recent in-patient neonatal nursing experience
- **Nurse anesthesia** – minimum of one year (two years preferred) of recent adult critical care nursing experience
- **Pediatric acute care** – minimum of six months of recent inpatient pediatric nursing experience
- **Pediatric primary care** – minimum of six months of recent pediatric nursing experience
- **Psychiatric-mental health** – minimum of six months of recent nursing experience

All materials of the application are taken into consideration when evaluating an applicant.

Applicants must have earned a baccalaureate degree with a recognized upper-division major upon enrollment. The majority of credit toward the degree should be earned through university-level course work. Students taking courses under student-at-large status will not be admitted nor allowed to matriculate as an enrolled student if their Rush GPA is below 3.0.

## Deadlines for Application

Current application deadlines for nursing programs may be obtained on the College of Nursing Program and Admission web page at <https://www.rushu.rush.edu/college-nursing/academic-programs>. All application materials must be received by the indicated deadline. Applicants are encouraged to apply early in order to avoid missing deadlines due to a lack of required documentation.

## International Students

Students from other countries are welcome to apply. Limited financial aid is available. TOEFL is required for applicants who are non-native speakers of English. This requirement may be waived if the applicant has completed a minimum of three years of higher education and received a baccalaureate degree in the United States.

## Student Progression in the College of Nursing

Student progress in the College of Nursing is reviewed and evaluated in several ways. The progressions policies established by the faculty are interpreted and applied by the student's academic advisor, the Office of the Dean, and the College of Nursing Progressions Committee. The College of Nursing reserves the right to request a leave of absence or the withdrawal of any student whose conduct, physical or mental health, or performance demonstrates lack of fitness for continuance in a health profession. Should a student's behavior come into question, policies and procedures to determine the student's continuing status in the college are delineated in the College of Nursing Student Handbook.

Since much of the work in nursing assumes that students will achieve a progressively higher level of understanding and skill, high academic performance is expected. The individual student is responsible for acquiring knowledge inside and outside of formal classroom and clinical settings.

## Academic Progressions Policy

A student must achieve an A or B grade in all required clinical nursing courses. If a C grade is achieved in a single clinical seminar course or a single clinical practicum, the student must repeat the course prior to graduation. A student may repeat only one clinical seminar or clinical practicum in a program of study. A grade of F, N, or a second C in a required clinical seminar or clinical practicum may result in dismissal from the program. An F or N grade in any required course places the student on academic probation and may

result in dismissal from the program. Permission may be given to retake a course at the discretion of the progressions committee. If permitted, a student has only one opportunity to achieve a passing grade. An F or N grade in the repeated courses may result in dismissal.

Students in all graduate programs must maintain a cumulative 3.0 average in graduate course work to remain in good academic standing. If a student's cumulative GPA drops below 3.0, the student will be placed on academic probation. A student may enroll for no more than two consecutive terms as a probationary student. Students may be dismissed from the college upon failing to achieve satisfactory academic standing in the required period of time, or if the student incurs a second probationary event.

To be awarded a degree or certificate, a student must be in good academic standing at the completion of the program.

Please refer to the College of Nursing Student Handbook for a complete review of the college academic progressions policy.

## College of Nursing Committees

### Faculty Senate

The Faculty Senate is the senior representative and governing body for the College of Nursing faculty and operates as the Committee on Committees. The Senate has eight elected members: six faculty members and two student representatives. Members of this body serve three-year terms.

### Standing Committees

The Standing Committees of the College of Nursing assist with the work of the college. The faculty elects members of the committees every June to serve three-year terms. Students are also elected to represent the student body on various committees. The committees include the following:

#### Admissions and Progressions

The Admissions and Progressions Committee is responsible for the review of all applicants to the College of Nursing and maintaining the admission standards and policies for all nursing programs. This joint committee is also charged with oversight of the progression standards and policies for all nursing programs, and for the progress and performance review of all students.

#### Curriculum

There is a curriculum committee for each of the College of Nursing programs: MSN, DNP and PhD. These committees

are charged with overseeing the quality and integrity of their respective curricula. The committees review all new courses or major changes in the curriculum, establish and monitor methodology for curriculum evaluation, and provide overall consistency for curriculum development.

### Diversity and Inclusion

The Diversity and Inclusion Committee provides a forum for communication across all of the faculty standing committees to ensure that diversity and inclusion goals of individual committees are supported and strategies are coordinated and aligned to meet the University and College of Nursing strategic plans' diversity and inclusion goals. In addition, Rush University is committed to ensuring that equal access to its facilities, programs and services are available to students with disabilities. Students who may need special accommodations can access this information at <https://www.rushu.rush.edu/students-disabilities>.

### Evaluation

This committee evaluates the integrity and quality of the academic enterprise in the College of Nursing using the College of Nursing Evaluation Matrix; ensures the College of Nursing programs are future-oriented and innovative in their approach and align with College of Nursing and University strategic plans; and promotes communication across the three curriculum committees by meeting at least once per term with the three committee chairs to discuss curriculum quality issues and processes.

### Faculty Appointments and Promotions

This committee acts upon the appointments and promotions of faculty in accordance with the Rules for Governance.

### Faculty Development

The Faculty Development Committee performs a periodic needs assessment and establishes, implements and evaluates faculty orientation, mentoring and development programs in collaboration with the College and the University.

### Research

This committee establishes, implements and evaluates criteria for distribution of funds allocated for faculty and student research activities in collaboration with the Office of Research and Scholarship with emphasis on underserved populations. Committee members also collaborate with the Dean and the Associate Dean for Research regarding matters pertaining to research enrichment and suggest measures for ongoing facilitation of research productivity for faculty and students.

## Academic Program Curricula

### Master of Science in Nursing (MSN)

Area of Focus: Generalist Entry Master's (GEM)

Term 1			Credit Hours
NSG	500	Socialization Into Nursing Seminar	2
NSG	501	Role of the Professional Nurse	3
NSG	501P	Role of the Professional Nurse Practicum	2
NSG	510	Pathophysiology for the Advanced Generalist	3
NSG	525	Health Assessment Across the Lifespan	2
NSG	525L	Health Assessment Across the Lifespan Lab: Advanced Generalist	1
			Subtotal 13
Term 2			Credit Hours
NSG	502	Nursing Management of Common Health Alterations Across the Lifespan	3
NSG	502P	Nursing Management of Common Health Alterations Across the Lifespan Practicum	3
NSG	511	Pharmacology for the Advanced Generalist	3
NSG	522	Applied Epidemiology and Biostatistics for Nursing Practice	3
			Subtotal 12
Term 3			Credit Hours
IDS	505	Interdisciplinary Studies in Palliative Care	2
NSG	503	Psychiatric and Mental Health Nursing	3
NSG	503P	Psychiatric and Mental Health Nursing Practicum	3
NSG	523	Research for Evidence-Based Practice	3
NSG	524	Health Promotion in Individuals and Clinical Populations	3
			Subtotal 14
Term 4*			Credit Hours
NSG	504	Women's Health Across the Lifespan	3
NSG	504P	Women's Health Nursing Practicum	1
NSG	505	Public Health Nursing	3
NSG	505P	Public Health Nursing Practicum	2
NSG	521	Organizational and Systems Leadership	3
			Subtotal 12
Term 5*			Credit Hours
NSG	506	Nursing Management of Complex Health Alterations Across the Lifespan	3
NSG	506P	Nursing Management of Complex Health Alterations Across the Lifespan Practicum	3
NSG	512	Clinical Leadership and Project Development	3
NSG	536	Principles of Case Management	3
			Subtotal 12
Term 6*			Credit Hours
NSG	513	Capstone: Clinical Project Development and Implementation	3
NSG	514	Immersion: Advanced Generalist (Prelicensure)	7
NSG	507	Comprehensive Exam	1
			Subtotal 11
			<b>Total 74</b>

\* Students must complete a minimum of 132 professional development hours to meet the CNL competencies. Students may register for NSG-GEM: Opportunities for GEM in terms 4, 5 and 6 in order to access a list of current sites. This is a 0-credit course.

## Master of Science in Nursing (MSN)

### Area of Focus: Clinical Nurse Leader (CNL) - Part Time

Term 1			Credit Hours
NSG	522	Applied Epidemiology and Biostatistics for Nursing Practice	3
NSG	602	Health Economics, Policy and Finance	3
			Subtotal 6
Term 2			Credit Hours
NSG	524	Health Promotion in Individuals and Clinical Populations	3
NSG	533	Advanced Pathophysiology	3
			Subtotal 6
Term 3			Credit Hours
NSG	531	Advanced Pharmacology	3
NSG	625	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan	2
NSG	625L*	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan: Lab	1
			Subtotal 6
Term 4			Credit Hours
NSG	521	Organizational and Systems Leadership	3
NSG	523	Research for Evidence-Based Practice	3
			Subtotal 6
Term 5			Credit Hours
NSG	512	Clinical Leadership and Project Development	3
NSG	517	CNL Role Seminar	3
			Subtotal 6
Term 6			Credit Hours
NSG	515	Immersion: Clinical Project Implementation	7
			Subtotal 7
			<b>Total 37</b>

\* This course requires students to attend two live, on-campus days of lab. Dates for the on-campus days will be provided at registration time.

## Doctor of Nursing Practice (BSN to DNP)

Population/Role: Adult-Gerontology Acute Care Nurse Practitioner (AGACNP)

Graduate Nursing Core			Credit Hours
NSG	521	Organizational and Systems Leadership	3
NSG	522	Applied Epidemiology and Biostatistics for Nursing Practice	3
NSG	523	Research for Evidence-Based Practice	3
NSG	524	Health Promotion in Individuals and Clinical Populations	3
			Subtotal 12
Advanced Practice Nursing Core			Credit Hours
NSG	625	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan	2
NSG	625L	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan: Lab	1
NSG	532	Advanced Physiology	3
NSG	533	Advanced Pathophysiology	3
NSG	531	Advanced Pharmacology	3
NSG	535	Diagnostics for the APRN	3
NSG	537	Transition to the APRN Role	3
			Subtotal 18
DNP Core			Credit Hours
NSG	603	Effective Project Planning, Implementation and Evaluation	3
NSG	600	Leadership in the Evolving Health Care Environments	3
NSG	602	Health Care Economics, Policy and Finance	3
NSG	604A	DNP Project Planning I	1
NSG	604D*	DNP Project Planning II and III	2
			Subtotal 12
Population/Role Cognates			Credit Hours
NSG	572	Quality and Safety for the Aging Adult	3
NSG	570A	Pharmacotherapeutics - Acute Care	3
NSG	571A	Management: Adult/Gerontology I	3
NSG	571C	Management: Adult/Gerontology Acute and Critical Illness I	4
NSG	571D	Management: Adult/Gerontology Acute and Critical Illness II	2
			Subtotal 15
DNP Practica and Capstone			Credit Hours
NSG	605	DNP Capstone (168 Clock Hours)	2
NSG	606	DNP Practicum (420 Clock Hours)	5
NSG	607	DNP Immersion Residency (420 Clock Hours)	5
			Subtotal 12
			<b>Total 69</b>

**Minimum credits required:** Successful completion of the AGACNP BSN to DNP track requires a minimum of 69 semester hours for graduation. Upon review of an individual's academic portfolio, additional courses or clinical hours may be required.

\* Depending on plan of study, students will register for NSG-604D DNP Project Planning II and III (2 credit hours) or NSG-604B DNP Project Planning II (1 credit hour) and NSG-604C DNP Project Planning III (1 credit hour).

## Doctor of Nursing Practice (MSN to DNP – non-APRN)

Population/Role: Adult-Gerontology Acute Care Nurse Practitioner (AGACNP)

Advanced Practice Nursing Core			Credit Hours
NSG	625	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan	2
NSG	625L	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan: Lab	1
NSG	532	Advanced Physiology	3
NSG	533	Advanced Pathophysiology	3
NSG	531	Advanced Pharmacology	3
NSG	535	Diagnostics for the APRN	3
NSG	537	Transition to the APRN Role	3
			Subtotal 18
DNP Core			Credit Hours
NSG	603	Effective Project Planning, Implementation and Evaluation	3
NSG	600	Leadership in Evolving Health Care Environments	3
NSG	602	Health Care Economics, Policy and Finance	3
NSG	604A	DNP Project Planning I	1
NSG	604D*	DNP Project Planning II and III	2
			Subtotal 12
Population/Role Cognates			Credit Hours
NSG	572	Quality and Safety for the Aging Adult	3
NSG	570A	Pharmacotherapeutics - Acute Care	3
NSG	571A	Management: Adult/Gerontology I	3
NSG	571C	Management: Adult/Gerontology Acute and Critical Illness I	4
NSG	571D	Management: Adult/Gerontology Acute and Critical Illness II	2
			Subtotal 15
DNP Practica and Capstone			Credit Hours
NSG	605	DNP Capstone (168 Clock Hours)	2
NSG	606	DNP/Specialty Practicum (420 Clock Hours)	5
NSG	607	DNP/Specialty Immersion Residency (420 Clock Hours)	5
			Subtotal 12
			<b>Total 57</b>

**Minimum credits required:** Successful completion of the AGACNP MSN to DNP track for non-APRNs requires a minimum of 57 semester hours for graduation. Upon review of an individual's academic portfolio, additional courses or clinical hours may be required.

The equivalent of Research and Biostatistics/Epidemiology must be completed prior to admission or added to the plan of study.

\* Depending on plan of study, students will register for NSG-604D DNP Project Planning II and III (2 credit hours) or NSG-604B DNP Project Planning II (1 credit hour) and NSG-604C DNP Project Planning III (1 credit hour).

## Doctor of Nursing Practice (MSN to DNP – APRN)

Population/Role: Adult-Gerontology Acute Care Nurse Practitioner (AGACNP)

DNP Core			Credit Hours
NSG	603	Effective Project Planning, Implementation and Evaluation	3
NSG	600	Leadership in Evolving Health Care Environments	3
NSG	602	Health Care Economics, Policy and Finance	3
NSG	604A	DNP Project Planning I	1
NSG	604D*	DNP Project Planning II and III	2
			Subtotal 12
Population/Role Cognates			Credit Hours
NSG	572	Quality and Safety for the Aging Adult	3
NSG	570A	Pharmacotherapeutics - Acute Care	3
NSG	571A	Management: Adult/Gerontology I	3
NSG	571C	Management: Adult/Gerontology Acute and Critical Illness I	4
NSG	571D	Management: Adult/Gerontology Acute and Critical Illness II	2
			Subtotal 15
DNP Practica and Capstone			Credit Hours
NSG	605	DNP Capstone (168 Clock Hours)	2
NSG	606	DNP/Specialty Practicum (168 Clock Hours)	2
NSG	607	DNP/Specialty Immersion Residency (420 Clock Hours)	5
			Subtotal 9
			<b>Total 36</b>

**Minimum credits required:** Successful completion of the AGACNP MSN to DNP track for APRNs requires a minimum of 36 semester hours for graduation. Upon review of an individual's academic portfolio, additional courses or clinical hours may be required.

\* Depending on plan of study, students will register for NSG-604D DNP Project Planning II and III (2 credit hours) or NSG-604B DNP Project Planning II (1 credit hour) and NSG-604C DNP Project Planning III (1 credit hour).

A gap analysis will be performed and an individualized program of study developed based on previous graduate education completed with evidence of the following course work:

- Advanced Health Assessment Across the Lifespan
- Advanced Pathophysiology
- Advanced Pharmacology
- Transition to the APRN Role
- Research
- Biostatistics/Epidemiology

It is expected that previous clinical hours plus DNP/Specialty Practicum and Immersion hours will be equal to or greater than 1000 clock hours.



## Doctor of Nursing Practice (BSN to DNP)

Population/Role: Adult-Gerontology Primary Care Nurse Practitioner (AGPCNP)

Graduate Nursing Core			Credit Hours
NSG	521	Organizational and Systems Leadership	3
NSG	522	Applied Epidemiology and Biostatistics for Nursing Practice	3
NSG	523	Research for Evidence-Based Practice	3
NSG	524	Health Promotion in Individuals and Clinical Populations	3
			Subtotal 12
Advanced Practice Nursing Core			Credit Hours
NSG	625	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan	2
NSG	625L	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan: Lab	1
NSG	532	Advanced Physiology	3
NSG	533	Advanced Pathophysiology	3
NSG	531	Advanced Pharmacology	3
NSG	535	Diagnostics for the APRN	3
NSG	537	APRN Role Transition	3
			Subtotal 18
DNP Core			Credit Hours
NSG	603	Effective Project Planning, Implementation and Evaluation	3
NSG	600	Leadership in Evolving Health Care Environments	3
NSG	602	Health Care Economics, Policy and Finance	3
NSG	604A	DNP Project Planning I	1
NSG	604D*	DNP Project Planning II and III	2
			Subtotal 12
Population/Role Cognates			Credit Hours
NSG	534	Major Psychopathological Disorders	3
NSG	570B	Pharmacotherapeutics - Primary Care	3
NSG	571A	Management: Adult/Gerontology I	3
NSG	571B	Management: Adult/Gerontology II	3
NSG	572	Quality and Safety for Aging Adults	3
			Subtotal 15
DNP Practica and Capstone			Credit Hours
NSG	605	DNP Capstone (168 Clock Hours)	2
NSG	606	DNP Practicum (504 Clock Hours)	6
NSG	607	DNP Immersion Residency (336 Clock Hours)	4
			Subtotal 12
			<b>Total 69</b>

**Minimum credits required:** Successful completion of the AGPCNP BSN to DNP track requires a minimum of 69 semester hours for graduation. Upon review of an individual's academic portfolio, additional courses or clinical hours may be required.

\* Depending on plan of study, students will register for NSG-604D DNP Project Planning II and III (2 credit hours) or NSG-604B DNP Project Planning II (1 credit hour) and NSG-604C DNP Project Planning III (1 credit hour).

## Doctor of Nursing Practice (MSN to DNP – non-APRN)

Population/Role: Adult-Gerontology Primary Care Nurse Practitioner (AGPCNP)

Advanced Practice Nursing Core			Credit Hours
NSG	625	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan	2
NSG	625L	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan: Lab	1
NSG	532	Advanced Physiology	3
NSG	533	Advanced Pathophysiology	3
NSG	531	Advanced Pharmacology	3
NSG	535	Diagnostics for the APRN	3
NSG	537	Transition to the APRN Role	3
			Subtotal 18
DNP Core			Credit Hours
NSG	603	Effective Project Planning, Implementation and Evaluation	3
NSG	600	Leadership in Evolving Health Care Environments	3
NSG	602	Health Care Economics, Policy and Finance	3
NSG	604A	DNP Project Planning I	1
NSG	604D*	DNP Project Planning II and III	2
			Subtotal 12
Population/Role Cognates			Credit Hours
NSG	534	Major Psychopathological Disorders	3
NSG	570B	Pharmacotherapeutics - Primary Care	3
NSG	571A	Management: Adult/Gerontology I	3
NSG	571B	Management: Adult/Gerontology II	3
NSG	572	Quality and Safety for Aging Adults	3
			Subtotal 15
DNP Practica and Capstone			Credit Hours
NSG	605	DNP Capstone (168 Clock Hours)	2
NSG	606	DNP/Specialty Practicum (504 Clock Hours)	6
NSG	607	DNP/Specialty Immersion Residency (336 Clock Hours)	4
			Subtotal 12
			<b>Total 57</b>

**Minimum credits required:** Successful completion of the AGPCNP MSN to DNP track for non-APRNs requires a minimum of 57 semester hours for graduation. Upon review of an individual's academic portfolio, additional courses or clinical hours may be required.

The equivalent of Research and Biostatistics/Epidemiology must be completed prior to admission or added to the plan of study.

\* Depending on plan of study, students will register for NSG-604D DNP Project Planning II and III (2 credit hours) or NSG-604B DNP Project Planning II (1 credit hour) and NSG-604C DNP Project Planning III (1 credit hour).

## Doctor of Nursing Practice (MSN to DNP – APRN)

Population/Role: Adult-Gerontology Primary Care Nurse Practitioner (AGPCNP)

DNP Core			Credit Hours
NSG	603	Effective Project Planning, Implementation and Evaluation	3
NSG	600	Leadership in Evolving Health Care Environments	3
NSG	602	Health Care Economics, Policy and Finance	3
NSG	604A	DNP Project Planning I	1
NSG	604D*	DNP Project Planning II and III	2
			Subtotal 12
Population/Role Cognates			Credit Hours
NSG	534	Major Psychopathological Disorders	3
NSG	570B	Pharmacotherapeutics - Primary Care	3
NSG	571A	Management: Adult/Gerontology I	3
NSG	571B	Management: Adult/Gerontology II	3
NSG	572	Quality and Safety for Aging Adults	3
			Subtotal 15
DNP Practica and Capstone			Credit Hours
NSG	605	DNP Capstone (168 Clock Hours)	2
NSG	606	DNP/Specialty Practicum (252 Clock Hours)	3
NSG	607	DNP/Specialty Immersion Residency (336 Clock Hours)	4
			Subtotal 9
			<b>Total 36</b>

**Minimum credits required:** Successful completion of the AGPCNP MSN to DNP track for APRNs requires a minimum of 36 semester hours for graduation. Upon review of an individual's academic portfolio, additional courses or clinical hours may be required.

\* Depending on plan of study, students will register for NSG-604D DNP Project Planning II and III (2 credit hours) or NSG-604B DNP Project Planning II (1 credit hour) and NSG-604C DNP Project Planning III (1 credit hour).

A gap analysis will be performed and an individualized program of study developed based on previous graduate education completed with evidence of the following course work:

- Advanced Health Assessment Across the Lifespan
- Advanced Pathophysiology
- Advanced Pharmacology
- Transition to the APRN Role
- Research
- Biostatistics/Epidemiology

It is expected that previous clinical hours plus DNP/Specialty Practicum and Immersion hours will be equal to or greater than 1000 clock hours.

## Doctor of Nursing Practice (BSN to DNP)

Population/Role: Family Nurse Practitioner (FNP)

Graduate Nursing Core			Credit Hours
NSG	521	Organizational and Systems Leadership	3
NSG	522	Applied Epidemiology and Biostatistics for Nursing Practice	3
NSG	523	Research for Evidence-Based Practice	3
			Subtotal 9
Advanced Practice Nursing Core			Credit Hours
NSG	625	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan	2
NSG	625L	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan: Lab	1
NSG	532	Advanced Physiology	3
NSG	533	Advanced Pathophysiology	3
NSG	531	Advanced Pharmacology	3
NSG	535	Diagnostics for the APRN	3
NSG	537	Transition to the APRN Role	3
			Subtotal 18
DNP Core			Credit Hours
NSG	600	Leadership in Evolving Health Care Environments	3
NSG	602	Health Care Economics, Policy and Finance	3
NSG	604A	DNP Project Planning I	1
NSG	604D*	DNP Project Planning II and III	2
			Subtotal 9
Population/Role Cognates			Credit Hours
NSG	566	Population Assessment and Health Promotion Frameworks	3
NSG	567	Population Intervention Planning, Implementation and Evaluation	3
NSG	534	Major Psychopathological Disorders	3
NSG	570B	Pharmacotherapeutics - Primary Care	3
NSG	571A	Management: Adult/Gerontology I	3
NSG	571B	Management: Adult/Gerontology II	3
NSG	569	Maternal Child Management for the FNP	3
			Subtotal 21
DNP Practica and Capstone			Credit Hours
NSG	605	DNP Capstone (168 Clock Hours)	2
NSG	606	DNP Practicum (504 Clock Hours)	6
NSG	607	DNP Immersion Residency (336 Clock Hours)	4
			Subtotal 12
			<b>Total 69</b>

**Minimum credits required:** Successful completion of the FNP BSN to DNP track requires 69 semester hours as a minimum for graduation. Upon review of an individual's academic portfolio, additional courses or clinical hour may be required.

\* Depending on plan of study, students will register for NSG-604D DNP Project Planning II and III (2 credit hours) or NSG-604B DNP Project Planning II (1 credit hour) and NSG-604C DNP Project Planning III (1 credit hour).

## Doctor of Nursing Practice (MSN to DNP)

Population/Role: Family Nurse Practitioner (FNP)

Advanced Practice Nursing Core			Credit Hours
NSG	625	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan	2
NSG	625L	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan: Lab	1
NSG	532	Advanced Physiology	3
NSG	533	Advanced Pathophysiology	3
NSG	531	Advanced Pharmacology	3
NSG	535	Diagnostics for the APRN	3
NSG	537	Transition to the APRN Role	3
			Subtotal 18
DNP Core			Credit Hours
NSG	600	Leadership in Evolving Health Care Environments	3
NSG	602	Health Care Economics, Policy and Finance	3
NSG	604A	DNP Project Planning I	1
NSG	604D*	DNP Project Planning II and III	2
			Subtotal 9
Population/Role Cognates			Credit Hours
NSG	566	Population Assessment and Health Promotion Frameworks	3
NSG	567	Population Intervention Planning, Implementation and Evaluation	3
NSG	534	Major Psychopathological Disorders	3
NSG	570B	Pharmacotherapeutics - Primary Care	3
NSG	571A	Management: Adult/Gerontology I	3
NSG	571B	Management: Adult/Gerontology II	3
NSG	569	Maternal Child Management for the FNP	3
			Subtotal 21
DNP Practica and Capstone			Credit Hours
NSG	605	DNP Capstone (168 Clock Hours)	2
NSG	606	DNP/Specialty Practicum (504 Clock Hours)	6
NSG	607	DNP/Specialty Immersion Residency (336 Clock Hours)	4
			Subtotal 12
			<b>Total 60</b>

**Minimum credits required:** Successful completion of the FNP MSN to DNP track requires 60 semester hours as a minimum for graduation. Upon review of an individual's academic portfolio, additional courses or clinical hour may be required.

The equivalent of Research and Biostatistics/Epidemiology must be completed prior to admission or added to the plan of study.

\* Depending on plan of study, students will register for NSG-604D DNP Project Planning II and III (2 credit hours) or NSG-604B DNP Project Planning II (1 credit hour) and NSG-604C DNP Project Planning III (1 credit hour).

## Doctor of Nursing Practice (BSN to DNP)

Population/Role: Neonatal Nurse Practitioner (NNP)

Graduate Nursing Core			Credit Hours
NSG	521	Organizational and Systems Leadership	3
NSG	522	Applied Epidemiology and Biostatistics for Nursing Practice	3
NSG	523	Research for Evidence-Based Practice	3
NSG	524	Health Promotion in Individuals and Clinical Populations	3
			Subtotal 12
Advanced Practice Nursing Core			Credit Hours
NSG	533	Advanced Pathophysiology	3
NSG	547	Neonatal Pathophysiology	3
NSG	531	Advanced Pharmacology	3
NSG	548	Advanced Neonatal Physical Assessment	3
NSG	537	Transition to the APRN Role	3
			Subtotal 15
DNP Core			Credit Hours
NSG	603	Effective Project Planning, Implementation and Evaluation	3
NSG	600	Leadership in Evolving Health Care Environments	3
NSG	602	Health Care Economics, Policy and Finance	3
NSG	604A	DNP Project Planning I	1
NSG	604B*	DNP Project Planning II	1
NSG	604C*	DNP Project Planning III	1
			Subtotal 12
Population/Role Cognates			Credit Hours
NSG	549	Neonatal Pharmacotherapeutics	3
NSG	546	Developmental Physiology of the Fetus/Neonates	3
NSG	550A	Neonatal Management I	3
NSG	550B	Neonatal Management II	3
NSG	550C	Neonatal Management III	3
			Subtotal 15
DNP Practica and Capstone			Credit Hours
NSG	605	DNP Capstone (168 Clock Hours)	2
NSG	606	DNP Practicum (588 Clock Hours)	7
NSG	607	DNP Immersion Residency (252 Clock Hours)	3
			Subtotal 12
			<b>Total 66</b>

**Minimum credits required:** Successful completion of the NNP BSN to DNP track requires 66 semester hours as a minimum for graduation. Upon review of an individual's academic portfolio, additional courses or clinical hour may be required.

\* Depending on plan of study, students will register for NSG-604B DNP Project Planning II (1 credit hour) and NSG-604C DNP Project Planning III (1 credit hour) or NSG-604D DNP Project Planning II and III (2 credit hours).

## Doctor of Nursing Practice (MSN to DNP)

Population/Role: Neonatal Nurse Practitioner (NNP)

Advanced Practice Nursing Core			Credit Hours
NSG	533	Advanced Pathophysiology	3
NSG	547	Neonatal Pathophysiology	3
NSG	531	Advanced Pharmacology	3
NSG	548	Advanced Neonatal Physical Assessment	3
NSG	537	Transition to the APRN Role	3
			Subtotal 15
DNP Core			Credit Hours
NSG	603	Effective Project Planning, Implementation and Evaluation	3
NSG	600	Leadership in Evolving Health Care Environments	3
NSG	602	Health Care Economics, Policy and Finance	3
NSG	604A	DNP Project Planning I	1
NSG	604B*	DNP Project Planning II	1
NSG	604C*	DNP Project Planning III	1
			Subtotal 12
Population/Role Cognates			Credit Hours
NSG	549	Neonatal Pharmacotherapeutics	3
NSG	546	Developmental Physiology of the Fetus/Neonates	3
NSG	550A	Neonatal Management I	3
NSG	550B	Neonatal Management II	3
NSG	550C	Neonatal Management III	3
			Subtotal 15
DNP Practica and Capstone			Credit Hours
NSG	605	DNP Capstone (168 Clock Hours)	2
NSG	606	DNP/Specialty Practicum (588 Clock Hours)	7
NSG	607	DNP/Specialty Immersion Residency (252 Clock Hours)	3
			Subtotal 12
			<b>Total 54</b>

**Minimum credits required:** Successful completion of the NNP MSN to DNP track requires 54 semester hours as a minimum for graduation. Upon review of an individual's academic portfolio, additional courses or clinical hour may be required.

The equivalent of Research and Biostatistics/Epidemiology must be completed prior to admission or added to the plan of study.

\* Depending on plan of study, students will register for NSG-604B DNP Project Planning II (1 credit hour) and NSG-604C DNP Project Planning III (1 credit hour) or NSG-604D DNP Project Planning II and III (2 credit hours).

## Doctor of Nursing Practice (BSN to DNP)

Population/Role: Pediatric Nurse Practitioner (PNP)

Graduate Nursing Core			Credit Hours
NSG	521	Organizational and Systems Leadership	3
NSG	522	Applied Epidemiology and Biostatistics for Nursing Practice	3
NSG	523	Research for Evidence-Based Practice	3
NSG	524	Health Promotion in Individuals and Clinical Populations	3
			Subtotal 12
Advanced Practice Nursing Core			Credit Hours
NSG	625	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan	2
NSG	625L	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan: Lab	1
NSG	532	Advanced Physiology	3
NSG	533	Advanced Pathophysiology	3
NSG	531	Advanced Pharmacology	3
NSG	535	Diagnostics for the APRN	3
NSG	537	Transition to the APRN Role	3
			Subtotal 18
DNP Core			Credit Hours
NSG	603	Effective Project Planning, Implementation and Evaluation	3
NSG	600	Leadership in Evolving Health Care Environments	3
NSG	602	Health Care Economics, Policy and Finance	3
NSG	604A	DNP Project Planning I	1
NSG	604B*	DNP Project Planning II	1
NSG	604C*	DNP Project Planning III	1
			Subtotal 12
Population/Role Cognates			Credit Hours
NSG	556	Applied Pharmacology: Pediatric	3
NSG	551A	Advanced Primary Care of the Child I	3
NSG	551B	Advanced Primary Care of the Child II	3
NSG	551C	Advanced Primary Care of the Child III	3
IDS	505	Palliative Care	2
			Subtotal 14
DNP Practica and Capstone			Credit Hours
NSG	605	DNP Capstone (168 Clock Hours)	2
NSG	606	DNP Practicum (588 Clock Hours)	7
NSG	607	DNP Immersion Residency (252 Clock Hours)	3
			Subtotal 12
			<b>Total 68</b>

**Minimum credits required:** Successful completion of the PNP BSN to DNP track requires 68 semester hours as a minimum for graduation. Upon review of an individual's academic portfolio, additional courses or clinical hour may be required.

\* Depending on plan of study, students will register for NSG-604B DNP Project Planning II (1 credit hour) and NSG-604C DNP Project Planning III (1 credit hour) or NSG-604D DNP Project Planning II and III (2 credit hours).



## Doctor of Nursing Practice (MSN to DNP – non-APRN)

Population/Role: Pediatric Nurse Practitioner (PNP)

Advanced Practice Nursing Core			Credit Hours
NSG	625	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan	2
NSG	625L	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan: Lab	1
NSG	532	Advanced Physiology	3
NSG	533	Advanced Pathophysiology	3
NSG	531	Advanced Pharmacology	3
NSG	535	Diagnostics for the APRN	3
NSG	537	Transition to the APRN Role	3
			Subtotal 18
DNP Core			Credit Hours
NSG	603	Effective Project Planning, Implementation and Evaluation	3
NSG	600	Leadership in Evolving Health Care Environments	3
NSG	602	Health Care Economics, Policy and Finance	3
NSG	604A	DNP Project Planning I	1
NSG	604B*	DNP Project Planning II	1
NSG	604C*	DNP Project Planning III	1
			Subtotal 12
Population/Role Cognates			Credit Hours
NSG	556	Applied Pharmacology: Pediatric	3
NSG	551A	Advanced Primary Care of the Child I	3
NSG	551B	Advanced Primary Care of the Child II	3
NSG	551C	Advanced Primary Care of the Child III	3
IDS	505	Palliative Care	2
			Subtotal 14
DNP Practica and Capstone			Credit Hours
NSG	605	DNP Capstone (168 Clock Hours)	2
NSG	606	DNP/Specialty Practicum (588 Clock Hours)	7
NSG	607	DNP/Specialty Immersion Residency (252 Clock Hours)	3
			Subtotal 12
			<b>Total 56</b>

**Minimum credits required:** Successful completion of the PNP MSN to DNP track for non-APRNs requires 56 semester hours as a minimum for graduation. Upon review of an individual's academic portfolio, additional courses or clinical hour may be required.

The equivalent of Research and Biostatistics/Epidemiology must be completed prior to admission or added to the plan of study.

\* Depending on plan of study, students will register for NSG-604B DNP Project Planning II (1 credit hour) and NSG-604C DNP Project Planning III (1 credit hour) or NSG-604D DNP Project Planning II and III (2 credit hours).

## Doctor of Nursing Practice (MSN to DNP – APRN)

Population/Role: Pediatric Nurse Practitioner (PNP)

DNP Core			Credit Hours
NSG	603	Effective Project Planning, Implementation and Evaluation	3
NSG	600	Leadership in Evolving Health Care Environments	3
NSG	602	Health Care Economics, Policy and Finance	3
NSG	604A	DNP Project Planning I	1
NSG	604B*	DNP Project Planning II	1
NSG	604C*	DNP Project Planning III	1
			Subtotal 12
Population/Role Cognates			Credit Hours
NSG	556	Applied Pharmacology: Pediatric	3
NSG	551A	Advanced Primary Care of the Child I	3
NSG	551B	Advanced Primary Care of the Child II	3
NSG	551C	Advanced Primary Care of the Child III	3
IDS	505	Palliative Care	2
			Subtotal 14
DNP Practica and Capstone			Credit Hours
NSG	605	DNP Capstone (168 Clock Hours)	2
NSG	606	DNP/Specialty Practicum (588 Clock Hours)	7
NSG	607	DNP/Specialty Immersion Residency (252 Clock Hours)	3
			Subtotal 12
			<b>Total 38</b>

**Minimum credits required:** Successful completion of the PNP MSN to DNP track for APRNs requires 38 semester hours as a minimum for graduation. Upon review of an individual's academic portfolio, additional courses or clinical hour may be required.

\* Depending on plan of study, students will register for NSG-604B DNP Project Planning II (1 credit hour) and NSG-604C DNP Project Planning III (1 credit hour) or NSG-604D DNP Project Planning II and III (2 credit hours).

A gap analysis will be performed and an individualized program of study developed based on previous graduate education completed with evidence of the following course work:

- Advanced Health Assessment Across the Lifespan/Diagnostics for the APRN
- Pathophysiology Across the Lifespan
- Advanced Pharmacology and Pharmacotherapeutics
- Transition to the APRN Role
- Research
- Biostatistics/Epidemiology

It is expected that previous clinical hours plus DNP/Specialty Practicum and Immersion hours will be equal to or greater than 1000 clock hours.

\*\*Evidence of current APRN certification and active practice within the past two years required.

## Doctor of Nursing Practice (BSN to DNP)

Area of Focus: Pediatric Acute Care Nurse Practitioner (AC PNP)

Graduate Nursing Core			Credit Hours
NSG	521	Organizational and Systems Leadership	3
NSG	522	Applied Epidemiology and Biostatistics for Nursing Practice	3
NSG	523	Research for Evidence-Based Practice	3
NSG	524	Health Promotion in Individuals and Clinical Populations	3
			Subtotal 12
Advanced Practice Nursing Core			Credit Hours
NSG	625	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan	2
NSG	625L	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan: Lab	1
NSG	532	Advanced Physiology	3
NSG	533	Advanced Pathophysiology	3
NSG	531	Advanced Pharmacology	3
NSG	535	Diagnostics for the APRN	3
NSG	537	Transition to the APRN Role	3
			Subtotal 18
DNP Core			Credit Hours
NSG	600	Leadership in Evolving Health Care Environments	3
NSG	602	Health Care Economics, Policy and Finance	3
NSG	603	Effective Project Planning, Implementation and Evaluation	3
NSG	604A	DNP Project Planning I	1
NSG	604B*	DNP Project Planning II	1
NSG	604C*	DNP Project Planning III	1
			Subtotal 12
Population/Role Cognates			Credit Hours
IDS	505	Palliative Care	2
NSG	551A	Advanced Primary Care of the Child I	3
NSG	556	Applied Pharmacology - Pediatric	3
NSG	557A	Pediatric Acute Care I	3
NSG	557B	Pediatric Acute Care II	3
			Subtotal 14
DNP Practica and Capstone			Credit Hours
NSG	605	DNP Capstone (168 Clock Hours)	2
NSG	606	DNP/Primary Care Pediatric Specialty Practicum (84 Clock Hours)	1
NSG	606	DNP/Acute Care Pediatric Specialty Practicum (504 Clock Hours)	6
NSG	607	DNP/Specialty Immersion Residency (252 Clock Hours)	3
			<b>Total 68</b>

**Minimum credits required:** Successful completion of the AC PNP BSN to DNP track requires 68 semester hours as a minimum for graduation. Upon review of an individual's academic portfolio, additional courses or clinical hour may be required.

\* Depending on plan of study, students will register for NSG-604B DNP Project Planning II (1 credit hour) and NSG-604C DNP Project Planning III (1 credit hour) or NSG-604D DNP Project Planning II and III (2 credit hours).

## Doctor of Nursing Practice (MSN to DNP – non-APRN)

Area of Focus: Pediatric Acute Care Nurse Practitioner (AC PNP)

Advanced Practice Nursing Core			Credit Hours
NSG	625	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan	2
NSG	625L	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan: Lab	1
NSG	532	Advanced Physiology	3
NSG	533	Advanced Pathophysiology	3
NSG	531	Advanced Pharmacology	3
NSG	535	Diagnostics for the APRN	3
NSG	537	Transition to the APRN Role	3
			Subtotal 18
DNP Core			Credit Hours
NSG	600	Leadership in Evolving Health Care Environments	3
NSG	602	Health Care Economics, Policy and Finance	3
NSG	603	Effective Project Planning, Implementation and Evaluation	3
NSG	604A	DNP Project Planning I	1
NSG	604B*	DNP Project Planning II	1
NSG	604C*	DNP Project Planning III	1
			Subtotal 12
Population/Role Cognates			Credit Hours
NSG	556	Applied Pharmacology - Pediatric	3
IDS	505	Palliative Care	2
NSG	551A	Advanced Primary Care of the Child I	3
NSG	557A	Pediatric Acute Care I	3
NSG	557B	Pediatric Acute Care II	3
			Subtotal 14
DNP Practica and Capstone			Credit Hours
NSG	605	DNP Capstone (168 Clock Hours)	2
NSG	606	DNP/Primary Care Pediatric Specialty Practicum (84 Clock Hours)	1
NSG	606	DNP/Acute Care Pediatric Specialty Practicum (504 Clock Hours)	6
NSG	607	DNP/Acute Care Pediatric Specialty Immersion Residency (252 Clock Hours)	3
			Subtotal 12
			<b>Total 56</b>

**Minimum credits required:** Successful completion of the AC PNP MSN to DNP track for non-APRNs requires 56 semester hours as a minimum for graduation. Upon review of an individual's academic portfolio, additional courses or clinical hour may be required.

The equivalent of Biostatistics/Epidemiology must be completed prior to admission or added to the plan of study.

\* Depending on plan of study, students will register for NSG-604B DNP Project Planning II (1 credit hour) and NSG-604C DNP Project Planning III (1 credit hour) or NSG-604D DNP Project Planning II and III (2 credit hours).

## Doctor of Nursing Practice (MSN to DNP – APRN)

Area of Focus: Pediatric Acute Care Nurse Practitioner (AC PNP)

DNP Core			Credit Hours
NSG	600	Leadership in Evolving Health Care Environments	3
NSG	602	Health Care Economics, Policy and Finance	3
NSG	603	Effective Project Planning, Implementation and Evaluation	3
NSG	604A	DNP Project Planning I	1
NSG	604D*	DNP Project Planning II and III	2
			Subtotal 12
Population/Role Cognates			Credit Hours
IDS	505	Palliative Care	2
NSG	551A	Advanced Primary Care of the Child I	3
NSG	557A	Pediatric Acute Care I	3
NSG	557B	Pediatric Acute Care II	3
			Subtotal 11
DNP Practica and Capstone			Credit Hours
NSG	605	DNP Capstone (168 Clock Hours)	2
NSG	606	DNP/ Primary Care Pediatric Specialty Practicum (84 Clock Hours) (MS/MSN practicum may be transferred in to meet this requirement)	1
NSG	606	DNP/Acute Care Pediatric Specialty Practicum (252 Clock Hours)	3
NSG	607	DNP/Acute Care Pediatric Specialty Immersion Residency (252 Clock Hours)	3
			Subtotal 9
			<b>Total 32</b>

**Minimum credits required:** Successful completion of the AC PNP MSN to DNP track for APRNs requires 32 semester hours as a minimum for graduation. Upon review of an individual's academic portfolio, additional courses or clinical hour may be required.

A gap analysis will be performed and an individualized program of study developed based on previous graduate education completed with evidence of the following course work:

- Advanced Health Assessment Across the Lifespan/Diagnostics for the APRN
- Advanced Physiology and Advanced Pathophysiology
- Advanced Pharmacology and Pharmacotherapeutics
- Transition to the APRN Role
- Research
- Biostatistics/Epidemiology

It is expected that previous clinical hours plus DNP/Specialty Practicum and Immersion hours will be equal to or greater than 1000 clock hours.

\*\*Evidence of current APRN certification and active practice within the past two years required.

\* Depending on plan of study, students will register for NSG-604D DNP Project Planning II and III (2 credit hours) or NSG-604B DNP Project Planning II (1 credit hour) and NSG-604C DNP Project Planning III (1 credit hour).

## Doctor of Nursing Practice (BSN to DNP)

Population/Role: Psychiatric-Mental Health Nurse Practitioner (PMHNP)

Graduate Nursing Core			Credit Hours
NSG	521	Organizational and Systems Leadership	3
NSG	522	Applied Epidemiology and Biostatistics for Nursing Practice	3
NSG	523	Research for Evidence-Based Practice	3
NSG	524	Health Promotion in Individuals and Clinical Populations	3
			Subtotal 12
Advanced Practice Nursing Core			Credit Hours
NSG	625	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan	2
NSG	625L	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan: Lab	1
NSG	533	Advanced Pathophysiology	3
NSG	531	Advanced Pharmacology	3
NSG	537	Transition to the APRN Role	3
			Subtotal 12
DNP Core			Credit Hours
NSG	603	Effective Project Planning, Implementation and Evaluation	3
NSG	600	Leadership in Evolving Health Care Environments	3
NSG	602	Health Care Economics, Policy and Finance	3
NSG	604A	DNP Project Planning I	1
NSG	604B*	DNP Project Planning II	1
NSG	604C*	DNP Project Planning III	1
			Subtotal 12
Population/Role Cognates			Credit Hours
NSG	576	Neurophysiology: A Lifespan Approach	3
NSG	575	Psychopharmacology	3
NSG	534	Major Psychopathological Disorders	3
NSG	577A	Diagnostics and Management I: Psychiatric Assessment Across the Lifespan	3
NSG	577B	Diagnostics and Management II: Evidence-Based Treatment	3
NSG	577C	Diagnostics and Management III: Group Therapy and Complex Care	3
			Subtotal 18
DNP Practica and Capstone			Credit Hours
NSG	605	DNP Capstone (168 Clock Hours)	2
NSG	606	DNP Practicum (588 Clock Hours)	7
NSG	607	DNP Immersion Residency (252 Clock Hours)	3
			Subtotal 12
			<b>Total 66</b>

**Minimum credits required:** Successful completion of the PMHNP BSN to DNP track requires 66 semester hours as a minimum for graduation. Upon review of an individual's academic portfolio, additional courses or clinical hours may be required.

\* Depending on plan of study, students will register for NSG-604B DNP Project Planning II (1 credit hour) and NSG-604C DNP Project Planning III (1 credit hour) or NSG-604D DNP Project Planning II and III (2 credit hours).

## Doctor of Nursing Practice (MSN to DNP – non-APRN)

Population/Role: Psychiatric-Mental Health Nurse Practitioner (PMHNP)

Advanced Practice Nursing Core			Credit Hours
NSG	625	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan	2
NSG	625L	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan: Lab	1
NSG	533	Advanced Pathophysiology	3
NSG	531	Advanced Pharmacology	3
NSG	537	Transition to the APRN Role	3
			Subtotal 12
DNP Core			Credit Hours
NSG	603	Effective Project Planning, Implementation and Evaluation	3
NSG	600	Leadership in Evolving Health Care Environments	3
NSG	602	Health Care Economics, Policy and Finance	3
NSG	604A	DNP Project Planning I	1
NSG	604B*	DNP Project Planning II	1
NSG	604C*	DNP Project Planning III	1
			Subtotal 12
Population/Role Cognates			Credit Hours
NSG	576	Neurophysiology: a Lifespan Approach	3
NSG	575	Psychopharmacology	3
NSG	534	Major Psychopathological Disorders	3
NSG	577A	Diagnostics and Management I: Psychiatric Assessment Across the Lifespan	3
NSG	577B	Diagnostics and Management II: Evidence-Based Treatment	3
NSG	577C	Diagnostics and Management III: Group Therapy and Complex Care	3
			Subtotal 18
DNP Practica and Capstone			Credit Hours
NSG	605	DNP Capstone (168 Clock Hours)	2
NSG	606	DNP/Specialty Practicum (588 Clock Hours)	7
NSG	607	DNP/Specialty Immersion Residency (252 Clock Hours)	3
			Subtotal 12
			<b>Total 54</b>

**Minimum credits required:** Successful completion of the PMHNP MSN to DNP track for non-APRNs requires 54 semester hours as a minimum for graduation. Upon review of an individual's academic portfolio, additional courses or clinical hours may be required.

The equivalent of Biostatistics/Epidemiology must be completed prior to admission or added to the plan of study.

\* Depending on plan of study, students will register for NSG-604B DNP Project Planning II (1 credit hour) and NSG-604C DNP Project Planning III (1 credit hour) or NSG-604D DNP Project Planning II and III (2 credit hours).

## Doctor of Nursing Practice (MSN to DNP – APRN)

Population/Role: Psychiatric-Mental Health Nurse Practitioner (PMHNP)

DNP Core			Credit Hours
NSG	603	Effective Project Planning, Implementation and Evaluation	3
NSG	600	Leadership in Evolving Health Care Environments	3
NSG	602	Health Care Economics, Policy and Finance	3
NSG	604A	DNP Project Planning I	1
NSG	604B*	DNP Project Planning II	1
NSG	604C*	DNP Project Planning III	1
			Subtotal 12
Population/Role Cognates			Credit Hours
NSG	576	Neurophysiology: a Lifespan Approach	3
NSG	575	Psychopharmacology	3
NSG	534	Major Psychopathological Disorders	3
NSG	577A	Diagnostics and Management I: Psychiatric Assessment Across the Lifespan	3
NSG	577B	Diagnostics and Management II: Evidence-Based Treatment	3
NSG	577C	Diagnostics and Management III: Group Therapy and Complex Care	3
			Subtotal 18
DNP Practica and Capstone			Credit Hours
NSG	605	DNP Capstone (168 Clock Hours)	2
NSG	606	DNP/Specialty Practicum (588 Clock Hours)	7
NSG	607	DNP/Specialty Immersion Residency (252 Clock Hours)	3
			Subtotal 12
			<b>Total 42</b>

**Minimum credits required:** Successful completion of the PMHNP MSN to DNP track for APRNs requires 42 semester hours as a minimum for graduation. Upon review of an individual's academic portfolio, additional courses or clinical hours may be required.

*\* Depending on plan of study, students will register for NSG-604B DNP Project Planning II (1 credit hour) and NSG-604C DNP Project Planning III (1 credit hour) or NSG-604D DNP Project Planning II and III (2 credit hours).*

A gap analysis will be performed and an individualized program of study developed based on previous graduate education completed with evidence of the following course work:

- Advanced Health Assessment Across the Lifespan
- Advanced Pathophysiology
- Advanced Pharmacology
- Transition to the APRN Role
- Biostatistics/Epidemiology

It is expected that previous clinical hours plus DNP/Specialty Practicum and Immersion hours will be equal to or greater than 1000 clock hours.



## Doctor of Nursing Practice (MSN to DNP)

Population/Role: Adult-Gerontology Clinical Nurse Specialist (AGCNS)

Graduate Nursing Core			Credit Hours
NSG	521	Organizational and Systems Leadership	3
NSG	522	Applied Epidemiology and Biostatistics for Nursing Practice	3
NSG	523	Research for Evidence-Based Practice	3
NSG	524	Health Promotion in Individuals and Clinical Populations	3
			Subtotal 12
Advanced Practice Nursing Core			Credit Hours
NSG	625	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan	2
NSG	625L	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan: Lab	1
NSG	532	Advanced Physiology	3
NSG	533	Advanced Pathophysiology	3
NSG	531	Advanced Pharmacology	3
NSG	535	Diagnostics for the APRN	3
NSG	537	Transition to the APRN Role	3
			Subtotal 18
DNP Core			Credit Hours
NSG	603	Effective Project Planning, Implementation and Evaluation	3
NSG	600	Leadership in Evolving Health Care Environments	3
NSG	602	Health Care Economics, Policy and Finance	3
NSG	604A	DNP Project Planning I	1
NSG	604D*	DNP Project Planning II and III	2
			Subtotal 12
Population/Role Cognates			Credit Hours
NSG	534	Major Psychopathological Disorders	3
NSG	570B	Pharmacotherapeutics - Primary Care	3
NSG	571A	Management: Adult/Gerontology I	3
NSG	571B	Management: Adult/Gerontology II	3
NSG	572	Quality and Safety for Aging Adults	3
NSG	679	Evidence-Based Teaching in the Health Professions	3
			Subtotal 18
DNP Practica and Capstone			Credit Hours
NSG	605	DNP Capstone (168 Clock Hours)	2
NSG	606	DNP Practicum (504 Clock Hours)	6
NSG	607	DNP Immersion Residency (336 Clock Hours)	4
			Subtotal 12
			<b>Total 72</b>

**Minimum credits required:** Successful completion of the AGCNS BSN to DNP track requires a minimum of 72 semester hours for graduation. Upon review of an individual's academic portfolio, additional courses or clinical hours may be required.

\* Depending on plan of study, students will register for NSG-604D DNP Project Planning II and III (2 credit hours) or NSG-604B DNP Project Planning II (1 credit hour) and NSG-604C DNP Project Planning III (1 credit hour).

## Doctor of Nursing Practice (MSN to DNP)

Population/Role: Adult-Gerontology Acute Care Clinical Nurse Specialist (AGACCNS)

Advanced Practice Nursing Core			Credit Hours
NSG	625	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan	2
NSG	625L	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan: Lab	1
NSG	532	Advanced Physiology	3
NSG	533	Advanced Pathophysiology	3
NSG	531	Advanced Pharmacology	3
NSG	535	Diagnostics for the APRN	3
NSG	537	Transition to the APRN Role	3
			Subtotal 18
DNP Core			Credit Hours
NSG	603	Effective Project Planning, Implementation and Evaluation	3
NSG	600	Leadership in Evolving Health Care Environments	3
NSG	602	Health Care Economics, Policy and Finance	3
NSG	604A	DNP Project Planning I	1
NSG	604D*	DNP Project Planning II and III	2
			Subtotal 12
Population/Role Cognates			Credit Hours
NSG	534	Major Psychopathological Disorders	3
NSG	570B	Pharmacotherapeutics - Primary Care	3
NSG	571A	Management: Adult/Gerontology I	3
NSG	571B	Management: Adult/Gerontology II	3
NSG	572	Quality and Safety for Aging Adults	3
NSG	679	Evidence-Based Teaching in the Health Professions	3
			Subtotal 18
DNP Practica and Capstone			Credit Hours
NSG	605	DNP Capstone (168 Clock Hours)	2
NSG	606	DNP/Specialty Practicum (504 Clock Hours)	6
NSG	607	DNP/Specialty Immersion Residency (336 Clock Hours)	4
			Subtotal 12
			<b>Total 60</b>

**Minimum credits required:** Successful completion of the AGCNS MSN to DNP track requires a minimum of 60 semester hours for graduation. Upon review of an individual's academic portfolio, additional courses or clinical hours may be required.

The equivalent of Research and Biostatistics/Epidemiology must be completed prior to admission or added to the plan of study.

\* Depending on plan of study, students will register for NSG-604D DNP Project Planning II and III (2 credit hours) or NSG-604B DNP Project Planning II (1 credit hour) and NSG-604C DNP Project Planning III (1 credit hour).

## Doctor of Nursing Practice (BSN to DNP)

Population/Role: Adult-Gerontology Acute Care Clinical Nurse Specialist (AGACCNS)

Graduate Nursing Core			Credit Hours
NSG	521	Organizational and Systems Leadership	3
NSG	522	Applied Epidemiology and Biostatistics for Nursing Practice	3
NSG	523	Research for Evidence-Based Practice	3
NSG	524	Health Promotion in Individuals and Clinical Populations	3
			Subtotal 12
Advanced Practice Nursing Core			Credit Hours
NSG	625	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan	2
NSG	625L	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan: Lab	1
NSG	532	Advanced Physiology	3
NSG	533	Advanced Pathophysiology	3
NSG	531	Advanced Pharmacology	3
NSG	535	Diagnostics for the APRN	3
NSG	537	Transition to the APRN Role	3
			Subtotal 18
DNP Core			Credit Hours
NSG	603	Effective Project Planning, Implementation and Evaluation	3
NSG	600	Leadership in Evolving Health Care Environments	3
NSG	602	Health Care Economics, Policy and Finance	3
NSG	604A	DNP Project Planning I	1
NSG	604D*	DNP Project Planning II and III	2
			Subtotal 12
Population/Role Cognates			Credit Hours
NSG	570A	Pharmacotherapeutics - Acute Care	3
NSG	572	Quality and Safety for Aging Adults	3
NSG	571A	Management: Adult/Gerontology I	3
NSG	571C	Management: Adult/Gerontology Acute and Critical Illness I	4
NSG	571D	Management: Adult/Gerontology Acute and Critical Illness II	2
NSG	679	Evidence-Based Teaching in the Health Professions	3
			Subtotal 18
DNP Practica and Capstone			Credit Hours
NSG	605	DNP Capstone (168 Clock Hours)	2
NSG	606	DNP Practicum (504 Clock Hours)	6
NSG	607	DNP Immersion Residency (336 Clock Hours)	4
			Subtotal 12
			<b>Total 72</b>

**Minimum credits required:** Successful completion of the AGACCNS BSN to DNP track requires a minimum of 72 semester hours for graduation. Upon review of an individual's academic portfolio, additional courses or clinical hours may be required.

\* Depending on plan of study, students will register for NSG-604D DNP Project Planning II and III (2 credit hours) or NSG-604B DNP Project Planning II (1 credit hour) and NSG-604C DNP Project Planning III (1 credit hour).

## Doctor of Nursing Practice (MSN to DNP – non-APRN)

Population/Role: Adult-Gerontology Acute Care Clinical Nurse Specialist (AGACCNS)

Advanced Practice Nursing Core			Credit Hours
NSG	625	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan	2
NSG	625L	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan: Lab	1
NSG	532	Advanced Physiology	3
NSG	533	Advanced Pathophysiology	3
NSG	531	Advanced Pharmacology	3
NSG	535	Diagnostics for the APRN	3
NSG	537	Transition to the APRN Role	3
			Subtotal 18
DNP Core			Credit Hours
NSG	603	Effective Project Planning, Implementation and Evaluation	3
NSG	600	Leadership in Evolving Health Care Environments	3
NSG	602	Health Care Economics, Policy and Finance	3
NSG	604A	DNP Project Planning I	1
NSG	604D*	DNP Project Planning II and III	2
			Subtotal 12
Population/Role Cognates			Credit Hours
NSG	570A	Pharmacotherapeutics - Acute Care	3
NSG	572	Quality and Safety for Aging Adults	3
NSG	571A	Management: Adult/Gerontology I	3
NSG	571C	Management: Adult/Gerontology Acute and Critical Illness I	4
NSG	571D	Management: Adult/Gerontology Acute and Critical Illness II	2
NSG	679	Evidence-Based Teaching in the Health Professions	3
			Subtotal 18
DNP Practica and Capstone			Credit Hours
NSG	605	DNP Capstone (168 Clock Hours)	2
NSG	606	DNP/Specialty Practicum (504 Clock Hours)	6
NSG	607	DNP/Specialty Immersion Residency (336 Clock Hours)	4
			Subtotal 12
			<b>Total 60</b>

**Minimum credits required:** Successful completion of the AGACCNS MSN to DNP track for non-APRNs requires a minimum of 60 semester hours for graduation. Upon review of an individual's academic portfolio, additional courses or clinical hours may be required.

The equivalent of Research and Biostatistics/Epidemiology must be completed prior to admission or added to the plan of study.

\* Depending on plan of study, students will register for NSG-604D DNP Project Planning II and III (2 credit hours) or NSG-604B DNP Project Planning II (1 credit hour) and NSG-604C DNP Project Planning III (1 credit hour).

## Doctor of Nursing Practice (BSN to DNP)

### Area of Focus: Neonatal Clinical Nurse Specialist (NCNS)

Graduate Nursing Core			Credit Hours
NSG	521	Organizational and Systems Leadership	3
NSG	522	Applied Epidemiology and Biostatistics for Nursing Practice	3
NSG	523	Research for Evidence-Based Practice	3
NSG	524	Health Promotion in Individuals and Clinical Populations	3
			Subtotal 12
Advanced Practice Nursing Core			Credit Hours
NSG	533	Advanced Pathophysiology	3
NSG	547	Neonatal Pathophysiology	3
NSG	548	Advanced Neonatal Physical Assessment	3
NSG	531	Advanced Pharmacology	3
NSG	535	Diagnostics for the APRN	3
NSG	537	Transition to the APRN Role	3
			Subtotal 18
DNP Core			Credit Hours
NSG	603	Effective Project Planning, Implementation and Evaluation	3
NSG	600	Leadership in the Evolving Health Care Environments	3
NSG	602	Health Care Economics, Policy and Finance	3
NSG	604A	DNP Project Planning I	1
NSG	604B*	DNP Project Planning II	1
NSG	604C*	DNP Project Planning III	1
			Subtotal 12
Population/Role Cognates			Credit Hours
NSG	546	Developmental Physiology of the Fetus/Neonate	3
NSG	549	Neonatal Pharmacotherapeutics	3
IDS	505	Palliative Care	2
NSG	550A	Neonatal Management I	3
NSG	550B	Neonatal Management II	3
NSG	550C	Neonatal Management III	3
NSG	536	Principles of Case Management	3
NSG	679	Evidence-Based Teaching in the Health Professions	3
			Subtotal 23
DNP Practica and Capstone			Credit Hours
NSG	605	DNP Capstone (168 Clock Hours)	2
NSG	606	DNP/Specialty Practicum (672 Clock Hours)	8
NSG	607	DNP/Specialty Immersion Residency (168 Clock Hours)	2
			Subtotal 12
			<b>Total 77</b>

**Minimum credits required:** Successful completion of the NCNS BSN to DNP track requires a minimum of 77 semester hours for graduation. Upon review of an individual's academic portfolio, additional courses or clinical hours may be required.

\* Depending on plan of study, students will register for NSG-604B DNP Project Planning II (1 credit hour) and NSG-604C DNP Project Planning III (1 credit hour) or NSG-604D DNP Project Planning II and III (2 credit hours).

## Doctor of Nursing Practice (MSN to DNP)

Area of Focus: Neonatal Clinical Nurse Specialist (NCNS)

Advanced Practice Nursing Core			Credit Hours
NSG	533	Advanced Pathophysiology	3
NSG	547	Neonatal Pathophysiology	3
NSG	548	Advanced Neonatal Physical Assessment	3
NSG	531	Advanced Pharmacology	3
NSG	535	Diagnostics for the APRN	3
NSG	537	Transition to the APRN Role	3
			Subtotal 18
DNP Core			Credit Hours
NSG	603	Effective Project Planning, Implementation and Evaluation	3
NSG	600	Leadership in Evolving Health Care Environments	3
NSG	602	Health Care Economics, Policy and Finance	3
NSG	604A	DNP Project Planning I	1
NSG	604B*	DNP Project Planning II	1
NSG	604C*	DNP Project Planning III	1
			Subtotal 12
Population/Role Cognates			Credit Hours
NSG	546	Developmental Physiology of the Fetus/Neonate	3
NSG	549	Neonatal Pharmacotherapeutics	3
IDS	505	Palliative Care	2
NSG	550A	Neonatal Management I	3
NSG	550B	Neonatal Management II	3
NSG	550C	Neonatal Management III	3
NSG	536	Principles of Case Management	3
NSG	679	Evidence-Based Teaching in the Health Professions	3
			Subtotal 23
DNP Practica and Capstone			Credit Hours
NSG	605	DNP Capstone (168 Clock Hours)	2
NSG	606	DNP/Specialty Practicum (672 Clock Hours)	8
NSG	607	DNP/Specialty Immersion Residency (168 Clock Hours)	2
			Subtotal 12
			<b>Total 65</b>

**Minimum credits required:** Successful completion of the NCNS MSN to DNP track requires a minimum of 65 semester hours for graduation. Upon review of an individual's academic portfolio, additional courses or clinical hours may be required.

The equivalent of Research and Biostatistics/Epidemiology must be completed prior to admission or added to the plan of study.

\* Depending on plan of study, students will register for NSG-604B DNP Project Planning II (1 credit hour) and NSG-604C DNP Project Planning III (1 credit hour) or NSG-604D DNP Project Planning II and III (2 credit hours).

## Doctor of Nursing Practice (BSN to DNP)

Population/Role: Pediatric Clinical Nurse Specialist (PCNS)

Graduate Nursing Core			Credit Hours
NSG	521	Organizational and Systems Leadership	3
NSG	522	Applied Epidemiology and Biostatistics for Nursing Practice	3
NSG	523	Research for Evidence-Based Practice	3
NSG	524	Health Promotion in Individuals and Clinical Populations	3
			Subtotal 12
Advanced Practice Nursing Core			Credit Hours
NSG	625	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan	2
NSG	625L	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan: Lab	1
NSG	532	Advanced Physiology	3
NSG	533	Advanced Pathophysiology	3
NSG	531	Advanced Pharmacology	3
NSG	535	Diagnostics for the APRN	3
NSG	537	Transition to the APRN Role	3
			Subtotal 18
DNP Core			Credit Hours
NSG	603	Effective Project Planning, Implementation and Evaluation	3
NSG	600	Leadership in Evolving Health Care Environments	3
NSG	602	Health Care Economics, Policy and Finance	3
NSG	604A	DNP Project Planning I	1
NSG	604B*	DNP Project Planning II	1
NSG	604C*	DNP Project Planning III	1
			Subtotal 12
Population/Role Cognates			Credit Hours
NSG	556	Applied Pharmacology: Pediatric	3
NSG	551A	Advanced Primary Care of the Child I	3
NSG	557A	Pediatrics Acute Care I	3
NSG	557B	Pediatrics Acute Care II	3
IDS	505	Palliative Care	2
NSG	536	Principles of Case Management	3
NSG	679	Evidence-Based Teaching in the Health Professions	3
			Subtotal 20
DNP Practica and Capstone			Credit Hours
NSG	605	DNP Capstone (168 Clock Hours)	2
NSG	606	DNP Practicum (672 Clock Hours)	8
NSG	607	DNP Immersion Residency (168 Clock Hours)	2
			Subtotal 12
			<b>Total 74</b>

**Minimum credits required:** Successful completion of the PCNS BSN to DNP track requires a minimum of 74 semester hours for graduation. Upon review of an individual's academic portfolio, additional courses or clinical hours may be required.

\* Depending on plan of study, students will register for NSG-604B DNP Project Planning II (1 credit hour) and NSG-604C DNP Project Planning III (1 credit hour) or NSG-604D DNP Project Planning II and III (2 credit hours).

## Doctor of Nursing Practice (MSN to DNP)

Population/Role: Pediatric Clinical Nurse Specialist (PCNS)

Advanced Practice Nursing Core			Credit Hours
NSG	625	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan	2
NSG	625L	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan: Lab	1
NSG	532	Advanced Physiology	3
NSG	533	Advanced Pathophysiology	3
NSG	531	Advanced Pharmacology	3
NSG	535	Diagnostics for the APRN	3
NSG	537	Transition to the APRN Role	3
			Subtotal 18
DNP Core			Credit Hours
NSG	603	Effective Project Planning, Implementation and Evaluation	3
NSG	600	Leadership in Evolving Health Care Environments	3
NSG	602	Health Care Economics, Policy and Finance	3
NSG	604A	DNP Project Planning I	1
NSG	604B*	DNP Project Planning II	1
NSG	604C*	DNP Project Planning III	1
			Subtotal 12
Population/Role Cognates			Credit Hours
NSG	556	Applied Pharmacology: Pediatric	3
NSG	551A	Advanced Primary Care of the Child I	3
NSG	557A	Pediatrics Acute Care I	3
NSG	557B	Pediatrics Acute Care II	3
IDS	505	Palliative Care	2
NSG	536	Principles of Case Management	3
NSG	679	Evidence-Based Teaching in the Health Professions	3
			Subtotal 20
DNP Practica and Capstone			Credit Hours
NSG	605	DNP Capstone (168 Clock Hours)	2
NSG	606	DNP/Specialty Practicum (672 Clock Hours)	8
NSG	607	DNP/Specialty Immersion Residency (168 Clock Hours)	2
			Subtotal 12
			<b>Total 62</b>

**Minimum credits required:** Successful completion of the PCNS MSN to DNP track requires a minimum of 62 semester hours for graduation. Upon review of an individual's academic portfolio, additional courses or clinical hours may be required.

\* Depending on plan of study, students will register for NSG-604B DNP Project Planning II (1 credit hour) and NSG-604C DNP Project Planning III (1 credit hour) or NSG-604D DNP Project Planning II and III (2 credit hours).



## Doctor of Nursing Practice (BSN to DNP)

### Area of Focus: Advanced Public Health Nursing (APHN)

Graduate Nursing Core			Credit Hours
NSG	522	Applied Biostatistics and Epidemiology for Nursing Practice	3
NSG	523	Research for Evidence-Based Practice	3
			Subtotal 6
DNP Core			Credit Hours
NSG	600	Leadership in Evolving Health Care Environments	3
NSG	602	Health Care Economics, Policy and Finance	3
			Subtotal 6
Population/Role Cognates			Credit Hours
NSG	565	Advanced Nursing Roles in Public Health Systems	3
NSG	566	Population Assessment and Health Promotion Frameworks	3
NSG	567	Population Intervention Planning, Implementation and Evaluation	3
NSG	568	Environmental Health	3
NSG	536	Principles of Case Management	3
NSG	611	Understanding Financial and Business Concepts	3
NSG	612	Applied Organizational Analysis and the Management of Human Resources	3
NSG	613	Data and Decision-Making for Strategic Outcomes Management	3
NSG	614	The Leader and Policy, Politics, Power, and Ethics	3
Cognates			9
			Subtotal 36
DNP Practica and Capstone			Credit Hours
NSG	605	DNP Capstone (168 Clock Hours)	2
NSG	606	Practicum (756 Clock Hours)	9
NSG	607	Immersion Residency (252 Clock Hours)	3
			Subtotal 14
			<b>Total 62</b>

**Minimum credits required:** Successful completion of the APHN BSN to DNP track requires a minimum of 62 semester hours for graduation. Upon review of an individual's academic portfolio, additional courses or clinical hours may be required.

## Doctor of Nursing Practice (MSN to DNP – non-APRN)

Area of Focus: APHN/Leadership to Enhance Population Health Outcomes

DNP Core			Credit Hours
NSG	600	Leadership in Evolving Health Care Environments	3
NSG	602	Health Care Economics, Policy and Finance	3
			Subtotal 6
Population/Role Cognates			Credit Hours
NSG	565	Advanced Nursing Roles in Public Health Systems	3
NSG	566	Population Assessment and Health Promotion Frameworks	3
NSG	567	Population Intervention Planning, Implementation and Evaluation	3
NSG	568	Environmental Health	3
NSG	536	Principles of Case Management	3
NSG	611	Understanding Financial and Business Concepts	3
NSG	612	Applied Organizational Analysis and the Management of Human Resources	3
NSG	613	Data and Decision-Making for Strategic Outcomes Management	3
NSG	614	The Leader and Policy, Politics, Power, and Ethics	3
			Subtotal 27
DNP Practica and Capstone			Credit Hours
NSG	605	DNP Capstone (168 Clock Hours)	2
NSG	606	DNP/Specialty Practicum (756 Clock Hours)	9
NSG	607	DNP/Specialty Immersion Residency (252 Clock Hours)	3
			Subtotal 14
			<b>Total 47</b>

**Minimum credits required:** Successful completion of the APHN MSN to DNP track for non-APRNs requires a minimum of 47 semester hours for graduation. Upon review of an individual's academic portfolio, additional courses or clinical hours may be required.

The equivalent of Biostatistics/Epidemiology must be completed prior to admission or added to the plan of study.

## Doctor of Nursing Practice (MSN to DNP – APRN)

Area of Focus: Leadership to Enhance Population Health Outcomes

DNP Core			Credit Hours
NSG	600	Leadership in Evolving Health Care Environments	3
NSG	602	Health Care Economics, Policy and Finance	3
			Subtotal 6
Population/Role Cognates			Credit Hours
NSG	565	Advanced Nursing Roles in Public Health Systems	3
NSG	566	Population Assessment and Health Promotion Frameworks	3
NSG	567	Population Intervention Planning, Implementation and Evaluation	3
NSG	536	Principles of Case Management	3
	or		
NSG	568	Environmental Health	3
NSG	611	Understanding Financial and Business Concepts	3
NSG	614	The Leader and Policy, Politics, Power, and Ethics	3
			Subtotal 18
DNP Practica and Capstone			Credit Hours
NSG	605	DNP Capstone (168 Clock Hours)	2
NSG	606	DNP/Specialty Practicum (252 Clock Hours)	3
NSG	607	DNP/Specialty Immersion Residency (168 Clock Hours)	2
			Subtotal 7
			<b>Total 31</b>

**Minimum credits required:** Successful completion of the APHN MSN to DNP track for APRNs requires a minimum of 31 semester hours for graduation. Upon review of an individual's academic portfolio, additional courses or clinical hours may be required.

It is expected that previous clinical hours plus DNP/Specialty Practicum and Immersion hours will be equal to or greater than 1000 clock hours.

The equivalent of Biostatistics/Epidemiology must be completed prior to admission or added to the plan of study.

## Doctor of Nursing Practice (BSN to DNP)

Population/Role: Nurse Anesthesia (CRNA)

Graduate Nursing Core			Credit Hours
NSG	521	Organizational and Systems Leadership	3
NSG	522	Applied Epidemiology and Biostatistics for Nursing Practice	3
NSG	523	Research for Evidence-Based Practice	3
NSG	524	Health Promotion in Individuals and Clinical Populations	3
			Subtotal 12
Advanced Practice Nursing Core			Credit Hours
NSG	625	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan	2
NSG	625L	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan: Lab	1
NSG	532	Advanced Physiology	3
NSG	533	Advanced Pathophysiology	3
NSG	531	Advanced Pharmacology	3
NSG	537	Transition to APRN Role	3
			Subtotal 15
DNP Core			Credit Hours
NSG	603	Effective Project Planning, Implementation and Evaluation	3
NSG	600	Leadership in Evolving Health Care Environments	3
NSG	602	Health Care Economics, Policy and Finance	3
NSG	604A	DNP Project Planning I	1
NSG	604B*	DNP Project Planning II	1
NSG	604C*	DNP Project Planning III	1
			Subtotal 12
Population/Role Cognates			Credit Hours
ANA	500	Neurobiology	3
NSG	541	Chemistry and Physics in Anesthesia	3
NSG	542	Nurse Anesthesia Pharmacology	3
NSG	543A	Anesthesia Principles I: Basic Principles of Nurse Anesthesia	3
NSG	543B	Anesthesia Principles II: Advanced Principles of Nurse Anesthesia	3
NSG	543C	Anesthesia Principles III: Obstetric and Pediatric Anesthesia	3
			Subtotal 18
DNP Practica and Capstone			Credit Hours
NSG	605	DNP Capstone (168 Clock Hours)	2
NSG	606	DNP Practicum (756 Clock Hours)	9
NSG	607	DNP Immersion Residency (1512 Clock Hours)	18
			Subtotal 29
			<b>Total 86</b>

**Minimum credits required:** Successful completion of the CRNA BSN to DNP track requires a minimum of 86 semester hours for graduation. Upon review of an individual's academic portfolio, additional courses or clinical hours may be required.

\* Depending on plan of study, students will register for NSG-604B DNP Project Planning II (1 credit hour) and NSG-604C DNP Project Planning III (1 credit hour) or NSG-604D DNP Project Planning II and III (2 credit hours).

## Doctor of Nursing Practice (MSN to DNP)

Population/Role: Nurse Anesthesia (CRNA)

Advanced Practice Nursing Core			Credit Hours
NSG	625	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan	2
NSG	625L	Advanced Health Assessment for Advanced Practice Nursing Across the Lifespan: Lab	1
NSG	532	Advanced Physiology	3
NSG	533	Advanced Pathophysiology	3
NSG	531	Advanced Pharmacology	3
NSG	537	Transition to the APRN Role	3
			Subtotal 15
DNP Core			Credit Hours
NSG	603	Effective Project Planning, Implementation and Evaluation	3
NSG	600	Leadership in Evolving Health Care Environments	3
NSG	602	Health Care Economics, Policy and Finance	3
NSG	604A	DNP Project Planning I	1
NSG	604B*	DNP Project Planning II	1
NSG	604C*	DNP Project Planning III	1
			Subtotal 12
Population/Role Cognates			Credit Hours
ANA	500	Neurobiology	3
NSG	541	Chemistry and Physics in Anesthesia	3
NSG	542	Nurse Anesthesia Pharmacology	3
NSG	543A	Anesthesia Principles I: Basic Principles of Nurse Anesthesia	3
NSG	543B	Anesthesia Principles II: Advanced Principles of Nurse Anesthesia	3
NSG	543C	Anesthesia Principles III: Obstetric and Pediatric Anesthesia	3
			Subtotal 18
DNP Practica and Capstone			Credit Hours
NSG	605	DNP Capstone (168 Clock Hours)	2
NSG	606	DNP/Specialty Practicum (756 Clock Hours)	9
NSG	607	DNP/Specialty Immersion Residency (1512 Clock Hours)	18
			Subtotal 29
			<b>Total 74</b>

**Minimum credits required:** Successful completion of the CRNA MSN to DNP track requires a minimum of 74 semester hours for graduation. Upon review of an individual's academic portfolio, additional courses or clinical hours may be required.

The equivalent of Research and Biostatistics/Epidemiology must be completed prior to admission or added to the plan of study.

\* Depending on plan of study, students will register for NSG-604B DNP Project Planning II (1 credit hour) and NSG-604C DNP Project Planning III (1 credit hour) or NSG-604D DNP Project Planning II and III (2 credit hours).

## Doctor of Nursing Practice (MSN to DNP)

### Area of Focus: Systems Leadership

Term 1			Credit Hours
NSG	603	Effective Project Planning, Implementation and Evaluation	3
NSG	602	Health Care Economics, Policy and Finance	3
			Subtotal 6
Term 2			Credit Hours
NSG	611	Financial and Business Concepts	3
NSG	614	The Leader and Policy, Politics, Power, and Ethics	3
NSG	604A	DNP Project Planning I	1
			Subtotal 7
Term 3			Credit Hours
NSG	612	Applied Organizational Analysis and Management of Human Resources	3
NSG	613	Data and Decision-Making for Strategic Outcomes Management	3
NSG	604B	DNP Project Planning II	1
			Subtotal 7
Term 4			Credit Hours
NSG	600	Leadership in an Evolving Health Care Environment	3
NSG	604C	DNP Project Planning III	1
			Subtotal 4
Term 5			Credit Hours
NSG	607	DNP/Specialty Immersion Residency	3
			Subtotal 3
Term 6			Credit Hours
NSG	605	DNP Capstone	2
NSG	607	DNP/Specialty Immersion Residency	3
			Subtotal 5
			<b>Total 32</b>

**Minimum credits required:** Successful completion of the Systems Leadership MSN to DNP track requires a minimum of 32 semester hours for graduation. Upon review of an individual's academic portfolio, additional courses or clinical hours may be required.

## Postgraduate Certificate

The postgraduate non-degree certificate is intended for nurses who already have an advanced practice graduate degree in nursing (MSN or DNP) and who wish to specialize in a different clinical area. It is expected that the following courses or their equivalent are completed prior to admission to the postgraduate certificate program: Advanced Health Assessment Across the Lifespan, Physiology and/or Pathophysiology, Advanced Pharmacology, APRN Role and Diagnostics. Review of these courses for equivalence and transfer credit will be done upon admission into the program.

### Postgraduate Advanced Practice Certificate Options:

- Neonatal
- Pediatric Acute Care
- Pediatric Primary Care
- Psychiatric-Mental Health

Specialty Curriculum Content		Credit Hours
Applied Pharmacology		3
Specialty Cognate		3
Management: I		3
Management: II		3
Management III		3
	Subtotal	15
DNP and Specialty Practica		Credit Hours
Specialty Practicum (336 Clock Hours)		4
Specialty Immersion Residency (168 Clock Hours)		2
	Subtotal	6
	<b>Total</b>	<b>21</b>

## Doctor of Philosophy (BSN to PhD)

### Nursing Science

Theory Courses			Credit Hours
NSG	680	Understanding Scientific Paradigms	3
NSG	681	Understanding Theoretical Framework Development	3
			Subtotal 6
Statistics Courses			Credit Hours
NSG	684	Intermediate Statistics	3
NSG	685	Multivariate Statistics	3
			Subtotal 6*
Research Courses			Credit Hours
NSG	675	Literature Synthesis Approach	3
NSG	686	The Research Process: Quantitative Design and Methods Part I	3
NSG	687	The Research Process: Quantitative Design and Methods Part II	3
NSG	688	The Research Process: Qualitative Design and Methods	3
NSG	691	Advanced Clinical Research Practicum (ACRP)	8
			Subtotal 20
Ethics Courses			Credit Hours
NSG	683	Ethical Conduct in Research Settings	3
			Subtotal 3
Role Courses			Credit Hours
NSG	600	Leadership in Evolving Health Care Environments	3
NSG	614	The Leader and Policy, Politics, Power, and Ethics	3
NSG	679	Evidence-Based Teaching in the Health Professions	3
NSG	690	Grantsmanship	3
			Subtotal 12
Cognates			Credit Hours
Cognates			5
			Subtotal 5
Dissertation			Credit Hours
NSG	699	Dissertation	12
			Subtotal 12
Bridge Course Work			Credit Hours
Bridge Course Work (Individual for Each Student)			8
			Subtotal 8
			<b>Total 72</b>

\* Students who have not previously taken a graduate level biostatistics course must take NSG-522: Applied Epidemiology and Biostatistics for Nursing Practice prior to taking NSG-684: Intermediate Statistics.

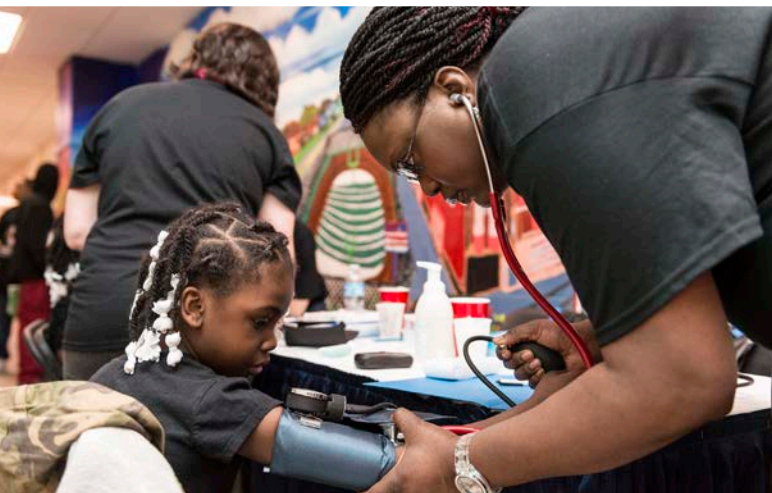


## Doctor of Philosophy (MSN to PhD)

### Nursing Science

Theory Courses			Credit Hours
NSG	680	Understanding Scientific Paradigms	3
NSG	681	Understanding Theoretical Framework Development	3
			Subtotal 6
Statistics Courses			Credit Hours
NSG	684	Intermediate Statistics	3
NSG	685	Multivariate Statistics	3
			Subtotal 6*
Research Courses			Credit Hours
NSG	675	Literature Synthesis Approach	3
NSG	686	The Research Process: Quantitative Design and Methods Part I	3
NSG	687	The Research Process: Quantitative Design and Methods Part II	3
NSG	688	The Research Process: Qualitative Design and Methods	3
NSG	691	Advanced Clinical Research Practicum (ACRP)	8
			Subtotal 20
Ethics Courses			Credit Hours
NSG	683	Ethical Conduct in Research Settings	3
			Subtotal 3
Role Courses			Credit Hours
NSG	600	Leadership in Evolving Health Care Environments	3
NSG	614	The Leader and Policy, Politics, Power, and Ethics	3
NSG	679	Evidence-Based Teaching in the Health Professions	3
NSG	690	Grantsmanship	3
			Subtotal 12
Cognates			Credit Hours
Cognates			5
			Subtotal 5
Dissertation			Credit Hours
NSG	699	Dissertation	12
			Subtotal 12
			<b>Total 64</b>

\* Students who have not previously taken a graduate level biostatistics course must take NSG-522: Applied Epidemiology and Biostatistics for Nursing Practice prior to taking NSG-684: Intermediate Statistics.



RUSH UNIVERSITY

## College of Health Sciences



## Welcome to the College of Health Sciences



The College of Health Sciences offers outstanding educational programs for the preparation of allied health and health care management professionals. There are more than 200 different allied health fields, and allied health workers constitute nearly 60 percent of the health care workforce in the United States. Because of advances in treatment and technology, population growth and the aging of the population, the demand for allied health professionals is expected to increase significantly. Allied health professionals and managers work in many different health care settings including acute care, chronic care, primary care, community-based care, clinics, physician's offices, educational institutions, research facilities and industry settings. Patients served range from newborn infants and pediatric patients to adults and the elderly.

In keeping with the Rush University practitioner-teacher model, the College of Health Sciences integrates patient care, research, scholarship and service into the teaching-learning process for our students. We strive to provide educational programs that are among the very best in preparing graduates to provide accessible, high-quality care for our patients and community.

Charlotte Royeen, PhD, OTR/L, FAOTA  
A. Armour Watson III Presidential Professorship  
Dean, College of Health Sciences, Rush University  
Professor of Occupational Therapy

## Overview

The College of Health Sciences, founded in 1975, is responsible for education and research in the allied health professions, including health care management. Rush University educates students as practitioners, scientists, teachers and leaders. The College of Health Sciences, as an integral component of Rush University, seeks to prepare excellent allied health practitioners and leaders to provide the very best care for our patients. In addition, the college makes meaningful and significant contributions to advancing health care through research, scholarship, service and practice.

The College of Health Sciences offers programs in 14 different professional areas housed within 10 academic departments. The college includes the Departments of Cardiopulmonary Sciences (Perfusion Technology and Respiratory Care); Clinical Nutrition; Communication Disorders and Sciences (Audiology and Speech-Language Pathology); Health Systems Management; Medical Laboratory Science; Medical Physics and Advanced Imaging (Imaging Sciences, Medical Physics, and Vascular Ultrasound); Occupational Therapy; Physician Assistant Studies; and Religion, Health and Human Values.

Programs and degrees offered within the college include audiology (AuD); medical laboratory science (BS and MS); clinical laboratory management (MS); specialist in blood bank (certificate); clinical nutrition (MS); health sciences (BS); health systems management (MS); imaging sciences (BS); medical physics (residency); occupational therapy (MS); perfusion technology (BS and MS); physician assistant studies (MS); research administration (MS); respiratory care (BS and MS); speech-language pathology (MS); and vascular ultrasound technology (BS). Through the Division of Health Sciences within the Graduate College, the PhD in health sciences is offered.

## Organization

The organization of the College of Health Sciences centers around departments and programs, each headed by a department chairperson and program director who reports to the college Dean.

The senior administrative and policy body of the college is the Chair's Council, made up of the chairpersons from each of the college's departments and a representative from the Faculty Council. The senior representative body of the college is the Faculty Council, composed of two faculty members elected from each department. Meetings of the Faculty Council are ordinarily held quarterly. Faculty may propose agenda items, and guests are welcome by invitation.

## Alumni Activities

Outstanding educational programs have outstanding alumni, and the college encourages the development of strong ties with its graduates. All graduates are considered alumni of Rush University College of Health Sciences. No dues are levied for membership in the college alumni association. In addition, each of the programs in the College of Health Sciences has an individual program alumni organization.

Further information about the College of Health Sciences can be obtained by contacting the Dean's office:

### College of Health Sciences Dean's Office

#### Rush University

Armour Academic Center

600 S. Paulina St., Suite 1001

Chicago, IL 60612-1832

Phone: (312) 942-7120

Fax: (312) 942-2100

## Mission and Vision

The purposes of Rush University are to educate students as practitioners, scientists and teachers who will become leaders in advancing health care and to further the advancement of knowledge through research. The College of Health Sciences, as an integral component of the University, seeks to prepare superb practitioners and leaders in the allied health professions to provide the very best care for our patients. In addition, the college seeks to make meaningful and significant contributions in advancing health care through excellence in research, scholarship and service. In keeping with the Rush University practitioner-teacher model, the college integrates patient care, research, scholarship and service into the teaching-learning process of developing future allied health professionals and leaders.

### Mission

The mission of the College of Health Sciences is to advance the quality and availability of health care through excellence in education, research and scholarship, service and patient care. The college promotes the values of diversity, access and inclusion in all of its endeavors.

### Vision

The College of Health Sciences at Rush University will be a world-class school of allied health sciences whose programs are recognized as among the best in the United States.

## Admission Requirements

Admission to the College of Health Sciences programs is on a competitive basis. Student selection is based on a number of factors including overall grade point average, prerequisite or science grade point average, consistency of academic performance, course work completed prior to application, examination scores, prior health care and life experiences and interpersonal abilities. Graduate Record Examination (GRE) score submission and a personal interview may be required by certain College of Health Sciences programs. For information on how to gain admission to a specific College of Health Sciences program, please consult the Web pages for the relevant academic program at <https://www.rushu.rush.edu/college-health-sciences/academic-programs>.

## Application Procedure

Application for admission into programs offered in the College of Health Sciences varies by program. For more information on application procedures, please consult the specific web pages for the program and department.

## TOEFL Policy

All applicants whose native language is not English must present evidence of proficiency in English by satisfactorily completing the Test of English as a Foreign Language (TOEFL).

A total TOEFL score of at least 88 on the Internet-based version, 570 on the paper-based version or 230 on the computer version must be achieved. In addition, applicants must score no less than 55 on the paper version, 20 on the computer version or 18 on the Internet-based version **on each of the three subtests of the TOEFL** (listening, structure/writing and reading).

An official report of these scores must be received by the admissions office prior to the date(s) on which admission decisions are made for the program(s) to which the applicant has applied. To obtain information or to register to take the TOEFL, write directly to the following address:

Educational Testing Service  
P.O. Box 6151  
Princeton, New Jersey 08541-6151, U.S.A.

For more information, visit the TOEFL website at <http://www.toefl.org>. The applicant should indicate on his or her application for the examination that results should be sent to institution code number 1676.

Applicants whose native language is not English and who have graduated from high school or successfully completed a higher-education degree program (associate degree or higher) in the United States or one of its English-speaking protectorates **may petition for waiver of the TOEFL requirement** to the College of Health Sciences Dean's Office.

Waiver requests should include proof of receipt of a high school or college diploma from an accredited institution in the United States or one of its English-speaking protectorates. College or university degrees must be granted by a regionally accredited college or university to be considered for waiver of the TOEFL.

## Philosophy of General Education

Undergraduate programs at Rush University prepare entry-level professionals for various roles in health care. The University strives to provide an environment where knowledgeable, informed and literate students are prepared to take their place, not only in the health care arena, but also as citizens of the world. The professional education builds on a solid general education, which forms the basis for life-long learning and prepares graduates to be practitioners with social consciences. Students are admitted to Rush University with general education sufficient to lay the groundwork for developing excellent written and verbal communication skills, critical thinking abilities, cultural sensitivity, high ethical standards and an inquiring mind. Students are expected to enter Rush University with foundations in communications, humanities, mathematics, physical/life sciences and social sciences.

The professional education offered by the University completes the student's general education, resulting in a graduate who does the following:

- Communicates effectively in writing and speech
- Demonstrates intellectual curiosity and critical thinking in the application of math and science to practice
- Applies ethical principles to practice
- Demonstrates ability to practice effectively in a diverse society
- Exercises and expresses his or her social conscience to positively influence health care at local to global levels

## General Education Requirements

Effective Jan. 1, 2009, all entering students<sup>1</sup> must complete the following general education requirements to be eligible for the Bachelor of Science degree: the following general education requirements in order to be eligible for the Bachelor of Science degree:

Requirements <sup>2</sup>	Semester Hours	Quarter Hours <sup>3</sup>
Two courses in communications (English or composition)	6	9
One course in mathematics (college algebra or higher)	3	4
Two courses in life sciences (anatomy, biology, microbiology or physiology)	6	9
One course in physical sciences (chemistry or physics)	3	4
One course in social sciences (government, history, political science, psychology or sociology)	3	4
One course in humanities, ethics, fine arts, literature or philosophy (may not include a performance course)	3	4
Elective courses in communications, computer science, ethics, fine arts, humanities, life sciences, literature, philosophy, physical sciences or social sciences to total 36 semester (56 quarter) hours	36	56
<b>Total Hours of Required and Elective Courses</b>	<b>60</b>	<b>90</b>

1. These requirements do not apply to students entering the College of Health Sciences prior to Jan. 1, 2009.

2. Minimum course and credit hour requirements for the Bachelor of Science degree are listed. Most College of Health Sciences programs require additional prerequisite courses and general education courses from the areas listed above. Applicants should review the specific prerequisite and general education requirements for the program(s) for which they are applying.

3. For students completing courses on the quarter system, actual credit awarded (and required) may be less. Please check with your academic program.

## Academic Policies

### Examination Policy

The examination policy is the responsibility of the individual course director who will inform students of examination requirements for that particular course. A time period at the end of the quarter is provided for examinations. This time period may be used as the course director chooses.

### Readmission

Any student who has withdrawn from a program or has not been enrolled for one or more quarters or any dismissed student may apply for readmission by submitting an application for this purpose. Applications for re-enrollment must be received at least three months before the planned return. An interview may be required. A re-entering student must meet the conditions for re-enrollment stated in his or her dismissal or re-entry acceptance letter and all policies, requirements and course sequences in effect at the time of re-entry. Previously enrolled students may be considered as part of the

pool of new applicants and are not guaranteed admission.

The student will pay tuition and fees at the rates in effect at the time of re-enrollment.

### Rush University Academic Policies

The Academic Resources and Policies section of this catalog contains additional Rush University academic policies.

## Student Professional and Community Service Requirement

Participation in service activities is an important attribute of the health science professional. A hallmark of outstanding Rush students and alumni is the desire and ability to make meaningful service contributions. Community service activities may include volunteer activities (health fairs and clinics, health education, provision of health services to at-risk or disadvantaged populations and other outreach education or clinical activities) and service on community boards, committees, work groups and other service

activities that promote the health and well-being of the community and its members. Professional service may include participation in the provision of state, national or international activities to advance the quality, access and effectiveness of health care services provided by allied health professionals.

Achievement of the College of Health Sciences Excellence in Service Goal is demonstrated in part through the following:

1. Student and faculty participation in community service activities
2. Student satisfaction with and appreciation for community service
3. Students and faculty who provide leadership and support to professional associations, boards and committees
4. Provision of community and professional continuing education to local, national and international audiences

In order to support achievement of the College's service excellence goals and objectives, the College has developed a professional and community service requirement for all College of Health Sciences students as a part of their academic programs.

As a requirement for program completion, each academic degree granting program will establish a minimum service requirement for each student enrolled in the program of at least 16 contact hours of approved professional or community service.

Examples of activities that may be used to meet this requirement include participation in community health fairs; community health screening and/or health services; provision of community health education; participation in approved professional service and/or continuing education activities; and assistance with the delivery of seminars, lectures, workshops and related community or professional continuing education activities.

## Conduct and Ethics

Each student is expected to conduct himself or herself in a professional manner at all times — in a manner which conforms to the ethics of the health professions and which instills confidence in the student's abilities as a health care professional. Each student is expected to conform to the professional code of ethics as outlined in his or her departmental student handbook.

Irresponsible, unprofessional or unethical behavior may result in disciplinary action, which may include suspension or dismissal from the college. All clinical agency or hospital regulations are to be followed by students when undergoing clinical or other training in a facility. For additional information, students should

refer to the Rush University Statement on Academic Honesty and Student Conduct and the Rush University Medical Center Code of Conduct.

## Scholastic Dishonesty and Cheating

The College of Health Sciences will not condone cheating in any form. Allegations of cheating will be reviewed by the departmental Committee on Progress and Promotions.

Any student found to be cheating on an examination may receive a zero for the examination and will be subject to formal disciplinary action, which may include suspension or dismissal from the program. Failure to report incidents involving scholastic dishonesty on the part of another student will be considered unprofessional conduct and may also result in disciplinary action. Students should refer to the Rush University Policy on Academic Honesty and Student Conduct for further information.

## HIPAA and Patient Privacy

Rush University students have a legal and ethical responsibility to safeguard the privacy of all patients and protect confidentiality and security of all health information. Protecting the confidentiality of patient information means protecting it from unauthorized use or disclosure in any format — verbal, fax, written or electronic/computer. Patient confidentiality is a central obligation of patient care. Any breaches in patient confidentiality or privacy may result in disciplinary action, up to and including dismissal from the college.

The laboratory component of some courses may use students as simulated patients. This is particularly true for the patient evaluation, medicine and patient education components. Additionally, the sharing of personal experiences can be a rich resource in the development of students' understanding, knowledge and appreciation of disease, health care and impact on peoples' lives.

Practicing the medical history and physical examination of patients places students in close contact and leads to the sharing of personal information and physical findings. Similarly students may use personal experiences in patient role-playing exercises.

All shared and personal medical information and physical examination findings are to be treated with the utmost confidentiality, the same as for any patient contact. Failure to protect the confidentiality of any information related to the activities in a course or clinical rotation may result in disciplinary action,

up to and including suspension or dismissal from the college. For additional information, students should refer to the Rush University HIPAA policy and the Rush University Policy on Privacy and Confidentiality of Student Records and FERPA.

## Guide to Professional Conduct

Professionalism relates to the intellectual, ethical, behavioral and attitudinal attributes necessary to perform as a health care provider or manager. As it applies to his or her professional role, the student will be expected to do the following:

### Attend

1. Demonstrate awareness of the importance of learning by asking pertinent questions, identifying areas of importance in practice and reporting and recording those areas.
2. Avoid disruptive behavior in class, laboratory and clinical or practicum rotations, such as talking or other activities that interfere with effective teaching and learning.

### Participate

1. Complete assigned work and prepare for class, laboratory and clinical or practicum objectives prior to attending.
2. Participate in formal and informal discussions, answer questions, report on experiences and volunteer for special tasks and research.
3. Initiate alteration in patient care techniques when appropriate via notification of instructors, staff and physicians.

### Dependability and Appearance

1. Attend and be punctual and reliable in completing assignments with minimal instructor supervision.
2. Promote a professional demeanor by appropriate hygiene, grooming and attire.

### Comport

1. Attend and be punctual and reliable in completing assignments with minimal instructor supervision.
2. Promote a professional demeanor by appropriate hygiene, grooming and attire.

### Communicate

1. Demonstrate a pleasant and positive attitude when dealing with patients and coworkers by greeting them by name, approaching them in a non-threatening manner and setting them at ease.

2. Explain procedures clearly to the patient.
3. Ask patients how they feel and solicit patient comments regarding the patient's overall condition and response to assessment and/or therapy.
4. Communicate clearly to staff and physicians regarding the patient status, utilizing appropriate charting, oral communication and the established chain of command.
5. Demonstrate a pleasant and positive attitude when dealing with coworkers, instructors, faculty, nurses and physicians.

### Organize

1. Display recognition of the importance of interpersonal relationships with students, faculty and other members of the health care team by acting in a cordial and pleasant manner.
2. Work as a team with fellow students, instructors, nursing staff and the physician in providing patient care.
3. Organize work assignments effectively.
4. Collect information from appropriate resources.
5. Correlate care to overall patient condition.
6. Adapt care techniques to overcome difficulties.
7. Devise or suggest new techniques for patient welfare or unit efficiency.

### Be Safe

1. Verify identity of patients before initiating therapeutic action.
2. Interpret written information and verbal directions correctly.
3. Observe and report significant changes in a patient's condition promptly to the appropriate person(s).
4. Act to prevent accidents and injury to patients, personnel and self.
5. Transfer previously learned theory and skills to new or different patient situations.
6. Request help from faculty or staff when unsure.
7. Comply with hospital and university guidelines for performance.

The following are examples of critical errors in professional conduct and judgment:

1. Failure to place the patient's welfare as first priority
2. Failure to maintain physical, mental and emotional composure
3. Consistent ineffective or inefficient use of time



4. Failure to be appropriately honest with patients, faculty and colleagues
5. Scholastic dishonesty in any form
6. Failure to follow the Rush University Medical Center Code of Conduct

## Procedure for Unprofessional Conduct

For specific rules regarding the procedures for unprofessional conduct, please refer to the departmental or program student handbook. In general, for issues that are not satisfactorily resolved between the instructor and student, the following guidelines should be followed for unprofessional conduct:

**Step 1.** The student will have been identified as violating an established standard of professional conduct/judgment or moral/ethical behavior, and the department chair or program director will have been notified.

**Step 2.** The department chair or program director will meet with the individual(s) making the allegation and the student's faculty advisor to review the available information and determine the veracity of the allegations.

**Step 3.** The department chair, student and faculty advisor, whenever possible, will meet as promptly as possible after the alleged incident. The department chair will report to the student the facts and available information and will seek to authenticate or clarify the allegations where possible. If it is determined that there is no basis for the allegation, no further action will be taken.

**Step 4.** If it is determined that there is a basis for the allegation and that further investigation is necessary, a preliminary hearing of the departmental Committee on Progress and Promotions will be convened to review the allegations and recommend a course of action. The department chair will inform the student and the Dean in writing of the preliminary hearing and the following:

- a) Date
- b) Name of student
- c) Nature of the allegations
- d) Date of alleged incident or occurrence
- e) Professional attributes that allegedly violate standards: skill, behavior, judgment, ethical values, etc.

For more information regarding the procedures for handling instances of unprofessional conduct, see the current departmental student handbook, the University Catalog and the College of Health Sciences Policies and Procedures for the Rush University Rules for Governance.

## Incidents in the Clinical Agency

An incident occurring that affects patients' or staff's well-being or the patient's prescribed care will be reported to the clinical instructor or preceptor immediately. An institutional incident report will then be completed following the policy of the health care institution or hospital in which the incident occurred. A duplicate of the hospital incident report as well as a memorandum of explanation from the clinical instructor or preceptor will be placed in the student's clinical file, and the department chair, program director or clinical director will be notified immediately. Incidents involving gross errors in judgment or practice on the part of the student will constitute grounds for dismissal from the program.

## Criminal Background Checks and Drug Testing

Programs offered in the College of Health Sciences often require that clinical rotations, practica, internships or other learning experiences be successfully completed in hospitals and other health care facilities in order to meet program requirements. Because use of these facilities is required, students must be able to successfully complete their assigned rotations in order to fulfill the academic requirements of their program.

Hospitals and other health care facilities often have policies requiring criminal background checks for employees, students and volunteers. These facilities may refuse to accept individuals for clinical, practicum or other experiential rotations based on past criminal convictions.

Students should be prepared to comply with the policies and procedures at any facility where they are assigned as part of their educational program and may not request facility assignments in an effort to avoid specific requirements. Students who have certain types of information in their criminal background checks may be ineligible to complete rotations in specific facilities. Students who are not allowed to participate at assigned facilities or who are terminated from rotations based on the results of a criminal background check will be unable to complete the program requirements for graduation and will be subject to dismissal on academic grounds.

Students should also be advised that persons with certain types of criminal convictions may not be eligible for state licensure or national registry or certification. In addition, many employers perform criminal background checks and may not hire individuals with certain types of criminal convictions.

## Drug Testing

Hospitals and other health care facilities often have policies requiring drug testing for employees, students and volunteers. Some facilities provide that students who test positive for drugs are ineligible to complete clinical, practicum or work assignments in that facility. Students should be prepared to comply with the policies and procedures at any assigned facility and may not request facility assignments in an effort to avoid drug screening requirements. Students who fail to report for clinical or practicum assignments or who are terminated from rotations because they violate the drug-testing or drug-use policies of the facilities will be subject to dismissal from the program.

## Procedures for the Implementation of Academic Accommodations for Students With Disabilities

Students who may need special accommodations can access this information. Students who may need special accommodations can access this information at <https://www.rushu.rush.edu/office-student-disability-services>.

## Student Government

A Student Government Association exists for the students enrolled in the College of Health Sciences. Student representatives will be elected by the student body in such a manner as to provide appropriate representation for all students in the College of Health Sciences.

## Release of Student Information

Students must sign a release requesting enrollment verification, verification of degree, recommendations, letters of reference or release of other student information. For a "Letter of Degree or Enrollment Verification," the student should use the form provided by the Office of the Registrar. The Office of the Registrar is the only authorized office at Rush University to release enrollment or degree verification information.

For recommendations or letters of reference, a release form is required for personally identifiable information from a student's educational record given out by the College of Health Sciences faculty. (Please note: The College of Health Sciences requires that all recommendations or letters of reference — even if they are based upon the recommender's personal observation or knowledge — have a release form on file before the person writing the recommendation can release the recommendation or letter of reference.)

Student grades will not be posted and cannot be given out over the telephone or via email.

For additional information, students should refer to the Rush University Policy on Privacy and Confidentiality of Student Records and FERPA.

## Student Academic Appeal and Grievance Procedures

The College of Health Sciences student appeals and grievance procedures provide a mechanism whereby any student may obtain a review of a complaint of unfair treatment. The student appeals procedures shall not be used to question a rule, procedure or policy established by an authorized faculty or administrative body. Rather it shall be used to provide due process for those who believe that a rule, procedure or policy has been applied in an unfair or inequitable manner or that there has been unfair or improper treatment by a person or persons. Students who are appealing an academic decision that could result in a dismissal from the University may be allowed to continue to progress in the program until the issue is resolved. If the academic decision is upheld and the student is dismissed from the University, the student will be withdrawn from the current classes. This withdrawal will be backdated to before the beginning of the quarter and the student will receive 100 percent tuition reimbursement for that quarter.

A student wishing to appeal an academic decision should follow the process summarized below, in the sequence indicated.

**Step 1.** In the academic community, the responsibility for course development, course delivery and the assessment of student achievement rests primarily with each course instructor. Any student who has a complaint of inappropriate treatment related to a course should first seek to resolve it informally with the course instructor. If the course instructor is the department chairperson or if the complaint does not pertain to a specific course, the student should seek resolution with the department chairperson at the outset.

1. A student with such a complaint must request reconsideration, in writing, of the application of a rule, procedure or policy, or unfair or improper treatment within five working days following the incident that forms the basis for the complaint (e.g., five days after grades are posted).
2. The instructor will meet with the student (or speak with the student via telephone for those students who are unable to come to the instructor's office, if so requested by the student). The instructor will notify the student in writing of his or her decision regarding the complaint within five working days following the meeting or discussion.

**Step 2.** If resolution is not achieved informally, as described in Step 1, the student should seek resolution with the chairperson of the department in which the course is offered within five working days following notification by the instructor of his or her decision.

1. The chairperson will meet with the student (or speak with the student for those students unable to come to the chairperson's office if so requested by the student) following receipt of the student's request for resolution to discuss the problem or complaint.
2. The chairperson will notify the student of his or her decision in writing following the meeting or discussion.

**Step 3.** If the issue was not resolved in Step 2, the student may submit a written appeal, describing the nature of the student's complaint and reasons for seeking an appeal to the student progress and promotion committee of the department within five working days following notification by the department chairperson of his or her decision.

1. The student may appear before the committee in person, make an oral statement and answer questions from the committee. The student will not be allowed to be present during committee deliberations.
2. The committee may request that the course instructor or faculty member named in the grievance appear before the committee to make an oral statement and answer questions. The instructor or faculty member named in the grievance may not be present during committee deliberations.
3. Following review of information provided, the committee will notify the student of its decision.

**Step 4.** If the issue was not resolved to the student's satisfaction in Step 3 the student may submit a written request seeking a hearing to the Dean within five working days of receiving the department progress and promotion committee decision. The written request should include a description of the complaint and the reason the student is seeking an appeal.

1. The Dean will meet with the student following receipt of the written request from the student for a hearing.
2. Following the meeting with the student, the Dean may render a decision or choose to appoint a panel to investigate the grievance and make a recommendation to the Dean.
3. Following review of the information provided and any recommendations from the panel, should one be appointed, the Dean will then notify the student of his or her decision. The decision of the Dean shall be final.

## Committees

The senior administrative and policy body of the College of Health Sciences is the Chairs Council. Its membership consists of the chairpersons of each of the college's departments and a representative of the Faculty Council. The senior representative body of the College of Health Sciences is the Faculty Council. Its membership is composed of faculty members representing all departments and ranks. The Committee on Senior Faculty Appointments and Promotions recommends all promotions and appointments of faculty to senior ranks. It is elected by the faculty and has representatives from all departments in the college. In addition, the Dean may appoint special committees and task forces of the college to meet specific college needs, such as strategic planning.



## College of Health Sciences Academic Programs

Clinical Nutrition (MS) and the Combined  
MS/Dietetic Internship

Communication Disorders and Sciences

Audiology (AuD)

Speech-Language Pathology (MS)

Health Sciences (BS)

Health Sciences (PhD)

Health Systems Management (MS)

Imaging Sciences (BS)

Medical Laboratory Science (MS)

Medical Physics (Residency)

Occupational Therapy (MS)

Perfusion Technology (MS)

Physician Assistant Studies (MS)

Respiratory Care (MS)

Specialist in Blood Bank Certificate and Clinical Laboratory  
Management Program (MS)

Vascular Ultrasound (BS)

## Clinical Nutrition: Academic Programs

Two programs, which have a common core of courses, lead to a Master of Science (MS) in clinical nutrition.

### Combined Master's Degree/Dietetic Internship

The combined MS/dietetic internship program is a 21-month program that integrates didactic and practicum experience. All students complete a thesis research project. Upon completion of the program, the student earns an MS degree with a major in clinical nutrition, completes an accredited dietetic internship and is eligible to take the Registration Examination for Dietitians.

The dietetic internship is accredited by the Accreditation Council for Education in Nutrition and Dietetics, the credentialing agency of the Academy of Nutrition and Dietetics. Contact information:

Accreditation Council for Education in Nutrition and Dietetics  
Academy of Nutrition and Dietetics  
120 S. Riverside Plaza, Suite 2000  
Chicago, IL 60606-6995  
Phone: (800) 877-1600 ext. 4727  
[www.eatright.org/acend](http://www.eatright.org/acend)

### Master's Degree for Registered Dietitians

The MS degree program for registered dietitians (RD) is a program for those who hold the RD credential and wish to expand their understanding of advanced human nutrition and medical nutrition therapy through critical evaluation, integration and application of nutrition and management research. Each student completes a thesis research project.

## Clinical Nutrition: Admission Requirements

### Applicants for the Combined Master of Science (MS)/Dietetic Internship

All applicants for the program must have earned a baccalaureate degree and completed requirements of an accredited Didactic Program in Dietetics (DPD) listed by the Accreditation Council for Education in Nutrition and Dietetics at [www.eatright.org/acend](http://www.eatright.org/acend).

Application requirements, fees and the application process are specified on the Department of Clinical Nutrition website at [www.rushu.rush.edu/nutrition](http://www.rushu.rush.edu/nutrition).

Contact Diane Sowa, MBA, RD, the dietetic internship director, at [diane\\_c\\_sowa@rush.edu](mailto:diane_c_sowa@rush.edu) or (312) 942-5212 for questions.

Acceptance procedures and timelines for the combined MS/dietetic internship are specified by the Accreditation Council for Education in Nutrition and Dietetics and can be found at [www.eatright.org/acend](http://www.eatright.org/acend). Students are required to follow these directions for acceptance to the program. After students have verbally accepted the appointment, the Rush Dietetic Internship Director will email them an acceptance letter form that students are required to complete and return.

Once students are accepted into the dietetic internship, they are then required to complete the application for Rush University at <http://ruapplying.learn.rush.edu>. A program acceptance confirmation fee of \$250 is required at this time. This fee is nonrefundable and will be applied to tuition for the first quarter.

### Drug Testing

Rush University Medical Center requires that all prospective employees (including dietetic interns) undergo drug testing as a contingency for employment or enrollment.

### Criminal Background Check

All dietetic interns will undergo a criminal background check, the purpose of which is to comply with legislation regarding employment in the health care field to assure patient safety.

### Required Testing for all Applicants

Applicants for both the MS/dietetic internship and the MS for registered dietitian programs in clinical nutrition will need to submit results of the following:

- Graduate Record Examination
- International applicants — graduates who obtained their education outside the United States and its territories — must have their academic degree(s) validated as equivalent to the baccalaureate or master's degree conferred by a regionally accredited college or university in the United States. These applicants also must submit results of TOEFL examination (see College of Health Sciences TOEFL requirements).

## Clinical Nutrition: Academic Policies

The Combined Master of Science (MS)/Dietetic Internship Program is offered on a full-time basis only. The program extends over seven quarters including a summer session. The supervised practice experiences must be completed within 31.5 months. The didactic and research components of the master's degree should be completed in seven quarters; all students must

complete course work within five years of matriculation. Rush University requires continuous enrollment through to completion of degree (see Rush University policies for further information). Students may be allowed to transfer up to nine quarter hours of applicable graduate credit from another accredited university. Graduate courses must be completed with a B grade or better and approved by the student's supervisory committee to be awarded transfer credit.

The MS Degree for Registered Dietitians Program is offered on a part-time or full-time basis. A full-time student can complete the program in seven quarters; all students must complete the program within five years of matriculation. Students may be allowed to transfer up to nine quarter hours of applicable graduate credit from another accredited university. Graduate courses must be completed with a B grade or better and approved by the student's supervisory committee to be awarded transfer credit.

If a student is not finished with either program in five years, a request for extension must be made to the Clinical Nutrition Academic Progress and Promotions Committee. If an extension is granted, conditions of the extension may include additional coursework to assure relevancy and currency of knowledge or competence at the master's level.

### **Academic Progression**

Students in the Combined MS/Dietetic Internship Program are required to earn grades of B or better in NTR-505 and NTR-506 and a grade of P (pass) (equivalent to a grade of B or better) in NTR-511, NTR-512, NTR-513, NTR-514, NTR-515, NTR-516, NTR-517 and NTR-518. Grades of C or better are required in all other courses. Failure to earn minimum required grades may result in dismissal from the program and will result in a performance review by the Clinical Nutrition Committee on Academic Progress and Promotions. The faculty reserves the right to request the withdrawal of any student whose conduct or performance demonstrates lack of fitness for continuance in the graduate program.

Students in the MS Degree for Registered Dietitians Program are required to earn grades of C or better in all courses. Failure to earn required grades may result in dismissal from the MS program and will result in a performance review by the Clinical Nutrition Committee on Academic Progress and Promotions. The faculty reserves the right to request the withdrawal of any student whose conduct or performance demonstrates lack of fitness for continuance in the graduate program.

Automatic probation for any student results when a student's cumulative grade point average (GPA) falls below 3.0 or when a student receives a grade of D or F in any course. The Clinical Nutrition Committee on Academic Progress and Promotions notifies any student placed on probation, states the reason(s) for probation and indicates the conditions that must be satisfied for removal of probation. A student who earns a grade of D or F in a course, other than those listed above, must repeat the course and earn at least a C grade. A student who earns a grade of D or F in more than one required course will be dismissed. Full-time students on probation must earn a cumulative GPA of 3.0 or greater by the end of the next two consecutive quarters. Part-time students on probation must earn a cumulative GPA of 3.0 or greater after completing the next 3 courses (approximately 9 quarter hours). Improvement in the GPA must be shown each quarter of probation.

### **College of Health Sciences/Rush University Academic Policies**

Academic policies specific to the College of Health Sciences and Rush University are located in those sections of the catalog.

## Clinical Nutrition: Curriculum Master of Science Degree/Dietetic Internship Program Curriculum

Year 1		Credit Hours
<b>Fall Quarter</b>		
NTR-521	Regulation of Macronutrient Metabolism in Human Nutrition	4
NTR-545	Nutrition Assessment	2
NTR-598	Thesis	1
CHS-502	Research Methods	3
NTR-511	Supervised Experience in Food System Management I	3
<b>Winter Quarter</b>		
NTR-522	Energy Metabolism and Bioactive Compounds in Human Nutrition	2
NTR-541	Integrating Nutrition in Disease Prevention and Treatment I	4
NTR-512	Supervised Experience in Food System Management II	2
NTR-513	Supervised Experience in Clinical Nutrition I	2
NTR-598	Thesis	2
<b>Spring Quarter</b>		
CHS-501	Introduction to Biostatistics for the Health Scientist	3
NTR-542	Integrating Nutrition in Disease Prevention and Treatment II	4
NTR-505	Advanced Medical Nutrition Therapy I	2
NTR-514	Supervised Experience in Clinical Nutrition II	4
<b>Year 2</b>		
<b>Summer Quarter</b>		
NTR-503	Leadership in Dietetics	2
NTR-531	Application of Behavioral Change and Educational Theories in Nutrition Counseling and Education	4
NTR-506	Advanced Medical Nutrition Therapy II	3
NTR-515	Supervised Experience in Clinical Nutrition III	4
<b>Fall Quarter</b>		
NTR-523	Advances in Vitamin and Mineral Nutriture in Human Nutrition	2
NTR-555	Population Studies in Nutrition Epidemiology	2
NTR-598	Thesis	1
NTR-516	Supervised Experience in Clinical Nutrition IV	6
<b>Winter Quarter</b>		
NTR-560	Food and Nutrition Services Management	3
NTR-566	Seminar	1
NTR-598	Thesis	2
NTR-517	Supervised Experience in Clinical Nutrition V	6
<b>Spring Quarter</b>		
NTR-558	Dietetic Public Policy Initiatives and Advocacy	1
NTR-598	Thesis	3
CHS-510	Health Care in America	2
NTR-518	Supervised Experience in Management	3
<b>Hours Required for MS Degree:</b>		<b>83</b>

## Master of Science Degree for Registered Dietitians

(Sample plan of study)

Year 1		Credit Hours
<b>Fall Quarter</b>		
NTR-521	Regulation of Macronutrient Metabolism in Human Nutrition	4
NTR-545	Nutrition Assessment	2
NTR-598	Thesis	1
CHS-502	Research Methods	3
<b>Winter Quarter</b>		
NTR-522	Energy Metabolism and Bioactive Compounds in Human Nutrition	2
NTR-541	Integrating Nutrition in Disease Prevention and Treatment I	4
NTR-598	Thesis	1
<b>Spring Quarter</b>		
NTR-542	Integrating Nutrition in Disease Prevention and Treatment II	4
CHS-501	Introduction to Biostatistics for the Health Scientist	3
CHS-510	Health Care in America	2
<b>Year 2</b>		
<b>Summer Quarter</b>		
NTR-531	Application of Behavioral Change and Educational Theories in Nutrition Counseling and Education	4
NTR-503	Leadership in Dietetics	2
<b>Fall Quarter</b>		
NTR-523	Advances in Vitamin and Mineral Nutrition in Human Nutrition	2
NTR-555	Population Studies in Nutrition Epidemiology	2
NTR-598	Thesis	1
<b>Winter Quarter</b>		
NTR-560	Food and Nutrition Services Management	3
NTR-566	Seminar	1
NTR-598	Thesis	2
<b>Spring Quarter</b>		
NTR-558	Dietetic Public Policy Initiatives and Advocacy	1
NTR-598	Thesis	4
<b>Hours Required for MS Degree:</b>		<b>48</b>

### Thesis

Several programs in the College of Health Sciences either require or have an option for a thesis project. Completing one's thesis is a significant academic accomplishment and acknowledges that the student has conducted an independent scientific investigation that will add to the knowledge of his or her field. All students are required to have their theses registered with

the ProQuest Information and Learning Company. This process includes the publication of the thesis abstract, the microfilming of the thesis and the copyrighting of the work (approximately \$150). In addition, the original copy of the thesis is bound and becomes a permanent part of the collection of the Library of Rush University Medical Center. The director of the Library of Rush University Medical Center coordinates the process.



## **Clinical Nutrition: Graduation Requirements**

A cumulative GPA of 3.0 or greater is required of all graduates. The Combined MS/Dietetic Internship Program students shall complete the internship requirements within 31.5 months and the MS degree within five years from matriculation. Registered dietitians enrolled in the MS Degree for Registered Dietitians Program shall complete degree requirements within five years from matriculation.

## **Clinical Nutrition: Research Activities**

All students will complete a master's thesis. Faculty members of the Department of Clinical Nutrition are involved in basic and applied clinical nutrition and management research. Faculty and students present at professional meetings and publish in peer reviewed journals. A list of faculty and student research presentations and publications can be found on the clinical nutrition website at [www.rushu.rush.edu/nutrition](http://www.rushu.rush.edu/nutrition).

## **Clinical Nutrition: Service Activities**

The practitioner-teacher model is evident in the fully integrated operational and academic facilities and staff, providing unique opportunities for the merging of theory and practice within one institution. Two departments jointly administer the Combined MS/Dietetic Internship Program. The Department of Food and Nutrition Services at Rush University Medical Center provides the internship or supervised practice experience. The didactic component of the Master of Science degree is provided by the Department of Clinical Nutrition at Rush University. In addition to the academic program, the Department of Food and Nutrition Services provides nutrition services to the hospital and to the outpatient area, operates three food service units within the Medical Center and provides leadership in nutrition support in critical care.

Students in both programs are required to complete 16 hours of community or professional service during the program. Students meet this requirement in a variety of ways including assisting at health fairs; volunteering at the local food pantry; and assisting at local, state and national professional association meetings.

## **Communication Disorders and Sciences: Philosophy**

The underlying basis for the graduate degree programs in audiology and speech-language pathology is the practitioner-teacher model, whereby students learn from faculty who take on dual roles as academicians and practitioners. This approach to professional education helps to bridge the gap that can exist between classroom teaching and clinical service delivery. Students learn in an environment where teaching, research and patient care are wholly integrated. The faculty at Rush participate fully in the clinical process in addition to teaching and research. Students receive outstanding clinical education experiences with diverse patients who present a full range of communicative disorders. The audiology and speech-language pathology programs are accredited by the Council on Academic Accreditation of the American Speech-Language-Hearing Association (ASHA).

The programs in audiology and speech-language pathology are based on the philosophy that professional education is optimized by drawing upon the patients, staff and other resources of an academic medical center. The resources at Rush University enrich and enhance faculty and student research and scholarship, and they provide unique opportunities for interprofessional education and collaborations. The clinical skills of Rush students are fostered and developed through didactic courses, clinical observation and instruction, and supervision by practitioner-teachers. The department faculty is supplemented by the expertise of physicians, scientists and other health care practitioners within Rush University Medical Center.

The goals of the academic programs in audiology and speech-language pathology are to generate and disseminate new knowledge in the communication disorders and sciences and to prepare graduates who can do the following:

- Synthesize contemporary knowledge of speech and hearing science and apply it in the assessment and management of a broad spectrum of communication disorders
- Implement evidence-based protocols for the evaluation and treatment of individuals with communication disorders
- Utilize and contribute to new knowledge in the professions and discipline
- Function as professional-level speech-language pathologists or audiologists in health care and other settings
- Are eligible for clinical certification from the American-Speech-Language-Hearing Association
- Are eligible for state licensure within the profession

## **Mission Statement of the Department of Communication Disorders and Sciences**

The Department of Communication Disorders and Sciences at Rush University Medical Center integrates outstanding graduate education, superior patient care, excellence in research and scholarship, and service to diverse communities.

## **Vision Statement**

The clinical and graduate education programs of the Department of Communication Disorders and Sciences will be recognized as among the best in the United States.

## **Professional Credentialing**

Rush programs in communication disorders and sciences offer the academic and clinical education background necessary to begin the ASHA clinical fellowship year (speech-language pathology) and to meet requirements for certification in audiology and speech-language pathology. Upon graduation students are eligible to do the following:

- Obtain Illinois licensure
- Meet requirements for professional certification in speech-language pathology or audiology
- Meet the requirements for the Illinois Educator License as a non-teaching speech-language pathologist. This is under the School Services Personnel category. Eligibility for the Illinois Educator License may require adjustment to a student's didactic or clinical experiences.

## **Communication Disorders and Sciences: Admission Requirements**

Application for admission to the Doctor of Audiology or the Master of Science in Speech-Language Pathology Program is through a central application system. Refer to the programs' Web pages for more information. The application deadline for both programs is Jan. 1 for matriculation the following fall.

### **Doctor of Audiology (AuD)**

At the time of application, individuals should have completed or be in the process of completing baccalaureate degrees at accredited institutions. The baccalaureate degree must be completed before commencing work at Rush University. Students entering the program must have transcript credit for at least one college-level math course, at least one course in the behavioral/social sciences, at least one course in the biological sciences and at least one course in the physical sciences.

Although not required, the following course work is strongly recommended: advanced college-level math, research methods, psychology and physics. Applicants should check the program web page, <http://www.rushu.rush.edu/college-health-sciences/academic-programs/doctor-audiology>, for additional information about prerequisites.

Admission is granted for the fall quarter of each year. The application file includes a completed application with essay, application fee, three letters of recommendation from individuals acquainted with the applicant's academic background, official transcripts from all universities attended and official scores from the Graduate Record Examination (GRE). Applicants whose native language is not English and who have not obtained a college degree from a U.S. institution must submit official scores from the Test of English as a Foreign Language (TOEFL).

The generally applied minimum standards for acceptance into the AuD program are a 3.0 undergraduate GPA overall (on a 4.0 scale) or a 3.5 GPA in major courses. GRE scores (verbal and quantitative) above the 50th percentile are recommended. The department admissions committee makes all admissions decisions.

### **Master of Science in Speech-Language Pathology**

At the time of application, individuals should have completed or be in the process of completing baccalaureate degrees at accredited institutions. The baccalaureate degree must be completed before commencing work at Rush University. Students entering the program must have successfully completed course work in introduction to audiology, phonetics, normal speech and language development, speech and hearing science, speech and hearing anatomy and physiology, and statistics. In addition, entering students must have transcript credit for at least one course in each of the following areas: biological sciences, physical sciences (physics or chemistry), and social/behavioral sciences. Applicants should check the program web page at <https://www.rushu.rush.edu/college-health-sciences/academic-programs/doctor-audiology> for additional information about prerequisites.

Admission is granted for the fall quarter of each year. The application file includes a completed application with essay, application fee, three letters of recommendation from individuals acquainted with the applicant's academic background, official transcripts from all universities attended, and official scores from the Graduate Record Examination (GRE). Applicants whose native language is not English and who have not obtained a college degree from a U.S. institution must submit official scores from the Test of English as a Foreign Language (TOEFL).

The generally applied minimum standards for acceptance into the program are a 3.0 undergraduate grade point average (GPA) overall (on a 4.0 scale) and a 3.5 in major courses in speech-language pathology or a 3.5 in the prerequisite course content as listed in the application. Scores on the GRE (verbal and quantitative) should be at the 50th percentile or higher. The admissions committee in the department reviews all applications and makes all admissions decisions.

## Technical Standards for the Audiology and Speech-Language Pathology Programs

Graduates of speech-language pathology and audiology programs must possess the essential knowledge and skills to function in a broad variety of clinical situations and to render a wide spectrum of patient care safely and effectively. Rush University has specified the following nonacademic criteria ("technical standards") that applicants and enrolled students must meet to participate in the education program and the practice of speech-language pathology and audiology.

### 1. Observation

- The student must participate actively in all demonstrations and laboratory exercises in the academic and clinical curricula.
- The student must assess and comprehend the condition of all patients assigned to him or her for examination, diagnosis and treatment.
- Such observation and information acquisition usually requires the functional use of visual, auditory and somatic sensation.

### 2. Communication

- The student must be able to communicate effectively and sensitively with patients in order to elicit information, describe changes in mood, activity and posture, and assess nonverbal communications.
- The student must be able to effectively and efficiently transmit information to patients, fellow students, faculty, staff, family and other professionals.
- Required communication skills include speaking, reading and writing, as well as the observation skills described above.

### 3. Motor

- The student must be able to communicate effectively and sensitively with patients in order to elicit information, describe changes in mood, activity and posture, and assess nonverbal communications.
- The student must be able to effectively and efficiently transmit information to patients, fellow students, faculty, staff, family and other professionals.

- Required communication skills include speaking, reading and writing, as well as the observation skills described above.

### 4. Intellectual-Conceptual, Integrative and Quantitative Abilities

- The student must be able to measure, calculate, reason, analyze, synthesize and apply the critical thinking skills required of a health care professional.
- The student must have the capacity to problem-solve in a timely fashion.

### 5. Behavioral and Social Attributes

- The student must be able to fully utilize his or her intellectual abilities and exercise good judgment. Prompt completion of all responsibilities attendant to the diagnosis and care of patients is required.
- The student must be capable of developing mature, sensitive and effective relationships with patients and others.
- The student must be able to tolerate taxing workloads, function effectively under stress, adapt to changing environments, display flexibility, and learn to function in the face of uncertainties inherent in the clinical problems of many patients.
- Compassion, integrity, concern for others, commitment and motivation are personal qualities that each student should possess.
- The student must show respect for individuals with disabilities and for persons of different ages, ethnic backgrounds, races, religions and sexual orientations.

## Communication Disorders and Sciences: Academic Policies

The Academic Resources and Policies section of this catalog contains Rush University academic policies.

The following probation information is governed by the Academic Progression Committee.

### Academic Probation

Academic probation is assigned to a student who earns a quarterly academic grade point average (GPA) between 2.5 and 2.99 (A = 4.0), or whose cumulative academic GPA falls between 2.5 and 2.99 at any time. A remediation plan to address probation will be determined by the student and the student's academic advisor and documented. A student must earn a quarterly and cumulative academic GPA of 3.0 or greater at the end of the quarter during which the student is on academic probation or be placed again on academic probation. A student who incurs

academic probation for the third time will be dismissed from the program, even if the cumulative academic GPA is 3.0 or greater.

A student who earns a grade of D or less in a required course must repeat that course or an approved equivalent. In a repeated course, the new grade will replace the earlier grade in the cumulative academic GPA. Failure to receive a grade of C or better in a repeated course will result in dismissal from the program. A student who earns a grade of D or less in two or more required courses, regardless of the grade earned in a repeated course and regardless of the cumulative academic GPA, will be dismissed from the program.

A student who earns a quarterly academic GPA of less than 2.5 at any point during his or her course of study will be dismissed from the program.

A student who fails to meet the stated criteria for the comprehensive examination will be dismissed from the program.

A cumulative academic GPA of 3.0 or greater is required for graduation.

### **Clinical Probation**

Clinical probation is assigned to a student who earns a grade of C or less in a clinical practicum, internship or externship. Although the clinical contact hours may be used to meet CFCC (ASHA) certification requirements, the student is required to repeat the clinical education course before progressing further in the clinical sequence. A remediation plan to address clinical probation will be determined by the student, the student's academic advisor, and the clinical education manager and will be documented. Failure to achieve a grade of B or higher in any subsequent clinical education course will result in dismissal from the program.

The faculty reserves the right to request the withdrawal of any student whose conduct or performance demonstrates lack of fitness for continuance in a health profession. Any such student not voluntarily withdrawing will be dismissed from the program.

### **Interrupted Program**

Any student who wishes or needs to interrupt his or her program must fulfill the following requirements:

Meet with his or her academic advisor and the program director to work out a plan of action before leaving the program.

Complete all degree requirements within four years (master's program) and eight years (doctoral program) of the beginning of the first quarter in which the full-time student is enrolled in the department.

Follow all appropriate leave of absence/withdrawal procedures and policies as defined by Rush University.

### **Academic Appeal and Grievance**

See the Communication Disorders and Sciences Student Manual for the policy on academic appeal and grievance and for other policies. The department follows procedures outlined in the College of Health Sciences Student Academic Appeal and Grievance Procedures. Students who wish to file a complaint related to compliance with an accreditation standard may contact the Council on Academic Accreditation:

Chair, Council on Academic Accreditation in Audiology and Speech-Language Pathology  
American Speech-Language-Hearing Association  
2200 Research Blvd., Suite 310  
Rockville, MD 20850  
Phone: (800) 498-2071 or (301) 296-5700

## **Communication Disorders and Sciences: Speech-Language Pathology Curriculum**

### **Thesis Track**

Thesis students may de-select up to eight credit hours of select course work, shown in italics below. De-selected courses may be audited; audited courses will appear on the student's transcript. The selection of the courses to remove from a student's program of study is done with the approval of the student's advisor, taking into account the individual's undergraduate background and graduate needs and experiences.

Enrollment in practicum may be reduced in the winter and spring terms of the second year. These practicum experiences will be scheduled either on campus or at select external sites to facilitate completion of the thesis. The decision to reduce time in practicum for one or both quarters is made in consultation with a student's advisor and the clinical education manager. Students who reduce their practicum hours must be in frequent contact with the clinical education manager throughout their academic programs to monitor that the requisite contact hours needed for graduation are being attained.

Students who do not obtain the needed contact hours will register for additional credit during the following summer quarter so that this graduation requirement will be met. Thesis students who have completed the requisite clock hours and have achieved the skills outcomes for ASHA certification prior to the completion of their theses may be excused from further practicum or have their practicum hours reduced further at the time these requirements are met.

## Speech-Language Pathology Curriculum: Thesis Track

Year 1		Credit Hours
<b>Fall Quarter</b>		
CDS-504	Speech Production and Speech Perception	4
CDS-505	Clinical Methods in Speech-Language Pathology I	2
CDS-507	Neurological Bases of Speech, Hearing and Language	4
CDS-537	Anatomy and Physiology of the Speech System	2
CDS-526	Speech Sound Disorders	4
CDS-591	Applied Topics in Communication Disorders and Sciences	1
<b>Winter Quarter</b>		
CDS-506	Clinical Methods in Speech-Language Pathology II	2
CDS-511P	Speech-Language Pathology Practicum I	2–3
CDS-558	Dysphagia	4
CDS-564	Aphasia	4
CDS-581	Research Methods in Communication Disorders	4
<b>Spring Quarter</b>		
CDS-512P	Speech-Language Pathology Practicum II	2–3
CDS-521	Language Disorders in Preschool Children	4
CDS-540	<i>Speech Pathology Management of the Head and Neck Cancer Patient</i>	2
CDS-563	Voice Disorders	4
CDS-567	Dysarthria	4
<b>Summer Quarter</b>		
CDS 503	<i>Hearing Screening and Service Delivery for Speech-Language Pathologists</i>	2
CDS-513P	Speech-Language Pathology Practicum III	6
CDS-528	Current Issues in AAC Service Delivery	1
CDS-542	<i>Speech Pathology Management of Tracheostomized and Ventilator Dependent Patients</i>	2
CDS-562	<i>Craniofacial Anomalies</i>	2
CDS-900	Independent Study	2
<b>Year 2</b>		
<b>Fall Quarter</b>		
CDS-514P	Speech-Language Pathology Practicum IV	4
CDS-522	Language Disorders in School-age Children	4
CDS 535	Clinical Issues in Cultural and Linguistic Diversity	2
CDS-568	Cognition and Communicative Disorders	4
IDS-510	<i>Health Care in America</i>	2
CDS-598	Thesis	2
<b>Winter Quarter</b>		
CDS-510	<i>Professional Issues in Speech-Language Pathology</i>	2
CDS-524	<i>Fluency, Dysfluency and Stuttering</i>	2
CDS-575	Issues in Counseling	2
CDS-589P	Advanced Practicum I	9
CDS-591	Applied Topics in Communication Sciences and Disorders	1
CDS-598	Thesis	2
IDS-515	<i>Geriatric Interdisciplinary Team Training (Optional)</i>	Au
<b>Spring Quarter</b>		
CDS-590P	Advanced Practicum II	12
CDS-598	Thesis	2
<b>Hours Required for MS Degree:</b>		<b>107</b>

Due to the academic calendar conversion from quarters to semesters, students will be going through a transition plan which will cause revisions to this curriculum.

## Speech-Language Pathology Curriculum: Non-Thesis Track

Year 1		Credit Hours
<b>Fall Quarter</b>		
CDS-504	Speech Production and Speech Perception	4
CDS-505	Clinical Methods in Speech-Language Pathology I	2
CDS-507	Neurological Bases of Speech, Hearing and Language	4
CDS-537	Anatomy and Physiology of the Speech System	2
CDS-526	Speech Sound Disorders	4
CDS-591	Applied Topics in Communication Disorders and Sciences	1
<b>Winter Quarter</b>		
CDS-506	Clinical Methods in Speech-Language Pathology II	2
CDS-511P	Speech-Language Pathology Practicum I	2–3
CDS-558	Dysphagia	4
CDS-564	Aphasia	4
CDS-581	Research Methods in Communication Disorders	4
<b>Spring Quarter</b>		
CDS-512P	Speech-Language Pathology Practicum II	2–3
CDS-521	Language Disorders in Preschool Children	4
CDS-540	Speech Pathology Management of the Head and Neck Cancer Patient	2
CDS-563	Voice Disorders	4
CDS-567	Dysarthria	4
<b>Summer Quarter</b>		
CDS 503	Hearing Screening and Service Delivery for Speech-Language Pathologists	2
CDS-513	Speech-Language Pathology Practicum III	4
CDS-528	Current Issues in AAC Service Delivery	1
CDS-542	Speech Pathology Management of Tracheostomized and Ventilator Dependent Patients	2
CDS-562	Craniofacial Anomalies	2
<b>Year 2</b>		
<b>Fall Quarter</b>		
CDS-514P	Speech-Language Pathology Practicum IV	4
CDS-522	Language Disorders in School-age Children	4
CDS 535	Clinical Issues in Cultural and Linguistic Diversity	2
CDS-568	Cognition and Communicative Disorders	4
IDS-510	Health Care in America	2
<b>Winter Quarter</b>		
CDS-510	Professional Issues in Speech-Language Pathology	2
CDS-524	Fluency, Dysfluency and Stuttering	2
CDS-575	Issues in Counseling	2
CDS-589P	Advanced Practicum I	9
CDS-591	CDS Applied Topics in Communication Sciences and Disorders	1
IDS-515	Geriatric Interdisciplinary Team Training (Optional)	Au
<b>Spring Quarter</b>		
CDS-590P	Advanced Practicum II	15
<b>Hours Required for MS Degree:</b>		<b>108</b>

Due to the academic calendar conversion from quarters to semesters, students will be going through a transition plan which will cause revisions to this curriculum.

## Communication Disorders and Sciences: Audiology Curriculum

Audiology students who began their studies in or after fall 2012 through 2014 will follow the Track I or Track II curricula

alternately. Audiology students who began their studies in fall 2015 will follow the Track FQ15 and students who begin their studies in fall 2016 will follow Track FQ16 curricula.

Due to the academic calendar conversion from quarters to semesters, students will be going through a transition plan which will cause revisions to these curriculum plans.

### Track I Curriculum

Year 1		Credit Hours
<b>Fall Quarter</b>		
CDS-507	Neurological Bases of Speech, Hearing and Language	4
CDS-591	Applied Topics in Communication Disorders and Sciences	1
CDS-601	Anatomy and Physiology of the Auditory System	4
CDS-601L	Anatomy and Physiology of the Auditory System Laboratory	1
CDS-603	Acoustics and Psychoacoustics	4
<b>Winter Quarter</b>		
CDS-581	Research Methods in Communication Disorders	4
CDS-604	Acoustic Phonetics and Speech Perception	2
CDS-609	Clinical Observation in Audiology	1
CDS-628	Audiologic Assessment	4
CDS-629	Clinical Methods in Audiology	2
<b>Spring Quarter</b>		
CDS-605	Embryology and Genetics of the Auditory System	2
CDS-616	Audiology Practicum I	1
CDS-631	Basic Amplification	3
CDS-646	Vestibular Assessment and Rehabilitation	4
CDS-646L	Vestibular Assessment and Rehabilitation Laboratory	1
HHV-504	Ethics in Health Care: Interdisciplinary Perspectives	2
<b>Summer Quarter</b>		
CDS-617	Audiology Practicum II	3
CDS-627	Pathophysiology of the Auditory System	3
CDS-644	Pediatric Audiology	3
<b>Year 2</b>		
<b>Fall Quarter</b>		
CDS-591	Applied Topics in Communication Disorders and Sciences I	1
CDS-618	Audiology Practicum III	3
CDS-635	Auditory Implants	3
CDS-643	Electrophysiologic Assessment of the Auditory System	4
CHS-501	Introduction to Biostatistics for the Health Scientist	3
<b>Winter Quarter</b>		
CDS-575	Issues in Counseling	2
CDS-619	Audiology Practicum IV	3
CDS-633	Adult and Geriatric Rehabilitative Audiology	4
CDS-608	Pharmacology	3
CDS-648	Advanced Electrophysiologic Assessment	4

(continued)

Track I Curriculum (continued)

<b>Spring Quarter</b>		
CDS-632	Adult Amplification	5
CDS-636	Educational Audiology	3
CDS-676	Vestibular II	2
CDS-816	Internship I	4
CHS 501	Health Care in America	2
<b>Summer Quarter</b>		
CDS-610	Seminar in Career Topics	2
CDS-634	Pediatric Hearing Aids and Habilitation	3
CDS-638	Auditory Processing	2
CDS-680	Investigative Project Planning Seminar	1
CDS-817	Internship II	4
<b>Year 3</b>		
<b>Fall Quarter</b>		
CDS-612	Clinical Operations and Practice Management	3
CDS-626	Hearing Conservation	3
CDS-818	Internship III	4
<b>Winter Quarter</b>		
CDS-661	Advanced Topics in Amplification	1
CDS-681	Investigative Project	2
CDS-819	Internship IV	5
<b>Spring Quarter</b>		
CDS-662	Supervision and Mentorship in Audiology	2
CDS-681	Investigative Project	2
CDS-820	Internship V	5
<b>Summer Quarter</b>		
CDS-891	Externship I	8
<b>Year 4</b>		
<b>Fall Quarter</b>		
CDS-892	Externship II	8
<b>Winter Quarter</b>		
CDS-893	Externship III	8
<b>Spring Quarter</b>		
CDS-894	Externship IV	8
<b>Hours Required for AuD Degree:</b>		<b>166</b>



## Track II Curriculum

Year 1		Credit Hours
<b>Fall Quarter</b>		
CDS-507	Neurological Bases of Speech, Hearing and Language	4
CDS-591	Applied Topics in Communication Disorders and Sciences	1
CDS-601	Anatomy and Physiology of the Auditory System	4
CDS-601L	Anatomy and Physiology of the Auditory System Laboratory	1
CDS-603	Acoustics and Psychoacoustics	4
<b>Winter Quarter</b>		
CDS-581	Research Methods in Communication Disorders	4
CDS-604	Acoustic Phonetics and Speech Perception	2
CDS-609	Clinical Observation in Audiology	1
CDS-628	Audiologic Assessment	4
CDS-629	Clinical Methods in Audiology	2
<b>Spring Quarter</b>		
CDS-605	Embryology and Genetics of the Auditory System	2
CDS-616	Audiology Practicum I	1
CDS-631	Basic Amplification	3
CDS-646	Vestibular Assessment and Rehabilitation	4
CDS-646L	Vestibular Assessment and Rehabilitation Laboratory	1
CHS 510	Health Care in America	2
<b>Summer Quarter</b>		
CDS-617	Audiology Practicum II	3
CDS-627	Pathophysiology of the Auditory System	3
CDS-644	Pediatric Audiology	3
<b>Year 2</b>		
<b>Fall Quarter</b>		
CDS-591	Applied Topics in Communication Disorders and Sciences I	1
CDS-618	Audiology Practicum III	3
CDS-635	Auditory Implants	3
CDS-643	Electrophysiologic Assessment of the Auditory System	4
CDS-626	Hearing Conservation	3
<b>Winter Quarter</b>		
CDS-575	Issues in Counseling	2
CDS-608	Pharmacology	3
CDS-619	Audiology Practicum IV	3
CDS-633	Adult and Geriatric Rehabilitative Audiology	4
CDS-648	Advanced Electrophysiology	4
<b>Spring Quarter</b>		
CDS-632	Adult Amplification	5
CDS-636	Educational Audiology	3
CDS-676	Vestibular II	2
CDS-816	Internship I	4
HHV-504	Ethics in Health Care: Interdisciplinary Perspectives	2

(continued)

Track II Curriculum (continued)

<b>Summer Quarter</b>		
CDS-610	Seminar in Career Topics	2
CDS-634	Pediatric Hearing Aids and Habilitation	3
CDS-638	Auditory Processing	2
CDS-680	Investigative Project Planning Seminar	1
CDS-817	Internship II	4
<b>Year 3</b>		
<b>Fall Quarter</b>		
CDS-612	Clinical Operations and Practice Management	3
CDS-818	Internship III	4
CHS-501	Introduction to Biostatistics for the Health Scientist	3
<b>Winter Quarter</b>		
CDS-661	Advanced Topics in Amplification	1
CDS-681	Investigative Project	2
CDS-819	Internship IV	5
<b>Spring Quarter</b>		
CDS-662	Seminar in Supervision and Mentorship	2
CDS-681	Investigative Project	2
CDS-820	Internship V	5
<b>Summer Quarter</b>		
CDS-891	Externship I	8
<b>Year 4</b>		
<b>Fall Quarter</b>		
CDS-892	Externship II	8
<b>Winter Quarter</b>		
CDS-893	Externship III	8
<b>Spring Quarter</b>		
CDS-894	Externship IV	8
<b>Hours Required for AuD Degree:</b>		<b>166</b>

## Track FQ15 Curriculum

Year 1		Credit Hours
<b>Fall Quarter</b>		
CDS-507	Neurological Bases of Speech, Hearing and Language	4
CDS-601	Anatomy and Physiology of the Auditory System	4
CDS-601L	Anatomy and Physiology of the Auditory System Laboratory	1
CDS-603	Acoustics and Psychoacoustics	4
<b>Winter Quarter</b>		
CDS-581	Research Methods in Communication Disorders	4
CDS-604	Acoustic Phonetics and Speech Perception	2
CDS-609	Clinical Observation in Audiology	1
CDS-628	Audiologic Assessment	4
CDS-629	Clinical Methods in Audiology	2
<b>Spring Quarter</b>		
CDS-605	Embryology and Genetics of the Auditory System	2
CDS-616	Audiology Practicum I	1
CDS-631	Basic Amplification	3
CDS-646	Vestibular Assessment and Rehabilitation	4
CDS-646L	Vestibular Assessment and Rehabilitation Laboratory	1
CHS-510	Health Care in America	2
<b>Summer Quarter</b>		
CDS-617	Audiology Practicum II	3
CDS-627	Pathophysiology of the Auditory System	3
CDS-657	Seminar in Teleaudiology	1
CDS-644	Pediatric Audiology	3
<b>Year 2</b>		
<b>Fall Quarter</b>		
CDS-591	Applied Topics in Communication Disorders and Sciences I	1
CDS-618	Audiology Practicum III	3
CDS-635	Auditory Implants	3
CDS-643	Electrophysiologic Assessment of the Auditory System	4
CDS-626	Hearing Conservation	3
<b>Winter Quarter</b>		
CDS-575	Issues in Counseling	2
CDS-608	Pharmacology	3
CDS-619	Audiology Practicum IV	3
CDS-633	Adult and Geriatric Rehabilitative Audiology	4
CDS-648	Advanced Electrophysiology	2
<b>Spring Quarter</b>		
CDS-632	Adult Amplification	5
CDS-636	Educational Audiology	3
CDS-676	Vestibular II	2
CDS-816	Internship I	4
HHV-504	Ethics in Health Care: Interdisciplinary Perspectives	2

(continued)

Track FQ15 Curriculum (continued)

<b>Summer Quarter</b>		
CDS-610	Seminar in Current Professional Issues	2
CDS-634	Pediatric Hearing Aids and Habilitation	3
CDS-638	Auditory Processing	2
CDS-680	Investigative Project Planning Seminar	1
CDS-817	Internship II	4
<b>Year 3</b>		
<b>Fall Quarter</b>		
CDS-612	Practice Management Across Settings	3
CDS-818	Internship III	4
CHS-501	Introduction to Biostatistics for the Health Scientist	3
CDS-591	Applied Topics in Communication Disorders and Sciences	1
CDS-658	Seminar in Tinnitus Assessment and Management	1
<b>Winter Quarter</b>		
CDS-661	Advanced Topics in Amplification	1
CDS-681	Investigative Project	2
CDS-819	Internship IV	5
<b>Spring Quarter</b>		
CDS-662	Seminar in Supervision and Mentorship	2
CDS-681	Investigative Project	2
CDS-820	Internship V	5
<b>Summer Quarter</b>		
CDS-891	Externship I	8
<b>Year 4</b>		
<b>Fall Quarter</b>		
CDS-892	Externship II	8
<b>Winter Quarter</b>		
CDS-893	Externship III	8
<b>Spring Quarter</b>		
CDS-894	Externship IV	8
<b>Hours Required for AuD Degree:</b>		<b>166</b>

## Track FQ16 Curriculum

Year 1		Credit Hours
<b>Fall Quarter</b>		
CDS-507	Neurological Bases of Speech, Hearing and Language	4
CDS-601	Anatomy and Physiology of the Auditory System	4
CDS-601L	Anatomy and Physiology of the Auditory System Laboratory	1
CDS-603	Acoustics and Psychoacoustics	4
<b>Winter Quarter</b>		
CDS-581	Research Methods in Communication Disorders	4
CDS-604	Acoustic Phonetics and Speech Perception	2
CDS-609	Clinical Observation in Audiology	1
CDS-628	Audiologic Assessment	4
CDS-629	Clinical Methods in Audiology	2
<b>Spring Quarter</b>		
CDS-605	Embryology and Genetics of the Auditory System	2
CDS-616	Audiology Practicum I	1
CDS-631	Basic Amplification	3
CDS-646	Vestibular Assessment and Rehabilitation	4
CDS-646L	Vestibular Assessment and Rehabilitation Laboratory	1
HHV-504	Ethics in Health Care: Interdisciplinary Perspectives	2
<b>Summer Quarter</b>		
CDS-617	Audiology Practicum II	3
CDS-627	Pathophysiology of the Auditory System	3
CDS-657	Seminar in Teleaudiology	1
CDS-644	Pediatric Audiology	3
<b>Year 2</b>		
<b>Fall Quarter</b>		
CDS-591	Applied Topics in Communication Disorders and Sciences I	1
CDS-618	Audiology Practicum III	3
CDS-635	Auditory Implants	3
CDS-643	Electrophysiologic Assessment of the Auditory System	4
CHS-501	Introduction to Biostatistics for the Health Scientist	3
<b>Winter Quarter</b>		
CDS-575	Issues in Counseling	2
CDS-608	Pharmacology	3
CDS-619	Audiology Practicum IV	3
CDS-633	Adult and Geriatric Rehabilitative Audiology	4
CDS-648	Advanced Electrophysiology	2
<b>Spring Quarter</b>		
CDS-632	Adult Amplification	5
CDS-636	Educational Audiology	3
CDS-676	Vestibular II	2
CDS-816	Internship I	4
CHS-510	Health Care in America	2

(continued)

Track FQ16 Curriculum (continued)

<b>Summer Quarter</b>		
CDS-610	Seminar in Current Professional Issues	2
CDS-634	Pediatric Hearing Aids and Habilitation	3
CDS-638	Auditory Processing	2
CDS-680	Investigative Project Planning Seminar	1
CDS-817	Internship II	4
<b>Year 3</b>		
<b>Fall Quarter</b>		
CDS-612	Practice Management Across Settings	3
CDS-818	Internship III	4
CDS-591	Applied Topics in Communication Disorders and Sciences	1
CDS-626	Hearing Conservation	3
CDS-658	Seminar in Tinnitus Assessment and Management	1
<b>Winter Quarter</b>		
CDS-661	Advanced Topics in Amplification	1
CDS-681	Investigative Project	2
CDS-819	Internship IV	5
<b>Spring Quarter</b>		
CDS-662	Seminar in Supervision and Mentorship	2
CDS-681	Investigative Project	2
CDS-820	Internship V	5
<b>Summer Quarter</b>		
CDS-891	Externship I	8
<b>Year 4</b>		
<b>Fall Quarter</b>		
CDS-892	Externship II	8
<b>Winter Quarter</b>		
CDS-893	Externship III	8
<b>Spring Quarter</b>		
CDS-894	Externship IV	8
<b>Hours Required for AuD Degree:</b>		<b>166</b>

## Clinical Education Experiences in Audiology and Speech-Language Pathology

Clinical training occurs throughout the curriculum, including both patient experiences and clinical methods course work. Enrollment in each quarter of practicum, internship, or externship is contingent upon satisfactory completion (grade of B or better) of the previous quarter's clinical education course. Clinical experiences include direct and indirect patient care activities across the scope of practice with diverse populations from all age groups at both on- and off-campus facilities.

## Graduation Requirements

The requirements for the Master of Science degree in speech-language pathology and the Doctor of Audiology degree include a cumulative academic GPA of 3.0 or greater and successful completion of the comprehensive examination. Audiology students also must complete their investigative projects. Thesis students must successfully complete the thesis process in lieu of passing a comprehensive examination.

All master's degree requirements must be completed within 48 months from the beginning of the first quarter in which a full-time student is enrolled in the program. Requirements for the doctoral degree must be completed within eight years of the beginning of the first quarter in which a full-time student is enrolled. Students must complete the number of quarter hours required by the program. Refer to the Department of Communication Disorders and Sciences Student Manual for additional discussion about graduation and degree progression.

## Educational Activities

The Department of Communication Disorders and Sciences provides professional education and training in speech-language pathology and audiology. Its programs are notable in that the education of speech-language pathologists and audiologists is enhanced by the opportunities, resources and facilities provided by a world-class academic medical center. In addition to didactic and clinical activities, students and faculty participate in journal clubs, rounds and development sessions. Students and faculty benefit from presentations by distinguished guests who share research and clinical expertise in audiology or speech-language pathology. Special seminars and presentations on various health care topics are available to students throughout Rush University Medical Center. Faculty members are involved in the education of residents and students in Rush Medical College. Faculty

members participate in grand rounds for various medical specialties and provide in-service programs on campus for staff at Rush University Medical Center and at the Johnston R. Bowman Health Center.

## Research Activities

Faculty members are involved in interprofessional and translational research in the areas of audiology, hearing science and speech-language pathology. Projects include cochlear implant processing, working memory and communication, adult speech disorders, dysphagia, neurogenic communication disorders, language and literacy in children, quality of life and hearing aids, aging and hearing loss, and many other topics related to human communication. Faculty members publish in professional journals and present at international, national and state meetings. Summaries of faculty research and professional activities are available online at the department's website. Students are encouraged to participate in the research process, including development of hypotheses, data collection, and presentation or publication of results.

## Thesis

The faculty's commitment to research and the belief that an appreciation of scientific endeavors is critical to the clinical process provide the basis for an optional thesis. Many students in graduate school choose to do a thesis, thereby gaining valuable research experience. A thesis project is databased and may be an original or replication study. Often students present the results of their research at a professional meeting or publish results in a professional journal. The thesis project is optional in the speech-language pathology curriculum, and students are encouraged to consider choosing this option. Audiology students have the opportunity to complete a thesis in lieu of the investigative project. The complete thesis policy is found in the student manual for the Department of Communication Disorders and Sciences.

## Investigative Project

Each student enrolled in the Doctor of Audiology program completes the investigative project during the third year of the curriculum. The objectives of the investigative project are to synthesize a body of literature related to a specific topic in audiology, to cultivate professional writing skills, to acquire didactic skills for dissemination of professional information and to develop organizational and verbal tools needed for professional presentations. Ordinarily, the investigative project includes three options: 1) Evidence-based practice systematic review;

2) Experimental project; or 3) Professional or clinical project. A complete description of the investigative project is found in the student manual for the Department of Communication Disorders and Sciences. Students are expected to submit the completed project for presentation at a state or national professional meeting or for publication.

## Service Activities

The CDS clinical staff and faculty of Rush University Medical Center provides a full range of diagnostic and therapeutic services to a large clinical population, both inpatients and outpatients. In addition, faculty and students participate in community and professional activities on the local, national and international level. Students and faculty participate in health fairs, screenings and other service activities throughout the year. Faculty members provide leadership, editorial and committee service to state and national scientific and professional associations.

## Bachelor of Science in Health Sciences: Mission

The mission of the College of Health Sciences is to advance the quality and availability of health care through excellence in education, research and scholarship, service and patient care. The college promotes the values of diversity, access and inclusion in all of its endeavors.

The mission of the Bachelor of Science in health sciences program is to prepare individuals to enter health professional careers by providing undergraduate courses designed and specifically related to knowledge needed to meet the entry requirements and to provide a thorough health science knowledge base for the advanced courses taken once a professional program is chosen.

## Bachelor of Science in Health Sciences: Program Overview

### The Program

The Bachelor of Science (BS) in health sciences program at Rush University is designed to better prepare students for competitive applications into graduate professional degree programs in a variety of health care professional areas.

The program's curriculum prepares students to enter health science professional degree programs which require or suggest a bachelor's degree as a prerequisite for admission. These

programs include, graduate degree-granting allied health programs (e.g., audiology, physician assistant, respiratory care, occupational therapy, physical therapy, perfusion technology, and medical laboratory science), graduate degree-granting nursing programs (e.g., graduate entry level nursing), medical school and graduate programs in the biomedical sciences (e.g., cellular biology, physiology and pharmacology).

Students will complete a medical science-based curriculum to prepare for graduate school, as well as be given the opportunity to focus on health care leadership skills or the area of health-wellness/community health. Graduates of associate degree health occupations programs may use this program to acquire leadership skills needed in their occupational area.

Students may also choose to focus on health-wellness, corporate health, community health and medical home care coordination.

The overall purpose of the program is to provide a high-quality education that is relevant and professionally sound to meet the needs of the health care community.

## Program Goals

1. To prepare students for admission to graduate professional degree programs in allied health, medicine, nursing and the biomedical sciences.
2. To provide graduates of associate degree health occupations programs the opportunity to obtain a Bachelor of Science degree to expand their academic preparation and acquire leadership competencies.
3. To provide the opportunity for students to acquire specific competencies in the area of health-wellness and community health.

## Program and Students Outcomes:

### Major concept areas:

1. Health Science
2. Communications
3. Ethical Issues
4. Critical Thinking
5. Management
6. Information Technology
7. Research

### General Program outcomes:

1. Students will gain an understanding of fundamental biological, chemical and physical properties underlying all life systems.



2. Students will gain a broad understanding of the various health care professions and prepare for entry into a profession of choice.
3. Students will explain how current knowledge, theory and research are integrated into the practice of various health professions.
4. Students will integrate communication skills to work effectively in health care teams toward accomplishing goals.
5. Students will acquire knowledge of the various health professions and will maintain best practices through continuing education and lifelong learning.
6. Students will practice the ethics and professional behaviors and incorporate these practices into their interactions with one another as colleagues and with the general public.
7. Students will incorporate information technology skills in a variety of health care professions and settings.
8. Students will engage in critical thinking, reflection and problem solving through evidence-based practice in multiple health care areas.
9. Students will analyze concerns with health care delivery and strategize ideas that can improve disease treatment and prevention.
10. Students will consider the factors that influence community and individual behaviors toward health care to improve care for those in need.
11. Students will appreciate and advocate for continuous improvement of the health care system through promoting public policy.
12. Students will demonstrate respect and adaptability for cultural, ethnic and individual diversity within a changing health care environment.

Content/discipline knowledge and skills for outcomes 1, 2, 5, 8 and 9 are assessed through assignments, examinations and other projects completed in the following courses: HSC 301, 302, 304, 305, 311, 312, 321, 322, 331, 333, 402, 404, 411, 412, 413, and electives HSC 430, 431, 432, 433, 434, and NTR 313, 323, 331, 333, 340, 401, 402, 403, 411, 412, 413, 415, 422.

Communication knowledge and skills for outcomes 4 and 12 are assessed through assignments, examinations and other projects completed in the following courses: HSC 301, 303, 412, 450, 451, 453, 455, 470, 471, 472, 473, and electives NTR 323, 422.

Ethical and diversity issues and concepts for outcomes 6, 9, 10, 11 and 12 are assessed through assignments, examinations and other projects completed in the following courses: HSC 301, 313, 314, 323, 450, 453, 455, 472, 473, 474, 477, and electives NTR 323, 333, 422.

Critical thinking skills for outcomes 3, 5, 8 and 9 are assessed as part of the General Education Program through papers, exams and projects completed in the following courses: HSC 313, 314, 323, 401, 421, 422, 450, 451, 452, 453, 454, 455, 456, 470, 471, 472, 473, 474, 476, 477, and electives HSC 430 and NTR 313, 323, 340, 401, 402, 403, 415, 422.

Information technology and skills for outcome 7 are assessed through assignments, examinations and other projects completed in the following courses: HSC 403, 450, 455, 456, 472, 473, and NTR 340, 415.

Knowledge of research methods and skills for outcome 3 are assessed through assignments, examinations and other projects completed in the following courses: HSC 324, 332, 421, 422, and NTR 313.

Students are assigned a faculty advisor upon confirmation of admission to the program. The role of the faculty advisor is to serve as a role model, mentor and resource and will act in the best interest of the student. The advisor serves as a direct link between the student and the College of Health Sciences and Rush University administration.

College oversight of the program will assure that the design, conduct and evaluation of the program is under the direct academic control of the institution. This will include supervision of the processes for student recruitment, admissions, student services, instruction, evaluation and student records.

## Clinical

Students will complete practicum experiences of their choice (as available) in a health profession for which they plan to enter graduate school to complete. Offerings may include nursing, medicine and various allied health fields. Students will shadow the health care providers as they conduct their day-to-day work.

## Bachelor of Health Sciences: Admission Requirements

Program entry requirements include satisfactory completion of two years of specified lower division course work at a regionally accredited college or university. Upper division course work for the Bachelor of Science degree in health sciences may be completed in as few as 21 months, full time. Students can elect a part-time option.

Admission to the program is on a competitive basis. Student selection will be based on a number of factors including overall grade point average, prerequisite grade point average, consistency of academic performance, course work completed prior to application, and communication abilities.

Requirements for admission to the professional phase of the program include:

1. A minimum of 60 semester credit hours (90 quarter hours) of lower division undergraduate course work from a regionally accredited U.S. institution
2. A minimum overall GPA of 2.75 out of 4.00 in undergraduate course work
3. Completion of all professional prerequisite required courses with a grade of C or better
4. Official transcripts from all colleges attended
5. A personal interview with program faculty
6. Three letters of recommendation
7. Completed application to the program and submission of official transcripts for all college course work completed
8. All applicants whose native language is not English must present evidence of proficiency in English by satisfactorily completing the Test of English as a Foreign Language examination (TOEFL). A waiver of this requirement may be requested if the individual has graduated from high school or successfully completed a higher education degree program (associate degree or higher) in the United States or one of its English-speaking protectorates.

### **Courses Required for Admission:\***

For admission to the BS in health sciences program, students are required to complete, at minimum, the core general education requirements detailed below. In preparation for graduate school, hours may vary based on graduate program for which the student is preparing. For specific courses, see core requirements and general education.

A minimum of 60 semester credit hours (90 quarter hours) of lower division undergraduate course work from a regionally accredited U.S. institution is required prior to admission to the BS in health sciences program. Prerequisite courses must include the general and biological sciences, mathematics, communications, the social sciences and humanities. Specific prerequisite courses may vary depending on the unique prerequisite requirements of the graduate level health professional program of interest to the student. For example, the prerequisite lower division course work required for medical school, though similar, may not be the same as that required for application to graduate school in the area of occupational therapy. Specific prerequisite courses are described below.

1. Chemistry (8-20 semester hours)
2. Biology (16-20 semester hours)

3. Physics (4-8 semester hours)\*\*
4. Mathematics and statistics (6-12 semester hours)
5. Communications (6 semester hours)
6. Social sciences (6 semester hours)\*\*\*
7. Humanities and fine arts (6 semester hours minimum)
8. Electives (3 to 9 semester hours)

\* Students wishing to enter medicine or the graduate biomedical sciences are required to have 16 semester credits (SC) of chemistry, 20 SC of biology, 8 SC of physics and 6 SH of mathematics (e.g., calculus I and II). Nursing and specific allied health fields may require only 8 SC of chemistry, 16 SC of biology, 4 SC of physics and 3 SC of mathematics. Clinical nutrition requires 8 SC of general chemistry, 4 SC of organic chemistry, 3 SC of microeconomics, 3 SC of accounting, 3 SC and 4 SC food preparation with laboratory.

\*\*The master's degree programs in medical laboratory science and nursing at Rush University do not require physics.

\*\*\* Students wishing to enter occupational therapy are required to have one course in sociology or anthropology plus a course in developmental psychology that covers birth through death lifespan. A combination of child psychology plus a course in adult aging meets this requirement.

### **Application for Admission**

Application for admission into the Bachelor of Science in health science program must be made through Rush University site at [ruapplying@rush.edu](mailto:ruapplying@rush.edu) before Aug. 1 for admission into the class entering in September. September is the only admission time for entry into the program. Prospective applicants may submit transcripts and a request for an unofficial evaluation to the following:

College of Health Sciences  
600 S. Paulina St., Suite 1001  
Chicago, IL 60612  
Phone: (312) 942-7120

### **Transfer of Credit**

Students who desire to complete additional elective courses, offered either at Rush University or at another regionally accredited college or university, may request to do so. These electives may be incorporated into the student's program plan with the approval of the student's academic advisor.

Students entering the BS in health sciences degree program will complete a minimum of 60 semester hours (90 quarter hours) of prerequisite course work prior to entry into the program. General education requirements are as follows:

## Minimum Core General Education Requirements:

All entering students must complete the following core general education requirements to be eligible for the Bachelor of Science degree awarded by Rush University.

Requirements	Semester Hours	Quarter Hours
Two courses in communications (English composition) Composition is required	6	9
One course in mathematics (college algebra or higher)	3	4
Two courses in life sciences (anatomy, biology, microbiology, pathophysiology, physiology)	6	9
One course in physical sciences (chemistry, physics)	3	4
One course in social sciences (government, history, political science, psychology, sociology)	3	4
One course in humanities (ethics, fine arts, literature, philosophy) Performance courses do not meet this requirement	3	4
Elective courses in communications, computer science, ethics, fine arts, humanities, life sciences, literature, philosophy, physical sciences, or social sciences to total 36 semester (56 quarter) hours	36	56
<b>Total Hours of Required and Elective Courses:</b>	<b>60</b>	<b>90</b>

### Lower Division Course Work:

Lower division course work must have been completed at a regionally accredited college or university. However, lower division courses will vary depending on the student's graduate school and career goals. Pre-medicine, pre-nursing and pre-allied health professional programs each have unique prerequisite requirements. The following general list encompasses these requirements (variations based on planned graduate school major are noted\*).

- **Chemistry** (8-20 semester hours)  
Suggested courses:
  - General chemistry with laboratory (4-8 SC)
  - Organic chemistry with Laboratory (0-8 SC)
  - Biochemistry with laboratory (0-4 SC)
  - Students may elect 1 semester of organic (4 SC) and 1 semester of biochemistry with laboratory (4 SC).
  - Biochemistry may be taken in year three at Rush if it is not completed as a prerequisite.
- **Biology** (16-20 semester hours)
  - General biology with laboratory (4-8 SC)
  - Microbiology with laboratory (4 SC)
  - Anatomy with laboratory (4 SC)
  - Physiology with laboratory (4 SC)
- **Physics** (4-8 semester hours)\*\*
  - Physics with laboratory (4-8 SC)

- **Mathematics and statistics** (6-12 semester hours)
  - College algebra
  - Calculus I, II
  - Statistics (3 SC)
- **Communications** (6 SC)
- **Social sciences** (6 semester hours)\*\*\*
  - General psychology (3 SC)
  - Sociology (0-3 SC)
  - Developmental psychology (0-3 SC)
- **Humanities and fine arts** (6 semester hours minimum)
- **Electives** (3-9 semester hours)

\* Students wishing to enter medicine or the graduate biomedical sciences are required to have 16 SC of chemistry, 20 SC of biology, 8 SC of physics and 6 SH of mathematics (e.g., calculus I and II). Nursing and specific allied health fields may require only 8 SC of chemistry, 16 SC of biology, 4 SC of physics and 3 SC of mathematics. Clinical Nutrition requires 8 SC of general chemistry, 4 SC of organic chemistry, 3 SC of microeconomics, 3 SC of accounting, 3 SC and 4 SC of food preparation with laboratory.

\*\*The master's degree programs in medical laboratory science and nursing at Rush University do not require physics.

\*\*\* Students wishing to enter occupational therapy are required to have one course in sociology, or anthropology plus a course in developmental psychology that covers birth through death lifespan. A combination of child psychology plus a course in adult aging meets this requirement.

## Proficiency in English

All applicants whose native language is not English must present evidence of proficiency in English by satisfactorily completing the Test of English as a Foreign Language examination (TOEFL).

A total TOEFL score of at least 88 on the Internet-based version, or 570 on the paper-based version, or 230 on the computer version must be achieved. In addition, applicants must score no less than 55 on the paper version, or 20 on the computer version, or 18 on the Internet-based version on each of the three subtests of the TOEFL (listening, structure/writing, and reading).

An official report of these scores must be received by the admissions office prior to the date(s) on which admission decisions are made for the program(s) to which the applicant has applied. To obtain information or to register to take the TOEFL, write directly to the following address:

Educational Testing Service  
P.O. Box 6151  
Princeton, New Jersey 08541-6151, U.S.A.

Applicants may also wish to visit the TOEFL website at <http://www.toefl.org>. The applicant should indicate on his or her application for the examination that results should be sent to institution code number 1676.

Applicants whose native language is not English and who have graduated from high school or successfully completed a higher education degree program (associate degree or higher) in the United States or one of its English-speaking protectorates may petition for waiver of the TOEFL requirement to the College of Health Sciences Dean's Office.

Waiver requests should include proof of receipt of a high school or college diploma from an accredited institution in the United States or one of its English-speaking protectorates. College or university degrees must be granted by a regionally accredited college or university to be considered for waiver of the TOEFL.

## Essential Functions

The following essential functions are required of all students enrolled in the Bachelor of Science in health sciences program:

**1. Observation:** Students must be able to observe

demonstrations and exercises related to their particular health science discipline including the use of simple and complex instruments.

- 2. Communication:** Students must be able to communicate clearly and sensitively with patients and family members. Students must be able to communicate effectively and efficiently with all members of the health care team.
- 3. Motor:** Students must be able to perform tasks related to their particular health science discipline.
- 4. Intellectual-Conceptual, Integrative and Quantitative Abilities:** These intellectual abilities include measurement calculations, reasoning, analysis and synthesis. Problem solving is a critical skill requiring all of these intellectual abilities.
- 5. Behavioral and Interpersonal Attributes:** Students must possess the emotional health required for full utilization of intellectual abilities. This includes, but is not limited to, the exercise of good judgment and the prompt completion of all responsibilities attendant to the performance of procedures with maximal attention to the safety of self and others in dealing with potentially hazardous equipment and materials. Students must be able to tolerate periods of taxing workloads and function effectively under stress and with unpleasant materials. Students must be able to adapt to changing environments, to display flexibility, and to learn to function in the face of uncertainties inherent in the clinical situations. Compassion, integrity, concern for others, interpersonal skills, interest and motivation, as well as the ability to maintain confidentiality of patient results, are all personal qualities that will be assessed during the education process.
- 6. Academic Performance:** Students must obtain information from lectures, laboratory sessions/exercises, audiovisual materials and written materials. Students must take essay and multiple-choice tests, complete papers, deliver presentations and perform required clinical practice procedures.

Each student is expected to perform the above, with or without reasonable accommodation. Reasonable accommodation is defined as any reasonable change in the environment or in the way activities are usually done that enables an individual with a disability to participate as fully as possible in the academic program. Accommodations may include modification of policies, practices and procedures or the provision of auxiliary aids for communication. Students must not pose a threat to the safety or well-being of patients, other students, staff or themselves.

A request for accommodation or modification is not cause for withdrawal of the offer of acceptance. Any student can request accommodations once enrolled in the program. If an

accommodation is requested, the department may require additional documentation and information and will follow up with the student to discuss the specifics of the request and the appropriate plan of action. The program reserves the right to require applicants or students to demonstrate any of these essential functions.

## **Bachelor of Health Sciences: Academic Policies**

### **Academic Progression**

High academic performance in all courses is expected. Students will be considered in good standing at Rush University unless placed on academic probation. A cumulative grade point average of at least 2.0 is required to be considered in good standing and to be eligible to continue in the baccalaureate program. Cumulative grade point averages will be reviewed after each quarter.

The faculty reserves the right to request the withdrawal of a student whose conduct, health or performance demonstrates lack of fitness for continuance in a health profession. Any such student not voluntarily withdrawing will be dismissed from the University, regardless of grade point average.

### **Academic Probation**

Academic probation is assigned to any student who receives a quarterly grade point average below 2.0, or whose cumulative grade point average falls below 2.0. Students placed on probation have two quarters in which to regain the status of good standing as follows:

- The next quarter after being placed on probation, the student must attain a quarterly grade point average of at least 2.0.
- Two quarters after being placed on probation, the student must have a cumulative grade point average above 2.0.

Failure to make the minimum quarterly grade point average one quarter after probation regardless of the cumulative grade point average, or failure to make the minimum cumulative grade point average two quarters after probation, will result in dismissal from the University.

### **"D", "F" or "N" Grades in the Bachelor of Science Program**

Undergraduate students who receive an F or N grade in any course must repeat that course with the F or N grade being replaced by the grade earned upon repeating the course. In

the event that a student is required to repeat a course that is a prerequisite for an advanced course, the advanced course may not be taken until the student successfully passes the prerequisite course. Thus, the student's progression in the program may be affected. Students who receive a second D, F or N grade in the same academic year will be dismissed from the program, regardless of cumulative grade point average.

### **Student Appeals**

Please see the College of Health Sciences Student Academic Appeal and Grievance Procedures section of this catalog.

### **Student Professional and Community Service Requirement**

Please see the College of Health Sciences Student Professional and Community Service policy section of this catalog.

## **College of Health Sciences/Rush University Academic Policies**

Academic policies specific to the College of Health Sciences are located earlier in this catalog. In addition, the Academic Resources and Policies section of this catalog contains Rush University academic policies.

## **Bachelor of Health Sciences: Curriculum**

### **Upper Division Course Work**

Rush University provides two years of upper division course work to complete the requirements for the Bachelor of Science in Health Sciences.

Upper division course work consists of core courses required of all students and elective courses offered within three concentrations:

1. Medical sciences
2. Leadership
3. Health/wellness

For the 2016-17 academic year, only the medical sciences concentration will be offered to incoming students. Please note that the leadership and health and wellness concentrations are not being offered at this time.

Students must complete a minimum of 90 quarter hours (QH) of upper division course work to include a minimum of 45 QH in the required core and at least 45 QH of required concentration course work, as approved by their academic advisor.

## Core Courses Required of All Students

HSC-301	Introduction to the Health Professions	4
HSC-303	Professional Writing	3
HSC-313	Health Care Ethics	3
HSC-314	Health Care in America	3
HSC-323	Health Care Disparities	4
HSC-324	Biostatistics	3
HSC-332	Introduction to Research	5
HSC-333	Epidemiology	4
HSC-412	Patient Assessment	4
HSC-421	Practicum	5
HSC-422	Capstone Project	5
<b>Total Quarter Hours</b>		<b>43</b>

## Medical Sciences Concentration

HSC-302	Anatomy with Laboratory	5
HSC-304	Laboratory Fundamentals or Biochemistry	4
HSC-311	Medical Physiology	5
HSC-312	Clinical Immunology	4
HSC-321	Hematology*	4
HSC-322	Clinical Chemistry	4
HSC-331	Microbiology	5
HSC-401	Mycology, Parasitology, Virology*	4
HSC-402	Genetics	4
HSC-403	Health Care Informatics*	4
HSC-404	Nutrition*	3
HSC-411	Molecular Diagnostics*	4
HSC-413	Pharmacology	4
HSC-423	Fundamentals of Neuroscience*	4
<b>Total Quarter Hours</b>		<b>47-54</b>

\*Additional electives may be substituted for these courses with approval of the student's advisor.

## Leadership Concentration

HSC-450	Management Principles	4
HSC-451	Leadership Theory and Practice	4
HSC-452	Health Care Budgeting and Finance	4
HSC-453	Patient and Practitioner Education	5
HSC-454	Human Resources	4
HSC-455	Quality Improvement	4
HSC-456	Managed Care	4
HSC-457	Issues and Trends in Health Care	5
Electives (must be approved by advisor)		12
<b>Total Quarter Hours</b>		<b>46</b>

## Health Wellness Concentration

HSC-450	Management Principles	4
HSC-451	Leadership Theory and Practice	4
HSC-453	Patient and Practitioner Education	5
HSC-470	Principles of Health and Wellness I	4
HSC-471	Principles of Health and Wellness II	4
HSC-472	Corporate Health Programs*	4
HSC-473	Community Health*	4
HSC-474	Medical Home: Principles and Practice*	4
HSC-475	Fitness and Health*	3
HSC-476	Chronic Disease Management	4
Electives		4
<b>Total Quarter Hours</b>		<b>45</b>

\*Additional electives may be substituted with approval of the student's academic advisor.

## Upper Division Curriculum:

### Medical Science Concentration (Subject to change)

Year 1		Credit Hours
<b>Fall Quarter</b>		
HSC-301	Introduction to the Health Professions	4
HSC-303	Professional Writing	3
HSC-311	Medical Physiology	5
HSC-323	Health Care Disparities	4
Subtotal		<b>16</b>
<b>Winter Quarter</b>		
HSC-302	Anatomy with Laboratory	5
HSC-312	Clinical Immunology	4
HSC-313	Health Care Ethics	3
HSC-314	Health Care in America	3
Subtotal		<b>15</b>
<b>Spring Quarter</b>		
HSC-304	Laboratory Fundamentals OR	4
HSC-305	Principles of Biochemistry	4
HSC-321	Hematology*	4
HSC-322	Clinical Chemistry	4
HSC-324	Biostatistics	3
Subtotal		<b>15</b>
<b>Summer Quarter</b>		
HSC-331	Microbiology	5
HSC-332	Introduction to Research	5
HSC-333	Epidemiology	4
Subtotal		<b>14</b>
Year 2		Credit Hours
<b>Fall Quarter</b>		
HHSC-401	Mycology, Parasitology, Virology* OR	4
HSC-423	Fundamentals of Neuroscience*	4
HSC-402	Genetics	4
HSC-403	Health Care Informatics*	4
HSC-404	Nutrition*	3
Subtotal		<b>15</b>
<b>Winter Quarter</b>		
HSC-411	Molecular Diagnostics*	4
HSC-412	Patient Assessment	4
HSC-413	Pharmacology	4
Subtotal		<b>12</b>
<b>Spring Quarter</b>		
HSC-421	Practicum	5
HSC-422	Capstone Project	5
Subtotal		<b>10</b>

\* Electives may be substituted for some of the courses indicated by an asterisk (\*). Elective courses must be approved by the student's academic advisor and the program director and correspond with the student's career goals.

### Leadership Concentration (Subject to change)

Year 1		Credit Hours
<b>Fall Quarter</b>		
HSC-301	Introduction to the Health Professions	4
HSC-303	Professional Writing	3
HSC-450	Management Principles	4
HSC-451	Leadership Theory and Practice	4
Subtotal		<b>15</b>
<b>Winter Quarter</b>		
HSC-313	Health Care Ethics	3
HSC-314	Health Care in America	3
HSC-452	Health Care Budgeting and Finance	4
HSC-453	Patient and Practitioner Education	5
Subtotal		<b>15</b>
<b>Spring Quarter</b>		
HSC-323	Health Care Disparities	4
HSC-324	Biostatistics	3
HSC-454	Human Resources	4
HSC-455	Quality Improvement	4
Subtotal		<b>15</b>
<b>Summer Quarter</b>		
HSC-332	Introduction to Research	5
HSC-333	Epidemiology	4
HSC-456	Managed Care	4
	Elective	4
Subtotal		<b>17</b>
Year 2		Credit Hours
<b>Fall Quarter</b>		
HSC-403	Health Care Informatics	4
HSC-404	Nutrition	3
HSC-457	Issues and Trends in Health Care	5
	Elective	4
Subtotal		<b>16</b>
<b>Winter Quarter</b>		
HSC-411	Molecular Diagnostics*	4
HSC-412	Patient Assessment	4
	Elective	8
Subtotal		<b>16</b>
<b>Spring Quarter</b>		
HSC-421	Practicum	5
HSC-422	Capstone Project	5
Subtotal		<b>10</b>

\*Electives may be substituted for some of the courses indicated by an asterisk (\*). Elective courses must be approved by the student's academic advisor and the program director and correspond with the student's career goals.

## Health and Wellness Concentration (Subject to change)

Year 1		Credit Hours
<b>Fall Quarter</b>		
HSC-301	Introduction to the Health Professions	4
HSC-303	Professional Writing	3
HSC-450	Management Principles	4
HSC-451	Leadership Theory and Practice	4
Subtotal		<b>15</b>
<b>Winter Quarter</b>		
HSC-313	Health Care Ethics	3
HSC-314	Health Care in America	3
HSC-453	Patient and Practitioner Education	5
HSC-470	Principles of Health and Wellness I	4
Subtotal		<b>15</b>
<b>Spring Quarter</b>		
HSC-323	Health Care Disparities	4
HSC-324	Biostatistics	3
HSC-471	Principles of Health and Wellness II	4
	Elective	4
Subtotal		<b>15</b>
<b>Summer Quarter</b>		
HSC-332	Introduction to Research	5
HSC-333	Epidemiology	4
HSC-472	Corporate Health Programs	4
Subtotal		<b>13</b>
Year 2		Credit Hours
<b>Fall Quarter</b>		
HSC-403	Health Care Informatics	4
HSC-404	Nutrition	3
	Elective	4
Subtotal		<b>15</b>
<b>Winter Quarter</b>		
HSC-412	Patient Assessment	4
HSC-473	Medical Home: Principles and Practice	4
HSC-475	Fitness and Health	3
HSC-476	Chronic Disease Management	5
Subtotal		<b>16</b>
<b>Spring Quarter</b>		
HSC-421	Practicum	5
HSC-422	Capstone Project	5
Subtotal		<b>10</b>

\*Electives may be substituted for some of the courses indicated by an asterisk (\*). Elective courses must be approved by the student's academic advisor and the program director and correspond with the student's career goals.

## Transfer of Credit

Students who desire to complete additional elective courses, offered either at Rush University or at another regionally accredited college or university, may request to do so, and these electives may be incorporated into the student's program plan with the approval of the student's academic advisor.

## Bachelor of Health Sciences: Graduation Requirements

The following degree requirements must be met:

### Residency Requirement

The Bachelor of Science degree in Health Sciences requires a minimum of 180 quarter hours. This includes at least 90 quarter hours earned at a lower division college or university, or at an affiliated college. A minimum of 45 quarter hours of academic credit shall be earned as an upper division student in academic residence at Rush University. Candidates for the Bachelor of Science degree must earn a 2.0 cumulative grade point average in all computed upper division credits taken at Rush University.

## PhD in Health Sciences: Program Overview

The Doctor of Philosophy (PhD) in health sciences degree program, formally offered through the Graduate College, is designed to prepare health science professionals to assume major leadership, research and educational roles within their professions, as well as to provide career advancement opportunities. This interdisciplinary PhD program of study includes core course work in education, leadership, management, research and statistics. Advanced course work in a health science professional track, as well as elective courses in related areas, are included. The completion of a research project culminating in the successful defense of a dissertation is also required.

In addition to core requirements in management, leadership, research and statistics, the Doctor of Philosophy in health sciences offers ten specialization tracks. Specialty areas available include medical laboratory science, speech pathology, audiology, health systems management, nutritional sciences, medical physics, occupational therapy, perfusion technology, physician assistant studies and respiratory care.

Full-time students may complete formal courses by the end of the second year. After passing a comprehensive written examination on fundamental principles related to education, leadership, management, research and the student's chosen area of



concentration, the student must present a dissertation proposal that meets the approval of his or her advisory committee.

For the remainder of graduate training, the degree candidate concentrates on the dissertation research project under the direction of his or her advisor and committee. The research is conducted over a one- to three-year period. The PhD degree, which can usually be earned in four or five years, demonstrates the capability for independent research and recognizes a unique contribution to scientific knowledge.

The program is intended to advance the science and practice of health care by providing a link between the biomedical sciences, clinical research and practice. By incorporating a required research project, the program will increase knowledge within the discipline, provide for interdisciplinary collaboration, and help train future faculty for the field.

### **PhD in Health Sciences: Program Goals**

1. To prepare students to discover and disseminate new knowledge to provide high-quality, accessible and cost-effective health care and related services in the allied health sciences
2. To prepare students to conduct outcomes research to improve patient care and inform health policy.
3. To prepare students to incorporate interprofessional and interdisciplinary collaboration into the design and conduct of research.
4. To prepare students to conduct research that is ethical and responsible.
5. To provide core competencies in the areas of research, education and leadership.
6. To provide advanced, discipline-specific cognate courses to ensure that these practitioners are well versed in the latest science related to their specific allied health disciplines.
7. To prepare future faculty and leaders in the allied health sciences to teach, practice and perform research across the continuum of health care.

This program is a collaboration between the Graduate College and the College of Health Sciences at Rush University, and core faculty hold appointments in both the Graduate College and the College of Health Sciences. The Division of Health Sciences is dedicated to the mission, vision and values of the Graduate College, the College of Health Sciences, the University and the Medical Center.

### **PhD in Health Sciences: Career Outlook**

PhD in health sciences program graduates are prepared to assume roles as academicians, clinical researchers and leaders in allied health. Research skills will be based on the integration of knowledge from the biological, behavioral, educational, management and clinical sciences. Research will contribute to the scientific basis of care provided to patients to improve quality, access and cost of health care and related services. Graduates will also have the leadership skills necessary to serve as senior level professionals in their allied health disciplines and influence health care systems and policy.

The overall purpose of the program is to provide an outstanding, high-quality education that is relevant and professionally sound to meet the allied health leadership needs of the health care community. Inherent in this purpose is the goal to prepare future faculty and leaders who are able to discover and disseminate new knowledge in the allied health sciences.

The curriculum is designed to train and educate leaders in the health sciences. The specialty tracks are intended to offer advanced, discipline-specific cognate courses to ensure that these practitioners are well versed in the latest science related to their specific allied health disciplines. The goal is to provide experienced allied health professionals with a broad-based, interdisciplinary education that will prepare graduates to teach, practice and perform research across the continuum of health care.

### **PhD in Health Sciences: Admission Requirements**

Applicants must have completed a Master of Science degree or higher degree from a regionally accredited college or university, provide official transcripts from each college or university attended, and hold appropriate certification or licensure in their individual health science profession by a major U.S. certification or licensing agency, as applicable. Courses taken outside the United States may be considered for transfer with the approval of the section director, but all such courses must be evaluated by the Educational Credential Evaluators (ECE) and be judged equivalent by U.S. standards.

In addition, applicants must do the following:

- Possess a minimum overall grade point average (GPA) of 3.0 on a 4.0 scale.
- Submit scores from the Graduate Record Examination (GRE). It is recommended that you have verbal, quantitative and analytic scores near the 50th percentile. Please use the Rush University institution code 3263.

- Complete all prerequisite courses where required with a grade of 3.0 or better. All prerequisite courses must be completed by the time the student begins the program.
- Provide documentation of specialty certification and licensure.
- Provide three letters of recommendation from persons who are knowledgeable about the quality of the applicant's scholarly activities or work experiences.

Acceptable health care experience in the professional area of study is required for admission. Prior research experience, especially in a medical environment, will also be considered and has the benefit of increasing the candidate's understanding of the biomedical research process. Specific admission requirements may be waived by the Graduate College Council. These will be addressed on a case by case basis.

For more information, please contact the division director:

Douglas Kuperman PhD, RRT  
 Division Director  
 Phone: (312) 942-8271  
 Email: douglas\_kuperman@rush.edu

## Admissions Applications

Application for the Rush University PhD in Health Sciences Program must be completed online

## Transfer of Credit

The PhD program in health sciences consists of four major core areas:

- Education (12 QH)
- Research and statistics (21 QH)
- Leadership (10 QH)
- Professional track (6 QH)

Students holding a master's degree will be able to transfer 30 to 45 quarter hours into the PhD program at no cost. A formal research project culminating in a dissertation constitutes 12 quarter hours of credit. In addition to the above core courses, students will be able to take elective and independent study courses to obtain 120 QH required for the degree.

Additional graduate course work may be accepted subject to the approval of the major advisor and the section director for doctoral level courses taken at other institutions, if they are judged to meet divisional requirements. Grades from courses transferred from another institution are not recorded on the student's

academic record; the number of credits is recorded and added to the cumulative number of credits.

The minimum number of quarter hours required for the PhD degree in health sciences is 120 quarter hours. A minimum of 45 credit hours must be taken at Rush to fulfill residency requirements. Students entering the program at the bachelor's level will be required to complete one of the currently offered Master of Science degree programs in their area of specialty or complete 30 to 45 quarter hours of acceptable graduate credit.

## Professional Track (16 QH)

Professional track cognate courses in the various professional areas in which a student holds certification or licensure are provided with associated learning outcomes as follows. Upon completion of the program, the student will demonstrate the following:

1. An increased knowledge base in the professional specialty area.
2. Synthesis of an interdisciplinary perspective related to everyday activities and application of these perspectives, as well as knowledge generated in health science to promote evidence-based practice.
3. Presentation of research related to the professional track at state and national meetings.
4. Teaching allied health-health science students in undergraduate or graduate programs.
5. Initiation and participation in communities of practice and other collaborations with professionals and community members to mobilize resources to best meet learner needs and enhance professional growth.
6. Development of expertise in ways that cross conventional disciplinary lines.
7. Identification of professional venues, including conferences and journals for publication, and dissemination of results.
8. Presentation of research findings to peers during organized extracurricular research seminars.
9. Preparation of research manuscripts suitable for submission for publication.
10. Maintenance of a research portfolio.
11. Use of evidence-based practice as part of daily clinical decision making.

Education Core Courses		Credit Hours
HSC-601	Education Theories and Methods	3
HSC-602	Curriculum and Instruction	3
HSC-603	Methods and Evaluation	3
HSC-604	Teaching Practicum	3
Research Core Courses		
HSC-610	Research Design I	4
HSC-611	Research Design II	4
HSC-612	Statistics I	4
HSC-613	Statistics II	4
HSC-614	Grantsmanship	3
HSC-615	Research Seminar I	1
HSC-616	Research Seminar II	1
Leadership Core Courses		
HSC-620	Leadership Theory	3
HSC-621	Issues in Health Care	3
HSC-622	Ethics in Clinical and Research Settings	1
HSC-623	Management and Supervision in Higher Education	3
Professional Tracks*		
See Professional Sections for Listings		6
Elective Courses**		
Electives (Variable)		4-19
Independent Study (variable credit)***		
Independent Study		variable
Dissertation****		
HSC-617	Dissertation Research	12
MS Graduate Transfer Credit		
Graduate Course Credit Transfer		30-45
<b>Quarter Hours Required for PhD</b>		<b>120</b>

\* Variable: Minimum 6 QH

\*\* Elective courses may be taken at Rush or other appropriate institutions

\*\*\* Variable credit with advisor approval

\*\*\*\* Variable: Minimum 12 QH

## Health Systems Management: Philosophy, Mission, Vision and Values

### Philosophy

The health systems management master's program, which started in 1979, educates students for highly successful careers in the rapidly growing field of health care management. Graduates become hospital and health systems administrators and health care consultants, manage physician practices, work in international health care development, and manage professional associations. The hallmark of the program is its practitioner-teacher model, where graduate students learn from practitioners and practice what they learn. The program has an outstanding faculty to student ratio, which provides many opportunities for mentoring and professional growth. The program, which is ranked by U.S. News and World Report among the elite top five in the nation and accredited by the Commission on Accreditation of Healthcare Management Education (CAHME), links practitioner-focused course work with real-world management experience. Students study a comprehensive health management curriculum taught by experienced educators who are also top health care administrators.

### Mission

Our mission is to prepare individuals for leadership roles in the field of health care management. Our practitioner-teacher model integrates lifelong learning, scholarship and service to ensure our diverse students, faculty and alumni are leaders in transforming health care.

Our curriculum is designed to provide the knowledge, skills, abilities and values required to succeed in the field of health care management. An emphasis on competency and professional skills development — and an orientation toward lifelong learning — ensures that new graduates are well prepared for early careerist positions and that our alumni hold positions of increasing responsibility during their careers.

Our practitioner-teacher model provides leadership development opportunities for the faculty, ensuring that they stay abreast of the most recent conceptual frameworks and best practices in the field. Their roles as practitioner faculty provide them with opportunities to teach and mentor the next generation of health care leaders.

### Vision

We will be recognized as the premier graduate health care management program for developing leaders to transform health care.

Our practitioner-teacher model will be recognized as an ideal way to educate and train health administration graduate students. Through participation in the program's practitioner-teacher model, our faculty will be known for innovation and excellence in health care management practice, education and scholarship.

### **Values**

Our program embraces the values of Rush University Medical Center, Rush University and the College of Health Sciences. These values include: innovation, collaboration, accountability, respect, excellence, diversity, inclusion and accommodation.

## **Health Systems Management: Admission Requirements**

Each applicant must have a bachelor's degree from an accredited college or university or anticipate completion of that degree prior to the start of the HSM degree program. The two prerequisite courses, which consist of an undergraduate course in accounting and an undergraduate course in statistics, also must be completed prior to enrollment. An undergraduate course in microeconomics is highly recommended. An applicant fills out an online application, a personal statement, provides three letters of recommendation and submits official copies of their college or university transcripts from every college or university previously attended. In addition, each applicant needs to submit scores from either the Graduate Record Examination (GRE) or the Graduate Management Aptitude Test (GMAT). Applications are submitted through the Healthcare Administration, Management and Policy Centralized Application Service (HAMPCAS). An international student also must submit a credentialing evaluation of his or her international education, as well as the results from the Test of English as a Foreign Language (TOEFL).

Each qualified applicant is invited to Rush for an admissions visit. The visit typically includes four faculty interviews, lunch with a current student and an appointment with the Office of Student Financial Aid.

## **Health Systems Management: Academic Policies**

### **Enrollment**

While the program is primarily designed for full-time study, students can enroll in the program either on a full- or part-time basis. Full-time students typically attend the program for six

quarters over two academic years, with a summer break. Part-time students typically take two courses per quarter. The program must be completed within five years unless the student is granted a waiver by program officials.

### **Academic Progress**

All students in the Department of Health Systems Management must achieve a grade point average of 3.0 (A = 4.0) each quarter to maintain satisfactory academic status. A student is placed on academic probation when his or her grades fall below a quarterly or cumulative GPA average of 3.0 or when a student receives a grade of F in any course. A student on academic probation remains on probation until he or she has met the requirements established by the program for removal from academic probation.

### **Academic Advising**

All students are assigned an academic advisor from among the core faculty during orientation week. By the end of the first quarter, students are also assigned a career advisor from among Rush practitioner-teacher faculty.

## **College of Health Sciences/Rush University Academic Policies**

Academic policies specific to the College of Health Sciences are located earlier in this catalog. In addition, the Academic Resources and Policies section of this catalog contains Rush University academic policies.

## **Health Systems Management: Curriculum**

The curriculum is designed to instruct students in the current theory and practice of health services management, including the study of organizational behavior, quantitative and analytical techniques, planning, finance, and human resources management. The curriculum structure gives students the opportunity to apply managerial principles in real-world learning environments and to design and conduct applied health services research projects.

The curriculum content focuses on the following core content areas: professional development, operations and information systems, human resources and organizational design, health care business, finance, analytics, and emerging content.

**HSM Full-Time Program of Study**  
(Students Entering Fall 2016)

Year 1		Credit Hours
<b>Fall Quarter</b>		
HSM-502	Health Care Organization	2
HSM-504A	Professional Seminar I	2
HSM 506	Patient Experience	2
HSM-515	Human Resource Management	4
HSM-531	Health Care Financial Accounting	4
HSM-550A	HSM Internship	1
<b>Winter Quarter</b>		
HSM-504B	Professional Seminar II	2
HSM-557	Quality in Health Care	3
HSM-536	Corporate Finance	4
HSM-533	Health Care Economics	4
HSM-552	Health Care Information Systems	2
HSM-550B	HSM Internship	1
<b>Spring Quarter</b>		
HSM-551	Health Informatics	2
HSM-514	Statistics for Health Care Management	3
HSM-567	Health Insurance and Managed Care	3
HSM-572	Health Care Operations Management	4
HSM-590/592/594	Topics in Health Systems Management (Elective)*	2
HSM-550C	HSM Internship	1
* Students may enroll in year one or year two for a total of six elective credits required to graduate (three courses). HSM elective course numbers are 590, 592 or 594, taken in order of sequence, depending on when you choose to start your electives.		
<b>Year total</b>		<b>44-46</b>
Year 2		Credit Hours
<b>Fall Quarter</b>		
HSM-560	Health Policy	3
HSM-559	Health Care Planning and Marketing	4
HSM-532	Health Care Managerial Finance	4
HSM-597A	Master's Project I	4
<b>Winter Quarter</b>		
HSM-543	Health Law	3
HSM-545	Organizational Analysis and Change	4
HSM 576	Ethics for Health Care Managers	2
HSM-590/592/594	Topics in Health Systems Management (Elective)*	2
HSM-597B	Master's Project II	4
<b>Spring Quarter</b>		
HSM-523	Managerial Epidemiology	3
HSM-593	Governance and Leadership	2
HSM-596	HSM Capstone: Strategic Management of Health Care Organizations	4
HSM-590/592/594	Topics in Health Systems Management (Elective)*	2
HSM-590/592/594	Topics in Health Systems Management (Elective)*	2
* A total of six elective credits are required to graduate (three courses). HSM elective course numbers are 590, 592 or 594, taken in order of sequence, depending on when you choose to start your electives.		
<b>Year total</b>		<b>41-43</b>
<b>Hours Required for MS Degree:</b>		<b>87</b>

**HSM Part-Time Program of Study**  
(Students Entering Fall 2015)

Year 1		Credit Hours
<b>Fall Quarter</b>		
HSM-502	Health Care Organization	2
HSM-504A	Professional Seminar I	2
HSM 506	Patient Experience	2
<b>Winter Quarter</b>		
HSM-557	Quality in Health Care	3
HSM-504B	Professional Seminar II	2
HSM-552	Health Care IS	2
<b>Spring Quarter</b>		
HSM-514	Statistics for Healthcare Management	3
HSM-551	Health Informatics	2
Year 2		Credit Hours
<b>Fall Quarter</b>		
HSM-515	Human Resource Management	4
HSM-531	Health Care Financial Accounting	4
<b>Winter Quarter</b>		
HSM-533	Health Care Economics	4
HSM-543	Health Law	3
<b>Spring Quarter</b>		
HSM-567	Health Insurance and Managed Care	3
HSM-572	Health Care Operations Management	4
Year 3		Credit Hours
<b>Fall Quarter</b>		
HSM-559	Health Care Planning and Marketing	4
HSM-560	Health Policy	3
<b>Winter Quarter</b>		
HSM-536	Corporate Finance	4
HSM-545	Organizational Analysis and Change	4
<b>Spring Quarter</b>		
HSM-593	Governance and Leadership	2
HSM-590/592/594	Topics in Health Systems Management (Elective)	2
HSM-590/592/594	Topics in Health Systems Management (Elective)	2
Year 4		Credit Hours
<b>Fall Quarter</b>		
HSM-597A	Master's Project	4
HSM-532	Health Care Managerial Finance	4
<b>Winter Quarter</b>		
HSM-579B	Master's Project II	4
HSM-590/592/594	Topics in Health Systems Management (Elective)	2
HSM-576	Ethics for Health Care Managers	2
<b>Spring Quarter</b>		
HSM-523	Managerial Epidemiology	3
HSM-596	Strategic Management of Health Care Organizations	4

*Part time students should consult with their academic advisors before enrolling in courses since schedules vary from student to student.*

## Health Systems Management: Graduation Requirements

To be eligible to graduate, a student must successfully complete all the Department of Health Systems Management's academic requirements, which include earning a minimum of 87 quarter hours of credit and achieving a minimum cumulative grade point average of 3.0.

In addition, students must complete a minimum of 440 hours of work in a health care management internship. Most students will complete this by working in a part-time student job during the academic program and registering for HSM-550A, B and C.

Students need to have at least 16 documented contact hours of professional or community service.

## Health Systems Management: Faculty Work/Service Activities

Members of the faculty of the Department of Health Systems Management are actively involved in the operation of Rush University Medical Center as hospital administrators and health care planners, university administrators, financial managers, clinicians, attorneys, researchers, and information services managers. They serve as consultants to hospitals, planning bodies and other organizations.

Faculty members hold leadership positions, participate in seminars and engage in other professional activities sponsored by the American College of Healthcare Executives, the American Hospital Association, the Chicago Health Executives Forum, the Healthcare Financial Management Association, the Association of University Programs in Health Administration, the Commission on Accreditation of Healthcare Management Education, the Healthcare Information Management Systems Society and the Illinois Hospital and Health Systems Association.

## Health Systems Management: Career Services

Health systems management students receive ongoing career mentoring, counseling and related services throughout their academic career. During the first academic year, full-time students are placed in part-time jobs throughout Rush University Medical Center. The job sites include Perioperative Services, Nursing Administration Revenue Management, Human Resources, Finance, Medical Affairs, Enterprise Resource Planning, Capital Projects, Long Term Care, Quality and Accreditation, Women and Children's Services, Patient Relations, Emergency Management,

Rush Health, Emergency Department, Health and Aging, Strategic Outreach, and Rush University Medical Group. The jobs provide practical experience, reinforce the course work, produce a more dynamic classroom experience and offer students a multifaceted perspective on the field of health care management. The student's manager also functions as a preceptor for the work experience.

Program faculty and staff provide assistance identifying opportunities for summer internships and part-time work during the second academic year and counseling or assistance to secure postgraduate fellowships or jobs.

While students receive individualized input regarding their career goals, the program's Professional Seminar series provides systematic training, guidance and feedback in professional skills development and career planning.

## Health Systems Management: Rush Center for the Advancement of Healthcare Value

The vision of the Rush Center for the Advancement of Healthcare Value is to be recognized globally as an innovator in conducting research that prepares leaders for the future of health care.

Our center is housed within the Department of Health Systems Management at Rush University.

Our center's work is grounded in interdisciplinary research and focuses on translating research into practice and uses practice as a foundation for research. Our research is differentiated by the following:

- Academically based center with close ties to the practice community
- Strong focus on leadership development in health care research and practice
- Pursuit of objective knowledge
- Experts in advanced analytic methods
- Proficiency in large multisource database analyses

Our research focuses on evaluating ways to improve the value of care provided by health care organizations. This work addresses important challenges that relate to the following:

### Organizational excellence and leadership

The OEL program focuses on improving health care value by understanding the critical roles of leadership, governance, leadership development and other high-performance work practices

to organizational outcomes, such as patient experience and financial performance.

### **The patient experience**

Rush University Medical Center has a long history of providing and researching best practices in patient care. The Patient Experience Research Initiative, within the health systems management program, works to further develop the understanding of the patient experience and promote scholarship to provide empirically-based knowledge on the experience of patients.

### **Health care value, quality and safety**

The health care value, quality and safety program focuses on the following topics:

- Lean operations
- Throughput improvements
- Education in variation and standardization
- Just culture
- Informed decision-making and problem-solving
- Change management
- Sustainability strategies in health care organizations

### **Population health**

Population health research focuses on identifying the patterns of health determinants and their relationships with health outcomes among populations. The design is to implement evidence-based practice or interventions at an individual or societal level to reduce health disparities among vulnerable populations, such as racial and ethnic minorities, the uninsured, low-income children and women, and the elderly.

### **International health**

The department's international health care research program focuses on improving value by strengthening the evidence base for improving the value of health care through global exchange. Our research includes macro- and micro-level drivers of health care exports and international medical travel.

### **Workforce of the future**

Our research on the workforce of the future focuses on improving health care value by strengthening the pipeline of talented professionals into critical health care positions, with a special emphasis on understanding and addressing the challenges faced by early careerists from disadvantaged and underrepresented groups.

### **Interprofessionalism**

Interprofessionalism in health care delivery and health care education is becoming increasingly recognized as a cornerstone of improved service delivery. Research in this area focuses on the differential outcomes associated with a coordinated, team-based approach to service delivery.

For more information about our center, contact Tricia Johnson, PhD, Associate Chair of Research and Education, professor and director, at (312) 942-7107 or [tricia\\_j\\_johnson@rush.edu](mailto:tricia_j_johnson@rush.edu).

### **Imaging Sciences Education Program: Philosophy**

The faculty of the Bachelor of Science in Imaging Sciences Program shares a set of beliefs consistent with the philosophies and missions of Rush University and its clinical affiliates. The faculty believes that the knowledge, attitudes and skills required for professional medical imaging are best achieved through a combination of theory and related clinical experiences. Clinical application of theory based knowledge in the technical aspects of medical imaging, critical thinking, communication and quality patient care prepares students to become competent and compassionate professionals dedicated to a career of service to society. Learning is a life-long process promoted when intellectual inquiry, creativity, self-awareness, self-direction, maturity and responsibility are valued. This process results in positive attitude changes, knowledge acquisition and technical competence.

The Bachelor of Science in Imaging Sciences Program is committed to preparing advanced-level imaging science professionals to provide high-quality, diagnostic and interventional imaging procedures to patients.

### **Mission**

The mission of the Bachelor of Science in Imaging Sciences Program is to provide the highest quality of education to students through formal didactic and state-of-the-art clinical experiences that prepare our students to be imaging professionals, who are patient care focused, critical thinkers and engaged in lifelong learning. The program also seeks to enroll a diverse student body to promote the values of diversity and inclusion in our program.

### **Vision**

The vision of the imaging sciences program is to be a premier educational program in imaging sciences by providing innovative curricular, clinical and continuing education services to the



diagnostic imaging community and the patients we serve. Our vision is to transform lives through academic excellence, innovation and leadership.

## Goals

The Department of Medical Physics and Advanced Imaging Sciences is dedicated to clinical and academic excellence in teaching, scholarship, service and patient care. The imaging sciences program is designed to provide students with an outstanding education in preparation for a satisfying professional career as advanced imaging sciences practitioners as well as providing a foundation for leadership in management and supervision, education and clinical specialization.

The overall purpose of the program is to provide a high quality of education that is relevant and professionally sound to meet the advanced imaging needs in the health care community. Inherent in this purpose is the goal to prepare imaging sciences professionals who can demonstrate the knowledge, skills and professional competencies needed to perform advanced-level imaging in computed tomography (CT), magnetic resonance Imaging (MRI), cardiac-interventional (CI), vascular-Interventional (VI) and other advanced imaging modalities while completing their bachelor's degree.

## Imaging Sciences Education Program: Program Overview

### About the Profession

Radiologic imaging science, also known as radiologic technology or medical radiography, is the allied health profession responsible for diagnostic and interventional medical radiographic imaging. Imaging sciences professionals, under the supervision of physicians, provide medical imaging services to patients.

### The Program

The Rush University Bachelor of Science in Imaging Sciences Program offers an opportunity for registered radiologic technologists to advance their education by obtaining a bachelor's degree and skills that are significant to their current profession. This program offers the radiologic technologist an opportunity for advancement in employment and prepares advanced medical imaging technologists for professional leadership roles. This academic degree program will provide graduates with the knowledge, skills and professional competencies needed to perform advanced-level imaging in computed tomography (CT), magnetic resonance imaging (MRI), cardiac-interventional (CI), vascular-Interventional (VI) and other advanced imaging modalities.

The Bachelor of Science in Imaging Sciences Program is a career ladder program to provide advanced training and education for certified imaging technologists. In addition to the program prerequisites, the Bachelor of Science in imaging sciences degree program requires a minimum of 95 quarter credit hours taken at the upper division undergraduate level. The professional phase of the program, which consists of imaging sciences course work and clinical field work, is completed at Rush University and its affiliated clinical sites. The program is dedicated to clinical and academic excellence and includes more than 1000 hours of in-hospital clinical practice. As a leadership program in imaging sciences, the program is designed to provide graduates with the opportunity to gain the foundation needed to assume professional leadership roles in clinical practice, clinical specialty areas, education and management.

Students accepted into the professional phase normally begin course work in the fall quarter of the first year of the program, though students may begin taking classes at other times during the year with permission of the program director. Course work in the professional phase may be taken on a full-time (over 24 months) or part-time basis. Each student will develop an individualized program to be approved by the program director. As a part of the program, graduates will complete the clinical training required to be eligible for post-primary pathway to certification in computed tomography, magnetic resonance Imaging, cardiac-interventional or vascular-interventional offered by the American Registry of Radiologic Technologists (ARRT).

## Imaging Sciences Education Program: Admission Requirements

Requirements for admission to the professional phase of the program in imaging sciences include the following:

- Completion of 60 semester or 90 quarter hours of college or university credit at a regionally accredited college or university.
- Minimum overall GPA of at least 2.5 out of 4.0 in all college or university course work.
- Prerequisite courses include English composition, college algebra, chemistry, human anatomy and physiology, physics, speech, humanities or social sciences, microbiology, statistics and computer science. Note: Some prerequisites may be taken concurrently while enrolled in the program — for more information, contact the program. All general education requirements must be met prior to the awarding of the bachelor's degree.

- Successful completion of program prerequisites with a grade of at least a C or higher from a regionally accredited college or university.
- Associate's degree in medical radiography or nuclear medicine technology from a program accredited by the Joint Review Committee on Education in Radiologic Technology (JRCERT) or the Joint Review Committee on Educational Programs in Nuclear Medicine Technology (JRCNMT). Applicants who have successfully completed an accredited hospital-based program should contact the program director in order to determine if they may be admitted on this basis.
- Licensure or eligibility for accreditation in the practice of medical radiation technology by the Illinois Emergency Management Agency.
- Completed application to the program and submission of official transcripts for all college course work completed.
- Completed interview, which is scheduled for selected applicants following review of the application materials.
- Ability to perform the essential functions of the job.
- All applicants whose native language is not English must present evidence of proficiency in English by satisfactorily completing the Test of English as a Foreign Language (TOEFL). More information about this policy is located in the main College of Health Sciences section of this catalog.

## Prerequisite Courses

General Education Courses	Semester Hours	Quarter Hours
Communications (English, composition)	6	8
Speech (oral communication)	3	4
Mathematics (college algebra or higher)	3	4
Humanities, philosophy or ethics	6	8
Fine arts (may not include a performance class)	3	4
Social and behavioral sciences (must include one psychology course)	9	12
Elective courses in communications, humanities, fine arts, philosophy, ethics, social sciences, life sciences, physical sciences or computer science to total 60 semester credit hours for the core general education requirements for the college.	4	17
<b>Total</b>	<b>34</b>	<b>57</b>
Science Education Courses	Semester Hours	Quarter Hours
Human anatomy and physiology (or 4 hrs. anatomy and 4 hrs. physiology)	8	10
Chemistry (with lab)	4	5
Physics (with lab)	4	5
Microbiology (with lab)	4	5
Computer science (includes computer literacy)	3	4
Statistics	3	4
<b>Total</b>	<b>26</b>	<b>33</b>

## **Imaging Sciences Education Program: Academic Policies**

### **Good Academic Standing**

High academic performance is expected in required courses. If a student earns grades lower than C or the student's cumulative GPA falls below 2.0, the student may not be permitted to register for subsequent courses and may be subject to dismissal from the program. Students who withdraw or who have been dismissed from the program must reapply and will be considered on the same basis as a new applicant. Students requesting readmission must submit a letter to the Office of Admissions.

### **Academic Probation**

During the program, if a student's performance is unsatisfactory (GPA less than 2.0 or a letter grade of less than C), he or she may not be permitted to register for subsequent classes. The student will be subject to dismissal from the program. If the student wishes to re-enter the program, he or she must reapply and will be considered on the same basis as any new applicant. Students who voluntarily withdraw from the program, either passing or failing, have no guarantee of reinstatement to the program. Students requesting readmission to the program should submit a letter to that effect to the Committee on Progress and Promotion for Imaging Sciences.

### **Clinical Work**

Students must maintain a cumulative GPA in the program of at least 2.0 unless otherwise described in a given course syllabus, the minimum satisfactory grade for course credit is 75% (a letter grade of C), and all stipulated segments of a course must be passed by this standard. Students must demonstrate proficiency in all clinical skills presented in order to pass clinical courses. For all clinical courses, the final exam must be passed at the designated cut score and a grade of C or better must be maintained in order to successfully complete each clinical practice to continue in the program.

### **Grievance Policy — Student Appeals**

Normal communication regarding course or program policy should be first directed to the instructor assigned to the course or clinical section involved. In the event that the student is unable to satisfy his or her inquiry or request at that level, the matter should be referred to either the clinical director (in the case of clinical practice) or the department chair (in the case of academic course work or policy). In the event that the matter in question cannot be resolved at that level, it should be directed

to the Committee on Progress and Promotions for Imaging Sciences. This committee will either resolve the matter in question to the student's satisfaction or instruct the student on available mechanisms for appeal as described in the University Catalog and University Student Handbook.

### **Comprehensive Examination**

At the end of the program, the student will complete an end-of-program competency assessment examination; as a part of IS-471, Clinical Practicum IV is required to successfully complete IS-471, as well as meet graduation and program completion requirements (see Graduation Requirements). Students who do not successfully complete the examination will receive an Incomplete (an I grade) for IS-471 and will retake the examination prior to the beginning of the next quarter. Those failing the examination twice will be enrolled in IS-471 as a directed Independent study during the next quarter for remediation. Those failing the examination on the third attempt will be subject to dismissal from the program. Those students may reapply to the program (see Procedures for Readmission).

## **College of Health Sciences/Rush University Academic Policies**

Academic policies specific to the College of Health Sciences are located earlier in this catalog. In addition, the Academic Resources and Policies section of this catalog contains Rush University academic policies.

## Imaging Sciences Education Program: Computerized Tomography (CT) Track Curriculum

Professional Courses		
IS-311	Patient Assessment	5
IS-312	Pathophysiology I	5
IS-322	Pathophysiology II	5
IS-324	Pharmacology	4
IS-334	CT Position and Protocols	3
IS-441	CT Physics	3
IS-451	Sectional Anatomy and Pathology I	6
IS-461	Sectional Anatomy and Pathology II	6
IS-335	Advanced Radiation Biology	3
IS-442	Radiologic Contrast Agents	2
Leadership Courses		
IS-332	Management	3
RC-401	Education	5
CHS-503	Research and Statistical Methods	5
IDS-510	Health Care in America	2
IS-490	Cultural Competency and Communication	3
IS-452	Health Care Ethics and Critical Thinking	5
Clinical Courses		
IS-445P	Clinical Practicum I	5
IS-446	Clinical Seminar I	3
IS-455P	Clinical Practicum II	5
IS-456	Clinical Seminar II	3
IS-465P	Clinical Practicum III	5
IS-466	Clinical Seminar III	3
IS-471P	Clinical Practicum IV	5
<b>Total:</b>		<b>94</b>

**NOTE:** All professional, leadership and clinical courses require a grade of C or better in order for the student to continue in the degree program course sequence with a major in imaging sciences. **Failure to complete an imaging sciences professional course with a letter grade of C or better will subject the student to review by the Committee on Progress and Promotions for Imaging Sciences and may result in the student being dismissed from the program.** Students readmitted to the program at times other than the fall quarter of the second year will pick up the course sequence as prescribed by the committee.

## Sample Two-Year Program of Study — CT Track

Year 1		Credit Hours
<b>Fall Quarter</b>		
IS-441	CT Physics	3
IS-334	Computed Tomography Positioning and Protocols	3
IS-451	Sectional Anatomy and Pathology I	6
<b>Subtotal</b>		<b>12</b>
<b>Winter Quarter</b>		
IS-461	Sectional Anatomy and Pathology II	6
IS-335	Advanced Radiation Biology	3
IS-312	Pathophysiology I	5
<b>Subtotal</b>		<b>14</b>
<b>Spring Quarter</b>		
IS-311	Patient Assessment	5
IS-322	Pathophysiology II	5
IS-332	Management	3
<b>Subtotal</b>		<b>13</b>
<b>Summer Quarter</b>		
IS-445P	Clinical Practicum I	5
IS-446	Clinical Seminar I	3
IS-442	Radiologic Contrast Agents	2
RC-401	Education	5
<b>Subtotal</b>		<b>15</b>
Year 2		Credit Hours
<b>Fall Quarter</b>		
IS-455P	Clinical Practicum II	5
IS-456	Clinical Seminar II	3
CHS-503	Research and Statistical Methods	5
IDS-510	Health Care in America	2
<b>Subtotal</b>		<b>15</b>
<b>Winter Quarter</b>		
IS-324	Pharmacology	4
IS-465P	Clinical Practicum III	5
IS-466	Clinical Seminar III	3
<b>Subtotal</b>		<b>12</b>
<b>Spring Quarter</b>		
IS-452	Health Care Ethics and Critical Thinking	5
IS-490	Cultural Competence and Communication	3
IS-471P	Clinical Practicum IV	5
<b>Subtotal</b>		<b>13</b>
<b>Overall Total:</b>		<b>94</b>

## Imaging Sciences Education Program: Magnetic Resonance Imaging (MRI) Track Curriculum

Professional Courses		
IS-311	Patient Assessment	5
IS-312	Pathophysiology I	5
IS-322	Pathophysiology II	5
IS-324	Pharmacology	4
IS-336	Introduction to MRI	3
IS-443	MRI Positioning and Protocols I	3
IS-451	Sectional Anatomy and Pathology I	6
IS-461	Sectional Anatomy and Pathology II	6
IS-450	MRI Physics	3
IS-473	MRI Positioning and Protocols II	3
IS-442	Radiologic Contrast Agents	2
Leadership Courses		
IS 332	Management	3
RC-401	Education	5
CHS-503	Research and Statistical Methods	5
IDS-510	Health Care in America	2
IS 452	Health Care Ethics and Critical Thinking	5
IS-490	Cultural Competency and Communication	3
Clinical Courses		
IS-445P	Clinical Practicum I	5
IS-446	Clinical Seminar I	3
IS-455P	Clinical Practicum II	5
IS-456	Clinical Seminar II	3
IS-465P	Clinical Practicum III	5
IS-466	Clinical Seminar III	3
IS-471P	Clinical Practicum IV	5
<b>Total:</b>		<b>97</b>

**NOTE:** All professional, leadership and clinical courses require a grade of C or better in order for the student to continue in the degree program course sequence with a major in imaging sciences. **Failure to complete an imaging sciences professional course with a letter grade of C or better will subject the student to review by the Committee on Progress and Promotions for Imaging Sciences and may result in the student being dismissed from the program.** Students readmitted to the program at times other than the fall quarter of the second year will pick up the course sequence as prescribed by the committee.

## Sample Two-Year Program of Study — MRI Track

Year 1		Credit Hours
<b>Fall Quarter</b>		
IS-336	Introduction to MRI	3
IS-443	MRI Positioning and Protocols I	3
IS-451	Sectional Anatomy and Pathology I	6
<b>Subtotal</b>		<b>12</b>
<b>Winter Quarter</b>		
IS-461	Sectional Anatomy and Pathology II	6
IS-450	MRI Physics	3
IS-472	MRI Positioning and Protocols II	3
IS-312	Pathophysiology I	5
<b>Subtotal</b>		<b>17</b>
<b>Spring Quarter</b>		
IS-332	Management	3
IS-311	Patient Assessment	5
IS-322	Pathophysiology II	5
<b>Subtotal</b>		<b>13</b>
<b>Summer Quarter</b>		
IS-442	Radiologic Contrast Agents	2
IS-445P	Clinical Practicum I	5
RC-401	Education	5
IS-446	Clinical Seminar I	3
<b>Subtotal</b>		<b>15</b>
Year 2		Credit Hours
<b>Fall Quarter</b>		
CHS-503	Research and Statistical Methods	5
IDS-510	Health Care in America	2
IS-455P	Clinical Practicum II	5
IS-456	Clinical Seminar II	3
<b>Subtotal</b>		<b>15</b>
<b>Winter Quarter</b>		
IS-324	Pharmacology	4
IS-465P	Clinical Practicum III	5
IS-466	Clinical Seminar III	3
<b>Subtotal</b>		<b>12</b>
<b>Spring Quarter</b>		
IS-490	Cultural Competence and Communication	3
IS-452	Health Care Ethics and Critical Thinking	5
IS-471P	Clinical Practicum IV	5
<b>Subtotal</b>		<b>13</b>
<b>Overall Total:</b>		<b>97</b>

## Imaging Sciences Education Program: Vascular-Interventional (VI) /Cardiac- Interventional (CI) Radiology Track

Professional Courses		
IS-311	Patient Assessment	5
IS-312	Pathophysiology I	5
IS-322	Pathophysiology II	5
IS-324	Pharmacology	4
IS-326	VI Technology I	5
IS-327	VI Technology II	5
IS-451	Sectional Anatomy and Pathology I	6
IS-461	Sectional Anatomy and Pathology II	6
IS-335	Advanced Radiation Biology	3
IS-442	Radiologic Contrast Agents	2
Leadership Courses		
IS-332	Management	3
RC-401	Education	5
CHS-503	Research and Statistical Methods	5
IDS-510	Health Care in America	2
IS-490	Cultural Competency and Communication	3
IS-452	Health Care Ethics and Critical Thinking	5
Clinical Courses		
IS-445P	Clinical Practicum I	5
IS-446	Clinical Seminar I	3
IS-455P	Clinical Practicum II	5
IS-456	Clinical Seminar II	3
IS-465P	Clinical Practicum III	5
IS-466	Clinical Seminar III	3
IS-471P	Clinical Practicum IV	5
<b>Total:</b>		<b>98</b>

**NOTE:** All professional, leadership and clinical courses require a grade of C or better in order for the student to continue in the degree program course sequence with a major in Imaging sciences. **Failure to complete an imaging sciences professional course with a letter grade of C or better will subject the student to review by the Committee on Progress and Promotions for Imaging Sciences and may result in the student being dismissed from the program.** Students readmitted to the program at times other than the fall quarter of the second year will pick up the course sequence as prescribed by the committee.

## Sample Two-Year Program of Study — VI/CI Track

Year 1		Credit Hours
<b>Fall Quarter</b>		
IS-326	Vascular Interventional Technology I	5
IDS-510	Health Care in America	2
IS-451	Sectional Anatomy and Pathology I	6
<b>Subtotal</b>		<b>13</b>
<b>Winter Quarter</b>		
IS-327	Vascular Interventional Technology II	5
IS-461	Sectional Anatomy and Pathology II	6
IS-312	Pathophysiology I	5
<b>Subtotal</b>		<b>16</b>
<b>Spring Quarter</b>		
IS-332	Management	3
IS-311	Patient Assessment	5
IS-322	Pathophysiology II	5
<b>Subtotal</b>		<b>13</b>
<b>Summer Quarter</b>		
IS 442	Radiologic Contrast Agents	2
RC 401	Education	5
IS 445P	Clinical Practicum I	5
IS 446	Clinical Seminar I	3
<b>Subtotal</b>		<b>15</b>
Year 2		Credit Hours
<b>Fall Quarter</b>		
CHS-503	Research and Statistical Methods	5
IS-455P	Clinical Practicum II	5
IS-456	Clinical Seminar II	3
<b>Subtotal</b>		<b>13</b>
<b>Winter Quarter</b>		
IS-324	Pharmacology	4
IS-335	Advanced Radiation Biology	3
IS-465P	Clinical Practicum III	5
IS-466	Clinical Seminar III	3
<b>Subtotal</b>		<b>15</b>
<b>Spring Quarter</b>		
IS-490	Cultural Competence and Communication	3
IS-452	Health Care Ethics and Critical Thinking	5
IS-471P	Clinical Practicum IV	5
<b>Subtotal</b>		<b>13</b>
<b>Overall Total:</b>		<b>98</b>

## Imaging Sciences Program: Entry Level Magnetic Resonance Imaging (MRI) Curriculum

The Bachelor of Science in imaging sciences, magnetic resonance imaging (MRI) track, was designed originally to accommodate applicants licensed in radiography or nuclear medicine. Since that time, there has been increased interest from unlicensed, highly

Professional Courses		
IS-300	Introduction to Imaging Sciences	5
IS-301	Introduction to Patient Care I	5
IS-302	Introduction to Patient Care II	5
IS-311	Patient Assessment	5
IS-312	Pathophysiology I	5
IS-322	Pathophysiology II	5
IS-324	Pharmacology	4
IS-336	Introduction to MRI	3
IS-443	MRI Positioning and Protocols I	3
IS-451	Sectional Anatomy and Pathology I	6
IS-461	Sectional Anatomy and Pathology II	6
IS-450	MRI Physics	3
IS-473	MRI Positioning and Protocols II	3
IS-442	Radiologic Contrast Agents	2
Leadership Courses		
IS 332	Management	3
RC-401	Education	5
CHS-503	Research and Statistical Methods	5
IDS-510	Health Care in America	2
IS 452	Health Care Ethics and Critical Thinking	5
IS-490	Cultural Competency and Communication	3
Clinical Courses		
IS-445P	Clinical Practicum I	5
IS-446	Clinical Seminar I	3
IS-455P	Clinical Practicum II	5
IS-456	Clinical Seminar II	3
IS-465P	Clinical Practicum III	5
IS-466	Clinical Seminar III	3
IS-471P	Clinical Practicum IV	5
<b>Total:</b>		<b>112</b>

**NOTE:** All professional, leadership and clinical courses require a grade of C or better in order for the student to continue in the degree program course sequence with a major in imaging sciences. **Failure to complete an imaging sciences professional course with a letter grade of C or better will subject the student to review by the Committee on Progress and Promotions for Imaging Sciences and may result in the student being dismissed from the program.** Students readmitted to the program at times other than the fall quarter of the second year will pick up the course sequence as prescribed by the committee.

qualified applicants. This entry level track in MRI adds three additional patient care courses to the existing MRI curriculum. These courses will serve as bridge courses to provide those students who are unlicensed in radiography or nuclear medicine the academic content needed to be successful in the program.

Year 1		Credit Hours
<b>Fall Quarter</b>		
IS-301	Introduction to Patient Care I	5
IS-300	Introduction to Imaging Sciences	5
IS-451	Sectional Anatomy and Pathology I	6
<b>Subtotal</b>		<b>16</b>
<b>Winter Quarter</b>		
IS-302	Introduction to Patient Care II	5
IS-461	Sectional Anatomy and Pathology II	6
IS-336	Introduction to MRI	3
<b>Subtotal</b>		<b>14</b>
<b>Spring Quarter</b>		
IS-450	MRI Physics	3
IS-322	Pathophysiology II	5
IS-311	Patient Assessment	5
<b>Subtotal</b>		<b>13</b>
<b>Summer Quarter</b>		
IS-442	Radiologic Contrast Agents	2
IS-443	MRI Positioning and Protocols I	3
IS-445P	Clinical Practicum I	5
IS-446	Clinical Seminar I	3
<b>Subtotal</b>		<b>13</b>
Year 2		Credit Hours
<b>Fall Quarter</b>		
IS-455P	Clinical Practicum II	5
IS-456	Clinical Seminar II	3
IDS-510	Health Care in America	2
CHS-503	Research and Statistical Methods	5
<b>Subtotal</b>		<b>15</b>
<b>Winter Quarter</b>		
IS-465P	Clinical Practicum III	5
IS-466	Clinical Seminar III	3
IS-324	Pharmacology	4
IS-473	MRI Positioning and Protocols II	3
<b>Subtotal</b>		<b>15</b>
<b>Spring Quarter</b>		
IS-471P	Clinical Practicum IV	5
IS-452	Health Care Ethics and Critical Thinking	5
IS-490	Cultural Competence and Communication	3
<b>Subtotal</b>		<b>13</b>
<b>Summer Quarter</b>		
IS-332	Management	3
RC-401	Education	5
IS-312	Pathophysiology I	5
<b>Subtotal</b>		<b>13</b>
<b>Overall Total:</b>		<b>112</b>

## Imaging Sciences Program: Graduation Requirements

The following degree requirements must be met:

1. Satisfactory completion of all general education course work as listed
2. Completion of each required imaging sciences professional course with a grade of C or better
3. Cumulative grade point average (GPA) of 2.5 or better
4. Successful completion of a comprehensive end-of-program competency assessment

## Medical Laboratory Science: Philosophy

Medicine requires today's medical laboratory scientist to be a highly qualified professional who is willing and able to expand and extend his or her theoretical knowledge and technical skills. The faculty of the Department of Medical Laboratory Science will provide students with the tools and resources necessary to attain the knowledge, skills and attitudes expected of laboratory professionals who work in dynamic interprofessional environments. The medical laboratory scientist must maintain compassion and empathy and accept the patient's welfare as the highest priority.

## Medical Laboratory Science: Program Overview

The Department of Medical Laboratory Science currently offers one degree program the Master of Science, major in medical laboratory science or major in clinical laboratory management. A certificate program — the specialist in blood bank — is offered online.

## Mission of the Department of Medical Laboratory Science

Our mission is to prepare highly qualified graduates equipped to perform as laboratory professionals in a collaborative, diverse and rapidly changing health care environment. Students will be active participants in learning and developing into competent, ethical professionals. We prepare graduates who have a spirit of inquiry and a commitment to lifelong learning and service, and who are dedicated to advance the quality and availability of health care.

## Vision of the Department of Medical Laboratory Science

Our vision is to provide the highest quality medical laboratory science programs and curricula that are recognized as national leaders for excellent preparation of diverse students entering laboratory professions.

## Educational Goals

- Graduate competent practitioners who possess the skills and knowledge to function at an optimal level in various medical laboratory settings
- Graduate competent laboratorians who can meet the changing needs of the profession
- Foster and develop critical thinking and problem solving
- Instill the highest degree of professionalism
- Instill and foster a high degree of professional ethics
- Promote the importance of continuing education and professional association participation

## Functional Expectations for Students

The following is an outline of the expectations for students enrolled in the medical laboratory sciences degree programs. This information is provided so that students can be knowledgeable about performance skills expected during course work and clinical rotations, and also to allow students to determine whether accommodations may be needed due to a disabling condition.

Each student is expected to perform the following, with or without reasonable accommodation. Reasonable accommodation is defined as any change in the environment or in the way activities are usually done that enables an individual with a disability to participate as fully as possible in the academic program. Accommodations may include modification of policies, practices and procedures or the provision of auxiliary aids for communication. Students must not pose a threat to the safety or well-being of patients, other students, staff or themselves.

**Observation:** The students must be able to observe demonstrations and exercises in the clinical laboratory sciences involving body fluids and products being tested for biochemical, hematologic and microbiologic constituents, including the use of simple and complex instruments and microscopes.

**Communication:** The students must be able to communicate clearly and sensitively with patients and family members. The students must be able to communicate effectively and efficiently with all members of the health care team.



**Motor:** Students must be able to perform tasks using laboratory instruments and glassware dealing with specimen collection and test analysis.

### **Intellectual-Conceptual, Integrative and Quantitative**

**Abilities:** These intellectual abilities include measurement calculations, reasoning, analysis and synthesis. Problem solving is a critical skill requiring all of these intellectual abilities.

**Behavioral and Interpersonal Attributes:** Students must possess the emotional health required for full utilization of intellectual abilities. This includes the exercise of good judgment and the prompt completion of all responsibilities attendant to the performance of procedures with maximal attention to safety of self and others in dealing with potentially hazardous equipment and materials. Students must be able to tolerate periods of taxing workloads and function effectively under stress and with unpleasant materials. They must be able to adapt to changing environments, to display flexibility and to learn to function in the face of uncertainties inherent in the clinical problems that come to the laboratory. Compassion, integrity, concern for others, interpersonal skills, interest and motivation, as well as the ability to maintain confidentiality of patient results, are all personal qualities that will be assessed during the education process.

**Academic Performance:** The students must obtain information from lectures, laboratory sessions or exercises, audio-visual materials and written materials. Students must take essay and multiple-choice tests, complete papers, deliver presentations and perform required lab practice.

A request for accommodation or modification is not cause for withdrawal of the offer of acceptance. Any student can request accommodations once enrolled in the program. If an accommodation is requested, the department may require additional documentation and information and will follow up with the student to discuss the specifics of the request and the appropriate plan of action. Further information regarding accommodations is available at <https://www.rushu.rush.edu/students-disabilities>.

### **Specific Student Learning Outcomes**

Upon completion of the program, students will be able to do the following:

1. Demonstrate entry level competence in preanalytical, analytical, and postanalytical components of laboratory services.
  - a. Describe and perform procedures for proper specimen collection and processing of biological specimens.
  - b. Perform, with a high level of competence, analytical tests on body fluids, cells and blood products.
  - c. Integrate and relate data generated by various medical

laboratory departments while making judgments regarding possible discrepancies and adherence to quality control protocols.

- d. Practice and describe principles of quality assurance and quality improvement related to laboratory practice.
2. Apply all safety and governmental regulations and standards for the proper handling of chemical and biological specimens.
3. Demonstrate problem-solving and critical thinking skills in all major areas practiced in the contemporary medical laboratory.
4. Demonstrate professional and effective oral and written communication skills.
5. Behave in an ethical, culturally sensitive and professional manner in a diverse environment.
6. Describe and practice instructional techniques and terminology used to educate users and providers of laboratory services.
7. Conduct a research project with faculty or mentor guidance that includes applying principles of research design, evaluating published research studies, accurately interpreting data, and disseminating results.
8. Describe and apply concepts and principles of laboratory operations and management including the following:
  - a. Performance improvement.
  - b. Dynamics of health care delivery systems as they affect laboratory service.
  - c. Critical pathways and clinical decision making.
  - d. Laboratory informatics.
  - e. Human resource management.
  - f. Financial management.
9. Create a professional plan that supports ongoing professional career development through active membership in professional societies, attending professional society meetings and maintaining certification.
10. Apply knowledge and skills required for work in diverse laboratory settings.

The medical laboratory science professional program consists of two parts: didactic (classroom learning) and clinical (practice in the medical laboratory). After the completion of the program, graduates are eligible to take a national certification examination.

All students entering the medical laboratory science degree program are required to have a criminal background check before matriculating. The student's ability to begin the clinical portion of the program and to complete certification and licensure requirements for entry into the profession may depend

on documentation of such things as drug screening and a background check for a history of criminal offenses. A drug screen is required before entering the clinical practica. Students are prohibited from using academic or professional credentials until the satisfactory completion of a degree and appropriate credentials are awarded.

## Accreditation

The MS program in medical laboratory science is accredited by the following:

National Accrediting Agency for Clinical Laboratory Sciences (NAACLS)  
5600 N. River Rd., Suite 720  
Rosemont, IL 60018-5119  
Phone: (847) 939-3597 or (773) 714-8880  
Fax: (773) 714-8886  
<http://www.naacls.org>

The specialist in blood bank certificate program is accredited by the following:

Commission on Accreditation of Allied Health Education Programs (CAAHEP)  
25400 U.S. Highway 19 North, Suite 158  
Clearwater, FL 33763  
Phone: (727) 210-2350  
<http://www.caahep.org>

## State Licensure Requirements

Some states require that medical laboratory scientists be licensed in the state in order to work in a medical laboratory in that state. Illinois does not license medical laboratory scientists. The medical laboratory science program at Rush University satisfies requirements for certification by the American Society for Clinical Pathology Board of Certification and complies with the standards of accreditation established by the National Accrediting Agency for Clinical Laboratory Sciences, but the program may not satisfy the licensing requirements for some states. In particular, our program may not satisfy the requirement for clinical training set by the state of California. Students who intend on moving to a state that requires licensure are encouraged to check with the requirements for state licensure before starting the program to make sure that the Rush University curriculum will satisfy the requirements for licensure in that state.

## Medical Laboratory Science: Admission Requirements for Master of Science Applicants

### Requirements for Medical Laboratory Science Major

Applicants must complete the preprofessional requirements prior to enrollment at Rush University. An overall GPA of 3.0 on a 4.0 scale is required. Three letters of recommendation must be submitted with the admission application. Students are accepted at the beginning of fall and, space permitting, winter quarters. Fall admission is recommended. In addition to fulfillment of academic requirements, a personal interview conducted by members of the admission committee is required for admission. Interviews are behaviorally oriented and take about two hours. Questions focus on commitment, problem-solving ability, team interaction and initiative. Applicants are asked for life experience situations in which these behavioral characteristics are demonstrated. At the time of the interview, each applicant will be asked to write a short essay. Essays are evaluated for grammar, spelling, content and overall quality of written communication. Applications are ranked on the basis of grades in prerequisite courses, references, interview results and the written essay.

The following prerequisites are required for admission:

- A Bachelor of Science degree from an accredited United States college or university documented with official transcripts from each college or university attended. The following courses are required: 24 quarter or 16 semester hours of chemistry (organic, quantitative analysis and biochemistry recommended); 18 quarter or 12 semester hours of biology (anatomy and physiology, microbiology and genetics recommended); and 4 quarter or 3 semester hours of mathematics (algebra and statistics recommended).

The program will accept a BS or BA degree from a foreign institution for admission into the MLS.MS, CLM.MS and CLMB.MS programs with the following stipulations:

The foreign transcript must be evaluated by ECE and the evaluation must result in a determination that the student has earned a BS or BA degree that is equivalent to a U.S. BS or BA.

- An overall GPA of 3.0 on a 4.0 scale
- Personal interview
- Three letters of recommendation
- TOEFL/TSE if English is not the applicant's first language

Students who have not completed all requirements for entry into the Master of Science program may petition the Department of Medical Laboratory Science for consideration for admission. Such requests are handled on a case-by-case basis.

### **Documentation of Hepatitis B Virus Vaccination**

Before a student is allowed to begin the program, he or she must have on file documentation that he or she has either begun or has finished the course of inoculations for the hepatitis B virus vaccine. This documentation must be sent directly to the program director or his or her designate.

If the student has not yet finished the series of inoculations at the start of the program, he or she must provide documentation that he or she has finished the course of inoculations as soon as possible in order to remain in the program. This information will be reviewed quarterly and the student will be notified if he or she is not in compliance with this requirement. A student who fails to complete the hepatitis B virus vaccination protocol in a timely manner will not be allowed to register for the following quarter until he or she can provide documentation that he or she is in compliance. Students must submit a hepatitis B virus titer as proof of immunity.

### **Documentation of Tuberculosis Testing**

All students must provide the results from tuberculosis screening tests in order to begin the program. Students must be tested annually for tuberculosis and must submit the results to the program office. Failure to comply with this policy can lead to dismissal from the program or prevention of attendance at the clinical site regardless of GPA. In cases where the tuberculosis screen is positive or contraindicated, students must be screened annually by a physician for symptoms of active tuberculosis and submit documentation that they have been screened and are symptom free.

### **Required Rush University Medical Center OSHA, HIPAA and Safety Training**

Students are required to take all Medical Center training courses that apply to clinical laboratory scientists. These courses must be taken annually and are available through Rush University's LEAP Online system. Students failing to remain current in these training areas will not be allowed in the clinical laboratories.

## **Medical Laboratory Science: Programs**

### **Preprofessional Program**

The preprofessional curriculum for the medical laboratory science program is taken at an associated college or other accredited college or university and requires two to three years of study, depending upon the college. These years are devoted to preparing the scientific foundation upon which the practice of medical laboratory science can be built. The first year emphasizes courses in biological, physical and behavioral sciences, with options in the humanities. The succeeding years are used to increase depth in the sciences as they relate more specifically to health fields and to enhance personal experience through a broad choice of electives in the humanities. Specific course offerings and requirements may vary from campus to campus due to curriculum offerings, scheduling and course content. Required prerequisite courses are completed before a student comes to Rush and are listed above.

### **Professional Program**

Students integrate the theory of medical science with the practice of medical laboratory procedures, learning basic theory and skills in hematology, clinical chemistry, immunology, immunohematology, molecular techniques and clinical microbiology in the first year, and go on to more advanced courses in those areas in the second year along with courses in management, education and research to prepare students for supervisory, teaching and research positions.

Students apply basic concepts learned in the first year of the program as they rotate through the laboratories of Rush University Medical Center and affiliated hospitals. Currently, affiliated hospitals include the University of Chicago Medicine, Northwestern Memorial Hospital, Ann and Robert H. Lurie Children's Hospital of Chicago, Loyola University Medical Center, and the University of Illinois Hospital and Health Sciences System. It is the policy of the Rush University Department of Medical Laboratory Science that all students admitted into the program who complete all first-year didactic courses will be guaranteed an opportunity to complete the clinical practicum at one of our affiliated hospitals.

Graduates are eligible to take the medical laboratory scientist certification examination given by the American Society for Clinical Pathology Board of Certification. Upon passing this examination, they become certified as medical laboratory scientists, MLS (ASCP). Students are not eligible to take the national certification examinations until all degree requirements are met. Verification of degree completion is required from the program director by the American Society of Clinical Pathology Board of Certification. Graduation from the program is not contingent on successfully passing a certification examination.

## Medical Laboratory Science: Master of Science Curriculum

The program is built around a core of basic and advanced theoretical knowledge and clinical practice. This combination of both theory and practice enhances the development of skilled, knowledgeable professionals whose flexibility allows them to function at the highest level within the various laboratory settings available to graduates of the program. These areas include primary health care facilities, as well as research, educational and commercial laboratory settings across the country. This rigorous program requires students to achieve a 3.0 GPA on a 4.0 scale to graduate. Students will get hands-on experience in laboratory techniques and will develop a thorough knowledge base in medical laboratory science, providing a firm foundation for development and growth after graduation. The mission of

the faculty is to do more than train technical health care personnel, but to educate medical laboratory professionals who can meet the current and future demands of laboratory medicine. It is expected that students completing the Master of Science degree in Medical Laboratory Science will be the supervisors, managers and educators of the future.

Students in the Master of Science in Medical Laboratory Science program will complete a rigorous research project consisting of identification of the research problem and stating a hypothesis, designing and performing experiments to solve the research problem, interpreting and analyzing the data, as well as presenting the research study in written and oral formats which may result in publication in a peer-reviewed journal or presentation at a professional society meeting.

Year 1		Credit Hours
<b>Fall Quarter</b>		
MLS-500	Laboratory Fundamentals	2
MLS-501	Clinical Chemistry I	4
MLS-510	Hematology I	5
MLS-521	Clinical Immunology	3
MLS-544	Professional Development I	4
<b>Winter Quarter</b>		
MLS-502	Clinical Chemistry II	3
MLS-512	Body Fluid Analysis	5
MLS-530	Clinical Microbiology	5
MLS-511	Hematology II	3
<b>Spring Quarter</b>		
MLS-503	Clinical Chemistry III	3
MLS-531	Parasitology, Mycology and Virology	4
MLS-520	Immunohematology	5
MLS-540	MLS Seminar	2
MLS-545	Professional Development II	2
<b>Summer Quarter</b>		
MLS-533	Molecular Techniques	4
	Clinical Practica*	4-8
CHS-502	Research Methods	3
MLS-550	Laboratory Information and Automation Systems	2

*continued*

Year 2		Credit Hours
<b>Fall Quarter</b>		
MLS-522	Clinical Immunology II	2
CHS-510	Health Care in America	2
	Clinical Practica*	4-8
CHS-501	Introduction to Biostatistics for the Health Scientist	3
<b>Winter Quarter</b>		
MLS-551	Quality Issues in Clinical Laboratory Sciences	3
MLS-553	Communications	2
	Clinical Practica*	4-8
MLS-556	Clinical Laboratory Management	3
<b>Spring Quarter</b>		
MLS-562	Research Seminar III	1
MLS-513	Hematology Case Studies	2
MLS-567	Comprehensive Review	2
	Clinical Practica*	10
MLS-532	Infectious Disease Case Studies	2
<b>Courses Completed During Year 2</b>		<b>Credit Hours</b>
MLS-563	Master's Project I	2
MLS-564	Master's Project II	2
MLS-565	Master's Project III	2
<b>Clinical Practica*</b>		<b>Credit Hours</b>
MLS-578P	Patient Care Techniques	2
MLS-571P	Clinical Practicum — Hematology	4
MLS-572P	Clinical Practicum — Microbiology I	4
MLS-573P	Clinical Practicum — Microbiology II	2
MLS-574P	Clinical Practicum — Immunohematology	4
MLS-575P	Clinical Practicum — Immunology/Molecular Biology	2
MLS-570P	Clinical Practicum — Chemistry	4
MLS-576P	Clinical Practicum — Education	4
<b>Hours Required for MS Degree:</b>		<b>113</b>

\* Clinical practica schedules will be determined by program administration.

\* May substitute master's project courses.

Curriculum is subject to change.

## **Academic Policies**

### **Midterm Warning Notices**

Students not maintaining a passing-level grade at midterm time will be given a written warning notice. It is the student's responsibility to contact the course instructor immediately to ascertain how the grade can be improved.

### **Academic Progression**

High academic performance in required courses is expected. Students will be considered in good standing at Rush University unless placed on academic probation.

A cumulative grade point average of at least 3.0 is required in the graduate programs. Cumulative grade point averages will be reviewed after each quarter. No student will be permitted into the clinical rotation portion of the program unless the student has the required GPA. The faculty reserves the right to request the withdrawal of a student whose conduct, health or performance demonstrates lack of fitness for continuance in a health profession. Any such student not voluntarily withdrawing will be dismissed from the University.

### **Academic Probation**

Academic probation is assigned to any student in the graduate program who receives a quarterly grade point average below 3.0 or whose cumulative grade point average falls below 3.0. Students placed on probation have two quarters in which to regain the status of good standing as follows:

The next quarter after being placed on probation, the student must attain a quarterly grade point average of at least 3.0.

Two quarters after being placed on probation, the student must have a cumulative grade point average above 3.0.

Failure to make the minimum quarterly grade point average one quarter after probation or the minimum cumulative grade point average two quarters after probation will result in dismissal from the University.

### **C, D, F or N Grades**

Graduate students may not receive more than two grades of C or lower in the program. Should a graduate student receive a third letter grade of C or lower, he or she will be dismissed from the program. Graduate students who receive a D, F or N grade in any course must repeat that course. In the event that a student is required to repeat a course that is a prerequisite for an advanced course, the advanced course may not be taken until the student successfully passes the prerequisite course. Thus, the student's progression in the program may be affected. Students who receive a second D or F grade in the same academic year will be dismissed from the program.

All work in practicum courses must be at or above the B level. If a student earns a grade less than B in a clinical practicum course, the course must be repeated, but may be repeated only once, and must be taken within one year, with the new grade replacing the failing grade in the cumulative grade point average. A second grade below B in any practicum course will result in dismissal from the program.

### **Comprehensive Examination**

All students must take and pass a comprehensive examination at the end of the second year to graduate from the medical laboratory science program. Any student who fails the cumulative examination must retake the examination until he or she passes. A diploma will not be given until the student has passed all sections of the comprehensive examination.

### **Graduate Research Projects**

See the Graduate Research Bulletin and Department of Medical Laboratory Science's policy document for policies and procedures regarding graduate research projects. This bulletin lists specific deadlines for each component of the research project. Failure to meet these deadlines will delay acceptance of the research project and graduation from the program.

### **Certification**

The comprehensive technical curriculum at Rush University prepares the student to enter the practice of medical laboratory science. Graduates are eligible to take the medical laboratory scientist's certification examination given by the American Society for Clinical Pathology Board of Certification.

### **Service Work Policy**

Service work is defined as performing the duties expected of an employee who is paid to perform those tasks as an unpaid student. Service work by students is not required nor permitted by the program. Students are present in the clinical laboratory to learn the operation of the clinical laboratory. While learning and upon demonstrating proficiency, students may perform clinical tests under the supervision of an instructor who is a certified medical laboratory scientist. As such, students work on actual patient samples but at no time are they expected to, nor allowed to, perform service work without pay.

There are numerous work-study jobs available to our students in the clinical laboratories, as well as throughout the Medical Center and at our affiliate hospitals. Students are notified of openings as the faculty is informed. Students and supervisors at clinical sites must make a distinction between the student's

time in the laboratory as a student learning and not being paid and when the student becomes an employee and is working in the laboratory for pay on tasks for which the student has been specifically trained. Students should not be treated as employees during rotation time, which is typically between the hours of 7 a.m. and 3:30 p.m. What students do outside the time at which they are expected to be learning in the clinical laboratory is beyond the scope of control of the program.

## Graduation Requirements

The **Master of Science degree**, with a major in medical laboratory science, requires a minimum of 90 quarter hours. Candidates for the Master of Science degree must earn a 3.0 cumulative grade point average in all computed upper-division credits taken at Rush University. A minimum of 45 quarter hours of academic credit shall be earned as a graduate student in academic residence at Rush University. Participation in cap and gown at commencement exercises is expected of all graduates.

## Educational Activities

The faculty of the Department of Medical Laboratory Science is responsible for providing both the didactic course work and the clinical experiences necessary for students to successfully complete all degree requirements.

## Research Activities

Faculty members in the Department of Medical Laboratory Science engage in technical and educational research. Areas include biochemistry, education, hematology, hospital administration, immunohematology, immunology, molecular oncology and microbiology. The Department of Medical Laboratory Science supports and is involved in the administration of the Continuing Education Program offered to the professional staff of Rush Medical Laboratories.

## Service Activities

The Department of Medical Laboratory Science operates on the practitioner-teacher model. Faculty members are actively involved in the medical laboratories of Rush University Medical Center, maintaining active research, supervisory and clinical positions in their specialty areas. Several faculty members hold joint appointments in Rush Medical College. They provide the laboratory medicine courses for the medical college curriculum and the graduate nursing college curriculum.

## Clinical Laboratory Management: Curriculum

The online Master of Science degree program in clinical laboratory management is designed for the practicing medical laboratory scientist who desires formal but flexibly delivered graduate education in management. The program emphasizes management principles and quality management, organizational structure and management functions, managerial decision-making and process improvement, human resource management, financial management, compliance and regulatory issues, health care informatics, and legal issues in health care. This program provides a practical approach to managing the day-to-day aspects of the clinical laboratory.

The clinical laboratory manager is employable as supervisory personnel in a hospital, reference laboratory, clinical pathology, physician's office laboratory, industry, public health laboratory, clinical diagnostic company, educational institution or government agency. Students who successfully complete the MS in clinical laboratory management and possess two years of full-time acceptable experience in clinical laboratory supervision or management within the last 10 years may apply for the Diplomate in Laboratory Management from the American Society for Clinical Pathology Board of Certification. Students can attend on a part-time or full-time basis.

## Minimum Admissions Requirements

- A baccalaureate degree from a regionally accredited U.S. college or university in medical laboratory, biological or related science or a BS or BA degree from a foreign institution when the foreign transcript has been evaluated by ECE resulting in a determination that the student has earned a degree that is equivalent to a U.S. BS or BA.
- A minimum grade point average of 3.0 (on a scale of 4.0)
- Documentation of MLS (ASCP), MT (ASCP) or CLS (NCA) certification
- Two years working experience in an accredited laboratory
- For non-native English speakers, Test of English as a Foreign Language (TOEFL) scores to satisfy the College of Health Sciences' policy on the TOEFL
- Official transcripts from each college or university attended
- Three reference letters
- A phone interview

## Clinical Laboratory Management Curriculum

Year 1		Credit Hours
<b>Fall Quarter</b>		
CLM-590	Principles of Lab Management	4
CLM-591	Evidence-Based Research and Applied Statistics	4
CLM-592	Ethics	3
<b>Winter Quarter</b>		
CLM-584	Health Care Finance	4
CLM-595	Method Comparison and Process Validation	4
<b>Spring Quarter</b>		
CLM-593	Scientific and Technical Writing	4
CLM-596	Quality Systems & Regulatory Issues	4
<b>Summer Quarter</b>		
CLM-597	Issues and Practices in Human Resource Management	4
CLM-598	Health Care Informatics	4
Year 2		Credit Hours
<b>Fall Quarter</b>		
CLM-594	Advanced Health Care Finance	4
CLM-599A	Master's Project I (Management)	2
CLM-589A	Management Experience I	2
<b>Winter Quarter</b>		
CLM-586	Compliance and Regulatory Issues	4
CLM-587	Organizational Development	4
CLM-599B	Master's Project II (Management)	2
CLM-589B	Management Experience II	2
<b>Spring Quarter</b>		
CLM-588	Legal Issues in Health Care	4
CLM-599C	Master's Project III (Management)	2
CLM-589C	Management Experience III	2
<b>Hours required for the MS degree</b>		<b>63</b>



## Specialist in Blood Bank Technology Certificate Program

### Program Overview

The online Specialist in Blood Bank (SBB) Technology Certificate Program is intended to meet the needs of experienced medical laboratory scientists seeking advanced knowledge of immunohematology and its related disciplines. The SBB certificate program is designed to prepare students for the SBB certification examination offered by the American Society for Clinical Pathology (ASCP) Board of Certification (BOC).

### Minimum Admissions Requirements

- A baccalaureate degree from a regionally-accredited U.S. college or university in medical laboratory, biological or related science or a BS or BA degree from a foreign institution when the foreign transcript has been evaluated by ECE resulting in a determination that the student has earned a degree that is equivalent to a U.S. BS or BA.
- A minimum grade point average of 3.0 (on a scale of 4.0)
- Documentation of MLS (ASCP), MT (ASCP) or CLS (NCA) certification
- Two years working experience in an accredited blood bank laboratory
- For non-native English speakers, Test of English as a Foreign Language (TOEFL) scores to satisfy the College of Health Sciences' policy on the TOEFL

- Official transcripts from each college or university attended
- Three reference letters
- A phone interview

### Curriculum

The SBB curriculum is a one-year program consisting of eight courses. Students may complete the program in four quarters, including a summer quarter. A part-time option is available.

The SBB curriculum consists of both online lecture and discussion and clinical experience components. Clinical experiences may be arranged at blood centers and hospitals near the student's home. In some cases, the student's place of employment may qualify. Students with prior clinical experience may be eligible to earn credit by proficiency based on standardized departmental evaluation.

### Accreditation

The Rush University SBB Certificate Program is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP) (25400 U.S. Highway 19 North, Suite 158, Clearwater, FL 33763; (727) 210-2350) upon the recommendation of the AABB Committee on Accreditation of Specialist in Blood Bank Technology Schools (AABB/CoA).

Course	Credit Hours
SBB-580 Human Blood Group Systems	4
SBB-581 Principles and Methods of Antibody Identification	2
SBB-582 Blood Procurement and Blood Product Manufacturing	3
SBB-583 Blood Bank and Transfusion Service Operation	3
SBB-584 Clinical Immunohematology and Transfusion	4
SBB-585 SBB Comprehensive Review	3
SBB-586 SBB Clinical Practicum*	2
SBB-587 SBB Selected Topics and Project	3
<b>Total SBB Course Credit Hours Earned</b>	<b>24</b>

\*Students with prior clinical experience may qualify to complete the SBB 586 clinical practicum course through credit by proficiency based upon standardized departmental evaluation. Qualified students who successfully pass the departmental evaluation will be exempt from taking this course and for tuition associated with this course. Students interested in exemption from SBB 586 should speak with the program director and must complete a Clinical Experience Verification Form. A processing fee will be charged to the student. Credit awarded will equal the credit value of the course as listed in the current Rush University catalog. Information posted on the transcript will include the course prefix and number, title, credit value and a K grade. A transcript guide that accompanies all transcripts issued by the Office of the Registrar explains that the K grade indicates that credit was earned through successful completion of a proficiency examination.

## Clinical Laboratory Management Curriculum with SBB Certificate Completion Option

Students who are interested in completing the SBB certificate program along with the Master of Science in clinical laboratory management will start the MS in CLM program by taking

courses in the SBB certificate program followed by CLM courses. Graduates of a CAAHEP-accredited SBB program other than the Rush program must have their transcript evaluated to determine the transferability of the SBB courses and assignment of credit. Such students may need to take additional credits to be awarded the MS in CLM.

Year 1		Credit Hours
<b>Fall Quarter</b>		
SBB-580	Human Blood Group Systems	4
SBB-581	Principles and Methods of Antibody Identification	2
<b>Winter Quarter</b>		
SBB-582	Blood Procurement and Product Manufacturing	3
SBB-583	Blood Bank and Transfusion Service Operation	3
<b>Spring Quarter</b>		
SBB-584	Clinical Immunohematology and Transfusion	4
SBB-586	SBB Clinical Practicum*	2
<b>Summer Quarter</b>		
SBB-585	SBB Comprehensive Review	3
SBB-587	SBB Selected Topics and Project	3
Year 2		Credit Hours
<b>Fall Quarter</b>		
CLM-590	Principles of Lab Management	4
CLM-591	Evidence-Based Research and Applied Statistics	4
CLM-592	Ethics	3
<b>Winter Quarter</b>		
CLM-584	Health Care Finance	4
CLM-595	Method Comparison and Process Validation	4
CLM-599A	Master's Project I (Management)	2
<b>Spring Quarter</b>		
CLM-593	Scientific and Technical Writing	4
CLM-596	Quality Systems and Regulatory Issues	4
CLM-599B	Master's Project II (Management)	2
<b>Summer Quarter</b>		
CLM-597	Issues and Practices in Human Resource Management	4
CLM-598	Health Care Informatics	4
CLM-599C	Master's Project III (Management)	2
<b>Total hours required for the MS degree</b>		<b>65</b>

\* Students with prior clinical experience may qualify to earn academic credit based on standardized departmental evaluation, or students with extensive clinical experience may complete the SBB-586 clinical practicum course through credit by proficiency based upon a standardized departmental evaluation.

Curriculum is subject to change.

Minimum hours taken at Rush for the MS degree must equal at least 45 quarter hours.

## Academic Policies

### Midterm Warning Notices

Students not maintaining a passing-level grade at midterm time will be given a written warning notice. It is the student's responsibility to contact the course instructor immediately to ascertain how the grade can be improved.

### Academic Progression

High academic performance in required courses is expected. Students will be considered in good standing at Rush University unless placed on academic probation.

A cumulative grade point average of at least 3.0 is required in the CLM program. Cumulative grade point averages will be reviewed after each quarter. The faculty reserves the right to request the withdrawal of a student whose conduct, health or performance demonstrates lack of fitness for continuance in a health profession. Any such student not voluntarily withdrawing will be dismissed from the University.

### Academic Probation

Academic probation is assigned to any student who receives a quarterly grade point average below 3.0 or whose cumulative grade point average falls below 3.0. Students placed on probation have two quarters in which to regain the status of good standing as follows:

The next quarter after being placed on probation, the student must attain a quarterly grade point average of at least 3.0.

Two quarters after being placed on probation, the student must have a cumulative grade point average above 3.0.

Failure to make the minimum quarterly grade point average one quarter after probation or the minimum cumulative grade point average two quarters after probation will result in dismissal from the University.

### C, D, F or N Grades in the CLM Program

Students may not receive more than two grades of C or lower in the program. Should a student receive a third grade of C or lower, he or she will be dismissed from the program. Students who receive a D, F or N letter grade in any course must repeat that course. In the event that a student is required to repeat a course that is a prerequisite for an advanced course, the advanced course may not be taken until the student successfully passes the prerequisite course. Thus, the student's progression in the program may be affected. Students who receive a second D or F grade in the same academic year will be dismissed from the program.

## Medical Physics: Residency Program in Radiation Oncology Physics

The primary purpose of this training program is to provide specialized research, instruction and clinical training in cancer radiation treatment-related areas of medical physics. Candidates applying for this program should have a graduate degree in physics, engineering or computer science, and have demonstrated ability to perform high-quality research. Another important purpose of this program is to provide the trainees with sufficient academic and clinical experience so that they can become eligible for certification by the American Board of Radiology in therapeutic radiological physics. Our program is accredited by the Commission on Accreditation of Medical Physics Education Programs (CAMPEP).

### Application

The applicant should have received a graduate degree in physics, medical physics or other related fields. Graduates from CAMPEP-accredited graduate medical physics and certificate programs, as well as candidates with backgrounds satisfying an alternative pathway based on American Association of Physicists in Medicine (AAPM) Report 197S, will also be considered. There should be evidence of a candidate's ability to conduct independent research and to learn clinical and research aspects of radiation oncology physics. Good communication skills and the ability to effectively interact with other professionals are highly desirable. On-site interviews will be conducted for selected candidates. Interviews will include a 10 to 15 minute presentation on topics selected by candidates.

To be considered for this program, each candidate must submit the following:

1. A letter of application stating career goals and motivation toward medical physics
2. Curriculum vitae, including list of publications with applicant's name highlighted among co-authors
3. Three letters of recommendation
4. Official transcripts of undergraduate and graduate studies
5. Title and abstract for a short presentation

The Rush University Medical Physics Residency Program accepts applications through the AAPM Residency Common Application System (CAP) at <http://www.aapm.org/cap/>. Items 1 to 4 above are required for CAP submission. Item 5 should be submitted via email to Mylene Mauclair ([mylene\\_mauclair@rush.edu](mailto:mylene_mauclair@rush.edu)). We are participating in the 2015 Medical Physics Match Program at <https://natmatch.com/medphys/>. To apply, applicants must participate in the Match and enter code number 12011 for our program.

## Program Design

The medical physics residency training program is designed to educate and to train candidates with a graduate degree in physics, medical physics or closely related fields to a competency level that will allow them to practice radiation oncology physics and to be prepared to sit for the certification examination of the American Board of Radiology (ABR) in therapeutic radiological physics upon graduation. The program is organized in accordance with the American Association of Physicists in Medicine Report No. 90: Essentials and Guidelines for Hospital-Based Medical Physics Residency Training Programs, 2006. The program covers all aspects of clinical radiation oncology physics, including acceptance/commissioning, calibration and quality assurance of treatment and simulation equipment, radiation detectors, measurement and calculation of radiation dose, radiation treatment planning, design and fabrication of treatment aids, quality assurance of planning systems, external beam treatment techniques (including 2D, 3D conformal, intensity modulated [IMRT] and image guided [IGRT] radiation therapy techniques), low- and high-dose-rate brachytherapy (LDR and HDR), special procedures, radiation safety for both patients and radiation workers, room shielding designs, regulatory radiation safety guidelines and education of health professionals in radiation oncology physics.

## Program Length

The length of the program is three years. The resident will attend classes and clinical conferences, provide assistance in performing various quality assurance tasks, and participate in clinical research and development projects during the first year. The resident will start clinical rotations in various areas at the beginning of the second year. Completion of eight structured clinical rotations is required for the second and third year. A mentoring staff physicist will directly supervise the resident and monitor his or her progress during the rotation. Evaluations of a resident's performance in each rotation will be documented and communicated to the resident.

## Program Faculty

The Department of Radiation Oncology has six PhD-level physicists and six attending physicians. All physicians and physicists are either ABR certified or in the process of getting their certification. All faculty members are active in clinical services, teaching and research. Our faculty members are excellent teachers; our medical residents have consistently ranked above the ninetieth percentile in the American College of Radiology (ACR) in-service physics board exams of the past. In addition, we offer excellent courses in radiobiology, statistics and imaging physics.

All of these courses, as well as other courses offered by Rush University, are available to medical physics residents.

## Facility and Equipment

The Department of Radiation Oncology is equipped with a large-bore 4D CT simulator, a PET/CT scanner, a TomoTherapy system, a dedicated TrueBeam STX unit for SRS and SBRT, two additional state-of-the-art linear accelerators, a Nucletron HDR unit with Oncentra treatment planning system, a Pinnacle 3D treatment planning system, an Eclipse treatment planning system, a Brainlab stereotactic radiosurgery planning (iPlan) and treatment system, in vivo dosimetry systems, a film dosimetry system, and a 3D data acquisition system. The department has active clinical and research programs in IGRT, IMRT, TBI, SRS, SBRT, brachytherapy, Monte Carlo simulations, thermal imaging, scatter imaging, dose painting, contour segmentation, and biological model-based treatment planning applications in radiation therapy.

## Program Delivery

The program director, in collaboration with the Medical Physics Residency Committee, is responsible for the administration of the program. It is the program director's responsibility to advise the residents, coordinate clinical rotations and didactic training, and evaluate and promote the program. The committee meets regularly to review the progress of the residents and the operation of the program. All clinical training takes place in the Department of Radiation Oncology. The Office of Graduate Medical Education monitors and reviews the quality of the program and provides oversight to assure its adherence to the Commission on Accreditation of Medical Physics Education Programs (CAMPEP) standards.

## Occupational Therapy: Mission and Philosophy

The Department of Occupational Therapy is committed to teach, investigate and provide the very best quality health care using a unique practitioner-teacher-investigator model. The department promotes excellence in service and addressing diversity in our communities.

Occupational therapy practitioners recognize humans as complex beings engaged in and organized around occupations occurring within the physical, temporal, cultural, psychological, spiritual and virtual environments (AOTA, 2014; AOTA 2007). When dysfunction or internal or external contexts limit or prevent participation, occupational therapy practitioners enable

doing in a variety of ways. The practice of occupational therapy involves clients; individuals, groups or organizations, their attributes, and the multiple environmental contexts that comprise occupational performance. Occupational therapy interventions are designed to empower people to adapt and change to improve their engagement in occupational performance across the lifespan.

Rush University Department of Occupational Therapy faculty members fulfill roles as practitioner-teacher and investigator, a combination that infuses the curriculum with contemporary and scholarly perspectives to prepare students to meet the occupational needs of society. Graduate courses and clinical experiences build on students' past knowledge and skills to encourage transformative and integrative learning. The critical self-reflection of the transformative learning process encourages examining, questioning, validating, and possibly revising prior knowledge so that new perceptions and meanings may evolve (Cranton, 2006). Integrative learning expands on this process by facilitating students' ability to connect ideas, concepts and experiences to better adapt to novel and complex issues (Huber & Hutchings, 2004). The end result is a learner who is intellectually flexible to meet the needs of complex clients in a continually changing society. A program based on transformative and integrative learning builds on a student's past, connects it to present activities, and predicts a future in they are competent and capable to respond to the ongoing needs of the profession and the clients we serve.

The curriculum builds a foundation for demonstrating professional reasoning and the capacity to meet the needs of an increasingly dynamic profession. Self-directed learning and critical thinking using evidence-based research and practice are fostered through faculty mentorship, problem solving, collaborative activities and critical inquiry in the classroom, clinic and community to promote entry-level performance. Rush occupational therapy graduates are prepared to work in traditional and emerging practice settings, but more importantly, are ethical, flexible, creative, autonomous and informed entry level practitioner- teacher-investigators.

## References

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- American Journal of Occupational Therapy. (2007, November/December). *Philosophy of occupational therapy education*. , 61, 678. doi:10.5014/ajot.61.6.678
- Cranton, P. (2006). *Understanding and promoting transformative learning* (2nd ed.). San Francisco: Jossey-Bass.
- Huber, M.T., & Hutchings, P. (2004). *Integrative learning: Mapping the terrain*. Washington D.C.: Association of American Colleges and Universities.

## Occupational Therapy: Program Overview

### Professional Description

The Department of Occupational Therapy offers a graduate program that prepares the student for unique contributions to the field of occupational therapy. This professional level program is designed for individuals with baccalaureate degrees in other fields who are seeking to become occupational therapists.

### Educational Orientation

The professional graduate program at Rush University is designed for the student who has acquired a variety of life experiences through previous educational, vocational and avocational activities. The program values the incorporation of these life experiences into the educational activities of the program. The educational approach utilized in the program that best addresses these spheres is based on transformative and integrative learning theories. By basing the program on these learning theories, it is possible to build on the students' past, connect it to their activities of the present and predict a future of competent, capable responses to the needs of the profession. The program is designed to enable the student to learn not only the content and theories of occupational therapy, but also the process of utilizing the multiple resources of the learning environment, including teachers and peers. A series of carefully designed learning experiences, occurring within and outside the classroom, promote independence in conjunction with collegial interaction, problem solving and clinical reasoning, reflection, and analysis and synthesis of information. The graduate emerges as a competent therapist who has maintained initial curiosity and added to it through increased ability for creative thinking. Because of experiences in self-directed learning and self-identification of needs, the graduate is able to be responsible and responsive to the needs of the profession. The graduate is expected to be a life-long learner capable of maintaining professional integrity when faced with challenges and complexities of contemporary health care.

### Professional Orientation

Since Rush graduates will be prepared to work in a variety of traditional and nontraditional settings, their practice base is the result of broad experiences within the many arenas of occupational therapy. The graduates have the ability to add increasing amounts of depth and validation to their treatment programs as a result of their involvement and experiences with problem-solving approaches to therapy. Given the combination of breadth and depth of knowledge and experience related to occupational therapy treatment, the primary strength of Rush University graduates will be their ability to function as highly resourceful practitioners. As in the past, and for the foreseeable

future, the role of the practitioner is the core of all occupational therapy. The practitioner who is able to base treatment on established fact, use internal and external resources, and engage in clinical reasoning and problem solving is the practitioner who will contribute to the credibility and viability of the profession. It is this type of practitioner who is expected to be the product of the Rush program.

The graduates of the program are able to enter the clinical arena competently and confidently, applying their clinical skills and expanding upon those skills as individual situations require. This continuous process of assessment and expansion contributes to the personal and professional growth vital to occupational therapists. The role of the clinician, as it is understood in this context, incorporates other major roles of the OT practitioner. As the Rush program is designed, the students have the opportunity to explore the functions of the practitioner as a clinician educator, researcher and manager from the practitioner's perspective. The involvement of the student in these other roles is another major strength of the program. The additional roles of educator, manager and researcher cannot be separated from the practitioner's role.

## **Occupational Therapy: Educational Outcomes**

1. Apply the philosophy of occupational therapy to clinical practice.
2. Demonstrate an understanding of the foundations of human function and its impact on occupational performance.
3. Understand the importance and demonstrate entry-level professional reasoning in all aspects of occupational therapy service delivery.
4. Evaluate the needs and priorities for intervention based on an appreciation and understanding of the occupational needs of clients within the context of their physical, social, temporal and cultural environments.
5. Identify and design theoretically based interventions that address the individual's occupational needs.
6. Implement evidence-based practice in clinical care.
7. Evaluate and report effectiveness of occupational therapy interventions.
8. Demonstrate professionalism and leadership in occupational therapy services within the complex health care environment.
9. Discover, interpret and disseminate new knowledge to promote occupational therapy as a powerful, widely-recognized, science-driven and evidence-based profession.
10. Articulate the value of interprofessional collaboration in patient care.

## **Occupational Therapy: Technical Standards**

Graduates of the occupational therapy program must possess the essential knowledge and skills to function in a broad variety of clinical situations and to render a wide spectrum of patient care safely and effectively. Rush University has specified the following nonacademic criteria "technical standards" that applicants and enrolled students must meet to participate in the educational program and the practice of occupational therapy. These essential qualifications include the following:

### **Motor Abilities**

- Sufficient mobility to provide assessments and interventions related to balance, posture, movement, endurance, sensory processing and Activities of Daily Living (ADL) performance
- Sufficient strength to lift and transfer clients from all positions
- Motor planning and coordination abilities to fabricate splints, positioning devices and adaptive equipment
- Ability to sit and stand to participate in academic and clinical practice

### **Sensory Abilities**

- Acquire information presented through demonstrations and experiences in clinical settings and course work.
- Observe clients at close range and at a distance in clinical settings and in course work
- Observe and comprehend digital readings, medical records and other graphic images
- Observe client factors and performance skills
- Listen to clients
- Perceive verbal and non-verbal communication from clients
- Comprehend three-dimensional relationships and understand spatial relationships

### **Communication and Interaction Skills**

- Use English effectively in both oral and written formats
- Communicate sensitively to clients, other students, staff, faculty, family and other professionals, and use therapeutic communication
- Give and receive feedback effectively
- Complete written assignments and assessments
- Convey changes in clients (mood, activity and posture) effectively to other health providers
- Identify and interpret emotional affect, non-verbal cues and response to intervention

## Intellectual Abilities

- Problem solve
- Read and interpret data presented orally and in writing
- Exercise good judgment
- Prioritize
- Search, record, store and retrieve information

## Behavioral Skills

- Organize time effectively
- Complete all responsibilities related to academic and clinical work
- Adapt physical presentation and interaction style to be appropriate in a variety of settings
- Use professional touch interactions with students, faculty and clients of all genders
- Examine and change behavior when it interferes with productive individual or team relationships

## Emotional Skills

- Emotional well-being required for full use of intellectual abilities
- Emotional stability to function effectively in the face of stress and uncertainty
- Emotional stability to adapt to diverse and changing environment
- Flexibility
- Experience empathy for the situations and circumstances of others and effectively communicate that empathy

## Occupational Therapy: Admission Requirements

The applicant to the entry level master's in occupational therapy professional program must have completed or must show evidence of the following in order to be considered for admission:

- Completed application through the Occupational Therapy Centralized Application System
- A baccalaureate degree from an accredited college or university
- Minimum cumulative grade point average 3.0 on a 4.0 scale
- Official scores from Graduate Record Examination (GRE) General Test taken within the past five years are required. A combined score (verbal and quantitative portions) of 302 on the revised test (1000 prior to August 2011) and a minimum score of 4.0 on the analytical writing sample are required.

- Prerequisite courses including statistics, sociology or anthropology, human growth and development (must cover the entire lifespan), two psychology courses in addition to human growth and development, and human anatomy (with lab, preferably cadaver) and human physiology (lab preferred). Human anatomy and human physiology must be taken within five years prior to admission to program. Two sequential courses with labs will also satisfy this prerequisite. A grade of C or better in all prerequisite course work is required.
- Two letters of recommendation. One recommendation must be from an occupational therapy practitioner.
- Experience or familiarity with occupational therapy either through observation, volunteering or work experience with an OT practitioner

The admissions committee will make decisions regarding the acceptability of the applicant to the program. All application materials will be evaluated. Academic and nonacademic factors, including extracurricular activities, job and life experiences will be taken into consideration. Selected applicants will be required to participate in an on-site visit that will include a faculty interview. Recognizing the need of occupational therapists to serve a population representative of diverse social, ethnic, cultural and economic backgrounds, a goal of the admissions committee will be to select a class likely to meet these diverse needs.

Students accepted into the occupational therapy program must complete a criminal background check. Students who have certain types of information in their criminal background checks may be ineligible to complete fieldwork rotations in specific facilities and may be ineligible for state licensure or national registry or certification.

Students accepted into the occupational therapy program must submit official transcripts from every college or university attended directly to Rush University prior to matriculation

## Application Deadlines

Admission for the entry level master's in occupational therapy program is granted for the summer quarter of each year, which begins mid-June. Applications through the Occupational Therapy Centralized Application Service become available mid-July. Completed applications will begin to be reviewed by the admissions committee beginning Oct. 15. The application deadline is Dec. 1. Interviews will be held during the months of November, December and January. Enrollment is limited to 36 students. Applicants are encouraged to apply as early as possible.

## Occupational Therapy: Academic Policies

### Enrollment

The academic program is a 27-month program. Instruction is provided by occupational therapy faculty and faculty members from other departments and colleges within the University. Students must complete all program requirements within 39 months from the time they begin the program and part-time students 51 months from the time they begin. Any student who expects to go beyond this time frame must write the program director to request an exception to the policy. A minimum of 117 quarter hour credits (78 semester hour credits) is required for graduation.

### Accreditation and Certification

The occupational therapy program is accredited by the Accreditation Council for Occupational Therapy Education (ACOTE) of the American Occupational Therapy Association. Additional information can be obtained by contacting ACOTE:

Accreditation Council for Occupational Therapy Education  
c/o Accreditation Department  
American Occupational Therapy Association (AOTA)  
4720 Montgomery Lane, Suite 200  
Bethesda, MD 20814-3449  
Phone: (301) 652-2682  
[www.acoteonline.org](http://www.acoteonline.org)

Graduates will be eligible to sit for the national certification examination for the occupational therapist administered by the National Board for Certification in Occupational Therapy, Inc. (NBCOT). Additional information can be obtained by contacting NBCOT:

NBCOT, Inc.  
800 S. Frederick Ave., Suite 200  
Gaithersburg, MD 20877-4150  
Phone: (301) 990-7979

After successful completion of this exam, the individual will be an Occupational Therapist, Registered (OTR). In Illinois, occupational therapists must be licensed in order to practice, and state licensure is based on the results of the NBCOT certification examination. This is true in many other states, but specific requirements for licensure may be determined by contacting individual state licensing boards.

### Academic Progression

Students will progress through the curriculum following the curriculum outline provided.

The faculty reserves the right to dismiss any student whose conduct, health or performance demonstrates lack of fitness for

continuance in a health profession as identified by the faculty member and by the Rush University Code of Conduct. Any such student not voluntarily withdrawing will be dismissed from the University. Only grades of A, B, C or P may fulfill degree requirements in all non-elective courses listed in the curriculum outline. Students will be considered in good standing at Rush University unless placed on academic probation. Academic probation is assigned to any student who earns a quarterly grade point average of 2.99 and below. Full-time students placed on probation must earn a cumulative average of 3.0 or above by the end of the next consecutive quarter. Part-time students placed on probation must earn a cumulative average of 3.0 or above at the end of the next two consecutive quarters. Students who fail to meet minimum cumulative GPA requirements within the time frame specified above will be automatically dismissed from the program.

Students placed on academic probation for the first time must meet with their advisor and establish an action plan prior to the beginning of the next quarter. If a student is placed on probation a second time, he or she must petition and meet with the Student Performance and Academic Review Committee (SPARC) and provide an action plan that is acceptable to SPARC in order to continue in the program. The student will also be responsible to meet on a regular basis with his or her advisor to monitor the progress of the aforementioned action plan's implementation. A student who is placed on probation for a third time for didactic course work will automatically be dismissed from the program. A student receiving a grade D, F, No Pass (N), WF or WN in a required course must repeat the course at the next academic offering and earn at least a B (or Pass for Pass/No Pass courses) to remain in the program. Only one D, F, No Pass (N) or WN is allowed for the entire program. In the event a student receives a second D, F, No Pass (N), WF or WN at any other time in the program the student will be dismissed from the program.

### College of Health Sciences/Rush University Academic Policies

Academic policies specific to the College of Health Sciences are located earlier in this catalog. In addition, the Academic Resources and Policies section of this catalog contains Rush University academic policies.



## Occupational Therapy Curriculum

Course	Credit Hours
<b>Summer Quarter</b>	
OCC-502 OT History and Philosophy	4
OCC-504 Human Structure and Principles of Movement	4
OCC-530 OT Perspectives in Health and Wellness	2
OCC-505 Clinical Foundational Skills	2
OCC-506 Medical Conditions Seminar	3
<b>Fall Quarter</b>	
CHS-510 Health Care in America	2
OCC-503 Foundational Theories in Occupational Therapy	3
OCC-507 Psychosocial Dysfunction	3
OCC-510 OT Perspectives in Ethics and Multiculturalism	2
HHV-504 Ethics in Health Care	2
CHS-501 Introduction to Biostatistics for the Health Scientist	3
<b>Winter Quarter</b>	
OCC-508 Group Dynamics	3
OCC-509 Analysis of Occupational Performance	3
OCC-525 Introduction to Neuroscience	4
OCC-581 Qualitative Research Methods and Design	2
OCC-582 Research Methods and Evidence-Based Practice	3
<b>Spring Quarter</b>	
OCC-511 OT Interventions I	5
OCC-516 OT Interventions I — Fieldwork	1
OCC-543 Health Care Organizations	3
OCC-538 Evaluation and Assessments	3
OCC-583-1 Graduate Research Project	2
<b>Summer Quarter</b>	
OCC-512 OT Interventions II	5
OCC-517 OT Interventions II — Fieldwork	1
OCC-532 OT Perspectives in Technology	2
OCC-536 Issues and Perspectives in Pediatric OT	4
OCC-537 Issues and Perspectives in Geriatric OT	3
OCC-583-2 Graduate Research Project	2
<b>Fall Quarter</b>	
OCC-513 OT Interventions III	5
OCC-514 OT Interventions IV	4
OCC-518 OT Interventions III — Fieldwork	1
OCC-583-3 Graduate Research Project	2
<b>Spring Quarter</b>	
OCC-595 Advanced Fieldwork I	9
OCC-596 Advanced Fieldwork II	9
<b>Summer Quarter</b>	
OCC-544 Management Concepts for OT	3
OCC-5XX Program Development and Community-Based Practice in Occupational Therapy	2
<b>Hours Required for MS Degree:</b>	<b>117</b>

## **Occupational Therapy: Graduation Requirements**

The Master of Science with a major in occupational therapy requires a cumulative grade point average of 3.0 or greater to graduate. All degree requirements including fieldwork must be completed within 39 months. A minimum of 117 quarter hours (78 semester hours) is required for graduation. In addition, service is highly valued by the university; college and department, therefore a minimum of 16 community service hours are required for graduation.

## **Occupational Therapy: Research Activities**

Members of the department are increasingly involved in identifying research projects in occupational therapy. The students participate in one of a variety of faculty-supervised research projects, which may be carried out in one of Rush University Medical Center's occupational therapy clinics, other health care facilities, or community organizations. Students are encouraged to assist faculty with dissemination of their research projects during the annual Daniel Corcos Research Symposium, at state and national conferences, and through faculty lead publication.

## **Occupational Therapy: Service Activities**

The faculty members are outstanding practitioners, teachers and investigators involved in widely recognized professional and scholarly activities. They provide a full range of assessment and therapeutic services for a variety of populations. Within the Medical Center there are more than 30 dedicated occupational therapy practitioners working with pediatric, adult and geriatric patients in both inpatient and outpatient settings. In addition, faculty and clinicians are committed to serving with professional and community organizations. Students participate with faculty and clinicians in health fairs and service activities throughout the year. Students have an opportunity to join the Student Occupational Therapy Association (SOTA), a service-based organization.

## **Perfusion Technology: Philosophy**

The Department of Perfusion Technology provides students with both the scientific knowledge and the clinical experience needed in order to make them effective and successful perfusion technologists. In the challenging, expanding profession of perfusion technology, today's perfusion technologist must be able to meet the daily demands of the operating room, adapt to new technologies and uses for the extracorporeal circuit and be part of a profession growing beyond its traditional roles in cardiovascular surgery which now encompasses other surgical and nonsurgical specialties requiring the use of extracorporeal circuits, support devices or blood salvaging capabilities.

## **Perfusion Technology: Program Overview**

The Department of Perfusion Technology offers two degree programs; the Bachelor of Science with a major in Perfusion Technology and the Master of Science with a major in Perfusion Technology. The Master of Science degree is intended for those whose baccalaureate degree is in a field other than perfusion technology. Those entering the Master of Science degree program achieve entry-level competency in perfusion technology as well as acquire additional skills in educational methods, management and research.

This technical medical specialty has become increasingly important in the health care field. The perfusion technologist serves primarily as part of the cardiovascular surgical team, operating the heart-lung machine during open heart surgery. The perfusion technologist is also responsible for other life-support equipment, such as intra-aortic balloon pumps and ventricular assist devices. In addition to cardiovascular surgery, the perfusion technologist may also provide veno-venous bypass for liver transplantation, isolated limb or organ chemotherapy perfusion, cardiopulmonary bypass supported cardiac catheterization procedures, extracorporeal membrane oxygenation (ECMO) and blood salvaging for orthopedic or general surgery procedures.

## **Perfusion Technology: Admission Requirements Bachelor of Science Program**

A minimum of 60 semester or 90 quarter hours of liberal arts and sciences must be completed prior to enrolling. This must include the required prerequisite coursework.

The following are required for admission:

- Cumulative and science grade point average (GPA) of 3.0 on a 4.0 scale
- Completion or a plan to complete all the required prerequisite coursework prior to enrolling at Rush
- Receipt of three letters of recommendation
- Applicants who did not complete high school in the U.S. must submit TOEFL scores.
- Receipt of official transcripts from each institution of higher education attended

Once a complete application has been received, it will be reviewed and applicants will be selected to interview. If selected, completion of an on-site faculty interview is required to be considered for admission.

The Admissions Committee will take into consideration all application materials when evaluating an applicant.

The following courses must be completed prior to enrolling with a grade of "C" or better. Required courses must be taken for a letter grade rather than a pass/fail option.

### Natural and Biological Sciences

16 semester hours or 24 quarter hours. Science courses must include:

- One semester of inorganic chemistry
- One semester of organic chemistry
- One semester of physics
- One semester of a human anatomy course, AND
- One semester of a human physiology course, OR
- Two semesters of a combined anatomy and physiology course with a laboratory component

Some community college introductory science classes may not be comprehensive enough to satisfy the prerequisite requirements. For any questions about courses please contact the Office of College Admission Services at (312) 942-7100 to speak with an admissions counselor.

### Mathematics and Statistics

Two college level mathematics courses, which must include an introductory course in statistics.

### English Composition

Two courses or documented proficiency at Composition II level. Although not required, applicants are encouraged to take additional courses focusing on written communication because writing skills are essential for the successful completion of the Perfusion Technology program.

### Social Sciences

14 semester hours or 20 quarter hours

Coursework must include:

- Introduction to Psychology
- Introduction to Sociology
- Other social science courses; may include psychology, sociology, economics, history and anthropology

### Humanities

Eight semester hours or 12 quarter hours

- Humanities courses include religion; philosophy; foreign languages; literature; or the history of art, music, theater, film or dance. Studio art classes, instrumental music classes, and speech classes are not acceptable.
- **Medical Terminology is strongly recommended.**

### Additional Recommendation

In addition, it is highly recommended that prospective students talk to a clinical perfusionist and, if possible, observe a procedure requiring the use of cardiopulmonary bypass.

### Master of Science Program

- A baccalaureate degree from an accredited college or university
- Receipt of official transcripts from each institution of higher education attended
- If the baccalaureate degree was conferred by a college or university outside the United States, international transcripts must be evaluated by the Educational Credential Evaluators (ECE). A detailed course-by-course report is required. Contact ECE at (414) 289-3400 or [www.ece.org](http://www.ece.org).
- Completion or a plan to complete all the required prerequisite coursework prior to enrolling at Rush. Applicants must complete all prerequisite courses with a grade of "C" or better. Please see required courses as listed for the Bachelor of Science degree above.
- Cumulative and science GPA of 3.0 on a 4.0 scale
- Receipt of three letters of recommendation
- Applicants who did not complete high school in the United States must submit TOEFL scores.

### Perfusion Technology: Academic Policies

The Department of Perfusion Technology requires full-time enrollment beginning with the fall quarter of the junior year and continuing through the spring quarter of the senior year, a total of seven consecutive quarters of classroom work and clinical experience.

### Academic Progression

High academic performance in required courses is expected. Only grades of A, B or C may fulfill degree requirements in all required courses. Students will be considered to be in good standing unless placed on academic probation. Academic probation is assigned to any undergraduate student who earns a quarterly grade point average (GPA) below 2.5 (A = 4.0) or for graduate students who earn a quarterly GPA below 3.0 (A = 4.0). Students placed on probation have two quarters in which to regain the status of good standing. Failure to do so will result in dismissal from the University. As most courses are offered only once each year, students who receive a grade of F may have to defer enrollment until the course is offered again. A grade of F in a course that is a prerequisite to another required course may also prevent a student from continuing to progress in the normal sequence. The Department's Advisory Committee must approve any exception to these policies.

### College of Health Sciences/Rush University Academic Policies

Academic policies specific to the College of Health Sciences are located earlier in this catalog. In addition, the Academic Resources and Policies section of this catalog contains Rush University academic policies.

## Perfusion Technology: Curricula

The curriculum in Perfusion Technology combines rigorous didactic research curriculum with diverse clinical experience. Perfusion technology students take courses in anatomy, physiology, pathology and pharmacology. The clinical experience includes participation in adult and pediatric open heart procedures at Rush University Medical Center and at affiliated hospitals.

The curriculum begins in the fall quarter, which begins in early September, and continues for seven quarters, including one

summer session. Faculty include experienced perfusion technologists and cardiovascular and transplant surgeons in addition to specialists from anesthesia, nursing, medical technology and other related health professions. During the third quarter, students will choose and develop a research project from its inception to completion. The culmination of the project will be the preparation of a manuscript suitable for publication in a professional journal.

Graduates of the program will be qualified to sit for the certification examination of the American Board of Cardiovascular Perfusion.

## Bachelor of Science Curriculum

Year 1		Credit Hours
<b>Fall Quarter</b>		
PRF-301	Perfusion Technology	3
PRF-331	Anatomy and Physiology I	5
HHV-504	Ethics in Health Care	2
CHS-501	Biostatistics	3
PRF-311	Junior Seminar I	3
<b>Winter Quarter</b>		
PRF-333	Pharmacology	3
PRF-312	Junior Seminar II	5
PRF-302	Pathophysiology of CPB I	5
PRF-332	Anatomy and Physiology II	3
<b>Spring Quarter</b>		
PRF-381	Project Design and Research	3
PRF-303	Pathophysiology of CPB II	5
PRF-313	Junior Seminar III	3
CHS-510	Health Care in America	2
<b>Summer Quarter</b>		
PRF-441	Project Design and Research I	2
PRF-451	Senior Seminar I	2
PRF-431	Clinical Experience I	10
Year 2		Credit Hours
<b>Fall Quarter</b>		
PRF-442	Project Design and Research II	2
PRF-432	Clinical Experience II	10
PRF-452	Senior Seminar II	2
<b>Winter Quarter</b>		
PRF-443	Project Design and Research III	2
PRF-433	Clinical Experience III	10
<b>Spring Quarter</b>		
PRF-444	Project Design and Research IV	2
PRF-434	Clinical Experience IV	10
PRF-453	Senior Seminar III	2
<b>Hours Required for BS Degree:</b>		<b>99</b>

## Master of Science Curriculum

Year 1		Credit Hours
<b>Fall Quarter</b>		
PRF-501	Perfusion Technology**	3
PRF-521	Anatomy and Physiology I	5
HHV-504	Ethics in Health Care	2
CHS-501	Biostatistics	3
PRF-510	Seminar I**	3
<b>Winter Quarter</b>		
PRF-523	Pharmacology**	3
PRF-511	Seminar II**	5
PRF-502	Pathophysiology CPB I**	5
PRF-522	Anatomy and Physiology II	3
CHS-502	Research Methods	3
<b>Spring Quarter</b>		
PRF-541	Project Design/Research	3
PRF-503	Pathophysiology CPB II *	5
CHS-510	Health Care in America	2
PRF-512	Seminar III**	3
PRF-552	Advanced Topics: Cardiac Pharmacology	2
<b>Summer Quarter</b>		
PRF-542	Masters Project I	2
PRF-531	Clinical Experience I**	10
PRF-513	Seminar IV**	2
Year 2		Credit Hours
<b>Fall Quarter</b>		
PRF-543	Masters Project II	2
PRF-532	Clinical Experience II**	10
PRF-551	Advanced Topic: Cardiac Physiology	2
<b>Winter Quarter</b>		
PRF-544	Masters Project III	2
PRF-533	Clinical Experience III**	10
PRF-554	Advanced Topics: Educational Methods**	2
<b>Spring Quarter</b>		
PRF-545	Masters Project IV	2
PRF-534	Clinical Experience IV**	10
PRF-553	Advanced Topics: Management	2
<b>Hours Required for MS Degree:</b>		<b>106</b>

\*\*Denotes required term papers

## **Perfusion Technology: Educational Activities**

The faculty of the department is responsible for providing both the didactic coursework and the clinical experiences necessary for the completion of the Bachelor of Science and the Master of Science degrees in perfusion technology. The program is accredited by the Accreditation Committee-Perfusion Education (AC-PE) of the Commission on Accreditation of Allied Health Education Programs (CAAHEP).

## **Perfusion Technology: Service Activities**

Faculty members are licensed perfusion technologists actively involved in the daily activities of the Department of Extracorporeal Services.

## **Physician Assistant Studies Program: Program Overview, Mission, Vision and Goals**

### **Program Overview**

The Master of Science in Physician Assistant Studies program is designed to provide students with an outstanding education in preparation for careers as general practice physician assistants, as well as to provide a foundation for leadership in an area of advanced clinical practice.

The innovative 30-month curriculum will utilize the extensive resources available at Rush University to provide its students with an excellent training experience.

- The 12-month didactic phase includes lecture, small group discussion and case-based training to prepare students for clinical rotations.
- Our unique 18 months of clinical rotations prepares students to practice as primary care providers, while providing a one of a kind immersion experience in an area of advanced clinical practice. Current areas of advanced clinical training include orthopedics, cardiothoracic surgery, vascular surgery, emergency medicine, internal medicine, pulmonary and critical care medicine, interventional radiology, urology, neurosurgery, geriatrics, and physical medicine and rehabilitation

### **Mission**

The mission of the Rush University Physician Assistant Studies Program is to educate advanced practice PAs to practice medicine with competence, professionalism and compassion driven by academic excellence and a spirit of service to the community.

### **Vision**

The Rush University Physician Assistant Studies Program strives to be a nationally recognized leader in educating advanced practice PAs to assume leadership roles in clinical and professional practice.

### **Goals**

The following are goals of the Rush University Physician Assistant Studies program:

- Prepare highly qualified PAs to take leadership roles in clinical practice, collaborative patient-centered care, and service to the community and to the profession.
- Provide enhanced training opportunities to students in various areas of clinical practice.
- Prepare PAs who use best practice methods to plan, develop and deliver high quality, cost-effective health care services.
- Promote evidence-based practice as an integral part of effective medical practice.
- Provide a learning environment that is committed to promoting diversity and cultural humility.

The PA program is also dedicated to fulfilling the mission, vision and values of the University, the College and the Medical Center.

## **Physician Assistant Studies Program: Admission Requirements**

Admission to the PA program is competitive, and student selection is based on a number of factors. These factors include overall strength of academic performance, type and quality of prior health care experience, prior experience working with or shadowing PAs and interpersonal communication skills. The program is rigorous, and academic preparedness will be assessed based on indicators such as general and science course grade point average (GPA), prerequisite course work GPA, course work completed prior to application, and performance on the Graduate Record Examination (GRE).

Requirements for admission into the PA program include the following:

- A bachelor's degree from an accredited college or university prior to matriculation into the program.
- A minimum GPA of 3.0 on a 4.0 scale is required for both the total GPA and science GPA. A GPA greater than 3.3 for total and science is considered competitive.
- GRE scores taken within five years prior to application submission. A minimal combined verbal and quantitative score of 1,000, or 302 in the new scoring system, is required for interview and admission consideration. A combined score of 1,200 and above, or 309 in the new scoring system, is considered very competitive.
- Original copies of GRE scores must be sent directly to Rush University. The PA program GRE code is 0962.
- Documented hands-on, direct patient contact experience in a health care setting. Experience working with or shadowing PAs is required. A minimum of 1,000 hours direct patient contact experience is required at the time of application submission. Having 2,500 hours and above is considered competitive.
- A completed application submitted to the Central Application Service for Physician Assistants (CASPA).
- A supplemental application and \$40 fee is required only if applicants are invited to interview at the program. Information regarding this will be provided with an interview invitation.
- An on-campus interview with members of the PA program faculty and admissions committee.
- All applicants must meet the minimum requirements to perform the essential functions of a PA. See the Technical Standards section below for more information.
- Admission is contingent upon successful completion of a health assessment, criminal background check and drug screening prior to matriculation. Information regarding this requirement is discussed during interviews.
- Applicants with course work or a bachelor's degree conferred outside of the United States must submit a course equivalence evaluation by either World Education Services (WES) or Education Credentials Evaluators (ECE).
- TOEFL scores, if English is not the applicant's native language.
- The PA program admits students into the class on a rolling admission basis. This means that at each interview session, offers are made to fill seats in the class. Under a rolling admissions process, it is possible to fill all the seats in the class before interviews are done. It is to the applicant's advantage to submit all application materials as early as possible.
- **Due to the competitive nature of the application process, meeting posted admission criteria to the program does not guarantee an interview offer for the program.**
- Attendance in the program is on a full-time basis only. Students entering the PA program must complete the curriculum in its entirety. No advanced standing or transfer credits will be awarded, regardless of previous professional or academic experience.
- Applications must be submitted online via CASPA. The CASPA application has the following requirements:
  - Submission of official transcripts for all college course work completed
  - Three letters of recommendation (it is preferred that at least one of the letters be from a PA, physician or other health care provider familiar with the PA profession)
  - Personal statement
  - Payment of an application fee as outlined by CASPA

For inquiries related to the admissions process, contact CASPA directly.

For questions about the Rush University Physician Assistant Studies Program, call (312) 563-3234 or email [pa\\_admissions@rush.edu](mailto:pa_admissions@rush.edu).

## Physician Assistant Studies Program: Required Prerequisites

The following courses must be completed prior to matriculation into the program. Advanced placement or CLEP courses are not accepted towards meeting prerequisite course requirements.

Candidates must have at least four of the required courses completed at the time of application submission.

Course grades of C or better are mandatory for all prerequisite courses. Courses with grades of B or better are considered competitive for admission consideration.

<b>Professional Prerequisites</b>	<b>Minimum Semester Credit Hours</b>	<b>Minimum Quarter Credit Hours</b>
Human anatomy	3	4
Human physiology	3	4
<b>OR</b> a two-course sequence combined human anatomy and physiology course	5 Combined	7 Combined
Biochemistry	3	4
Microbiology (with lab preferred but not required)	3	4
Psychology or equivalent behavioral sciences course work	3	4
Statistics	3	4
<b>Total Minimum Credit Hours</b>	<b>18 and above</b>	<b>28 and above</b>

It is strongly recommended that all courses be taken within seven years prior to application to the program.

The following prerequisite courses **MUST BE** taken within the past seven years prior to application to the program:

- Human anatomy
- Human physiology
- Biochemistry
- Microbiology

### **Physician Assistant Studies Program: Technical Standards**

The following essential functions are required of all students enrolled in the Physician Assistant Studies Program.

Physician assistants (PAs) are responsible for the care of patients, some of who may be critically ill. PAs must be able to perform highly technical procedures and manage patients using complex medical equipment and devices. PAs must also be able to effectively and efficiently communicate with physicians and other health care professionals, as well as patients and their family members.

Therefore, in order to perform these tasks and be successful in the PA Studies Program, all students should have the capacity to perform, or learn to perform, all of the following functions:

1. Effectively maneuver between examination rooms, office areas, clinic areas, hospital patient rooms, operating rooms, special procedure suites and various other clinical areas in the hospital, clinic and physician's office setting as required for proper patient care.

2. Move and position patients, and perform potentially physically demanding tasks, including cardiopulmonary resuscitation, as required in the clinical setting.
3. Communicate effectively with patients, family, physicians and other health care workers in oral and written formats, and through the use of electronic medical records and email.
4. Assess and interpret information conveyed through diagnostic equipment and normal levels of speech from patients and staff, and respond to alarms.
5. Accurately measure medications, read patient records, evaluate information displayed on patient monitors, and make observations of a patient's condition.
6. Manipulate equipment as needed to perform fine motor tasks, examination techniques and technical procedures as appropriate for the patient population and clinical setting.
7. Apply sufficient intellectual and emotional skills to plan and exercise independent judgment, perform patient assessment, problem solve, and respond quickly and appropriately to medical emergencies.

The program reserves the right to require applicants or students to demonstrate any of these essential functions as part of the technical standards for the program.



## Physician Assistant Studies Program: Curriculum

Phase I: Core Didactic Program		Credit Hours
<b>Quarter I: Summer</b>		
PAS-510	Human Anatomy	7
PAS-511	Human Physiology	6
PAS-512	History and Physical Examination I	2
PAS-513	PA Professional Issues and Ethics	2
PAS-514	Diagnostic Methods I	2
<b>Quarter II: Fall</b>		
CHS-502	Research Methods and Statistics	5
GCC-520	Intro to Pharmacology and Physiology I	3
PAS-521	Clinical Medicine I	5
PAS-522	History and Physical Examination II	3
<b>Quarter III: Winter</b>		
GCC-521	Intro to Pharmacology and Physiology II	3
PAS-530	Principles of Epidemiology and Public Health	2
PAS-531	Clinical Medicine II	5
PAS-533	Clinical Diagnostic Reasoning	2
PAS-534	Diagnostic Methods II	2
PAS-535	Pediatrics	3
<b>Quarter IV: Spring</b>		
GCC-521	Intro to Pharmacology and Physiology III	3
CHS-510	Health Care in America	2
PAS-541	Clinical Medicine III	5
PAS-542	Fundamentals of Surgery	3
PAS-543	Psychosocial Medicine	2
PAS-545	Emergency Medicine	3
<b>Quarter Hours for Phase I:</b>		<b>70</b>

Phase II: Core Clinical Program (Typical Sequence)		Credit Hours
<b>Quarter I: Summer</b>		
PAS-581	Family Medicine	4
PAS-582	Internal Medicine I	4
PAS-583	Internal Medicine II	4
<b>Quarter II: Fall</b>		
PAS-584	General Surgery I	4
PAS-585	General Surgery II	4
PAS-586	Women's Health	4
<b>Quarter III: Winter</b>		
PAS-587	Pediatrics	8
PAS-588	Behavioral Health	4
PAS-589	Long-Term Care/Geriatrics	4
<b>Quarter IV: Spring</b>		
PAS-590	Emergency Medicine	4
PAS-591	Elective Rotation I	4
PAS-592	Elective Rotation II	4
PAS-580	Master's Research Project	2
<b>Quarter Hours for Phase II:</b>		<b>50</b>

Phase III: Clinical Specialization (Typical Sequence)		Credit Hours
<b>Quarter I: Summer</b>		
PAS-593	Advanced Clinical Practice	10
<b>Quarter II: Fall</b>		
PAS-594	Advanced Clinical Practice	10
<b>Quarter III: Winter</b>		
PAS-595	Advanced Clinical Practice	10
<b>Quarter Hours for Phase III:</b>		<b>30</b>
<b>Total Quarter Hours for Program:</b>		<b>150</b>

## Respiratory Care: Program Overview

The Department of Respiratory Care in the College of Health Sciences at Rush University is dedicated to clinical and academic excellence in teaching, research, service and patient care. The Respiratory Care Program is designed to provide students with an outstanding education in preparation for a satisfying professional career as advanced respiratory care practitioners, as well as to provide a foundation for leadership in management and supervision, education and clinical specialization.

Respiratory care, also known as respiratory therapy, is the allied health profession responsible for caring for patients with deficiencies and abnormalities of the cardiopulmonary system. Respiratory care is a dynamic and exciting health profession offering many opportunities for the new graduate.

Areas of respiratory care include basic care (oxygen, aerosol and chest physiotherapy), critical care (ventilator management and physiologic monitoring), perinatal and pediatric respiratory care, cardiopulmonary diagnostics, pulmonary laboratory, skilled nursing, restorative, subacute, home care, and pulmonary rehabilitation.

The respiratory therapist may often see a diverse group of patients ranging from the newborn and pediatric patients to adults and the elderly. Disease states or conditions often requiring respiratory care include asthma, emphysema, chronic obstructive lung disease, pneumonia, cystic fibrosis, infant respiratory distress, and conditions brought on by shock, trauma or postoperative surgical complications.

### Bachelor of Science Program

In addition to at least 60 semester hours (90 quarter hours) of general education and preprofessional prerequisite course requirements, the Bachelor of Science degree in respiratory care requires a minimum of 98 quarter hours of upper division credit for graduation. This program requires 29 semester hours of specific program preprofessional prerequisite requirements and 31 or more semester credits of general education prior to admission to Rush University for the professional phase (21 months). The preprofessional phase requirements may be completed at any accredited college or university. Dedicated to clinical and academic excellence, the professional phase includes more than 1,200 hours of in-hospital clinical practice. Additional elective course work in management and education may be taken by students interested in these areas.

As a leadership program in respiratory care, this course of study aspires to provide graduates with the foundation needed to assume professional leadership roles in clinical practice, clinical specialty areas and management. Upon completion of the

program, graduates are eligible for the national board examinations in respiratory care, as well as state licensure.

### Master of Science Program

The Master of Science degree in respiratory care requires a minimum of 119 quarter hours of credit for graduation. This is an integrated program, requiring 29 quarter hours of program preprofessional prerequisite requirements prior to admission to Rush University for the professional phase (21 months). The preprofessional phase requirements may be completed at any accredited college or university and include the successful completion of a baccalaureate degree. Dedicated to clinical and academic excellence, the professional phase includes more than 1,200 hours of in-hospital clinical practice.

As a leadership program in respiratory care, this course of study aspires to provide graduates with the foundation needed to assume professional leadership roles in clinical practice, clinical specialty areas, research, education and management. Upon completion of the program, graduates are eligible for the national board examinations in respiratory care, as well as state licensure.

## Respiratory Care: Admission Requirements — Bachelor's Program

Admission to the program is on a competitive basis. Student selection is based on a number of factors including overall grade point average (GPA), prerequisite GPA, consistency of academic performance, course work completed prior to application and interpersonal abilities. The program is rigorous, and applicants are required to arrange an orientation visit to a respiratory care department at a hospital prior to acceptance to the program if the applicant has no previous experience in the field of respiratory care. Requirements for admission to the professional phase of the program in respiratory care include the following:

- A minimum overall GPA of 2.5 in undergraduate course work.
- Completion of all professional prerequisite required courses with a grade of C or better.
- Completion of Rush University core curriculum requirements.\*
- Ability to complete all core general education curriculum and program prerequisite courses by fall enrollment in the program. Students admitted to the three-year track or advanced standing programs may be admitted with some program prerequisites or general education outstanding.

- Junior standing at the time of application.
- A personal interview with departmental faculty.
- Completed application to the program and submission of official transcripts for all college course work completed.
- Ability to perform the essential functions of the job.

\* Total Rush core curriculum is 60 semester credit (90 quarter credit hours). Courses listed below will meet the core requirements (see General Education Requirements and Professional Prerequisites).

### Preprofessional Phase — Program Prerequisites

The preprofessional phase (lower-division college level course work) requires a minimum of 60 quarter hours of prescribed study as outlined below.

### General Education Requirements

Successful completion of general education course work in mathematics (college algebra or above), communications, humanities and biological, social and behavioral sciences as outlined below.

	Semester Credit Hours	Quarter Credit Hours
Communications (English, composition)	6	8
Speech (oral communication)	3	4
Mathematics (college algebra or higher)	3	4
Humanities, philosophy or ethics	6	8
Fine arts (may not include a performance class)	3	4
Social and behavioral sciences (must include at least one course in psychology)	9	12
Elective courses in communications, humanities, fine arts, philosophy, ethics, social sciences, life sciences, physical sciences or computer science to total 60 semester credit hours for the core general education requirements for the college	4	17
<b>Total</b>	<b>34</b>	<b>57</b>
Professional Prerequisites*	Semester Credit Hours	Quarter Credit Hours
Human anatomy and physiology (or 4 hours anatomy and 4 hours physiology)	8	10
Chemistry (with lab)	4	5
Physics (with lab)	4	5
Microbiology (with lab)	4	5
Computer science (includes computer literacy)	3	4
Statistics	3	4
<b>Total</b>	<b>26</b>	<b>33</b>

## Respiratory Care: Admission Requirements — Master's Program

Admission to the program is on a competitive basis. Student selection is based on a number of factors including overall grade point average (GPA), prerequisite GPA, consistency of academic performance, course work completed prior to application, Graduate Record Examination (GRE) scores and interpersonal abilities. The program is rigorous, and applicants are required to arrange an orientation visit to a respiratory care department at a hospital prior to acceptance to the program if the applicant has no previous experience in the field of respiratory care.

Requirements for admission to the professional phase of the program in respiratory care include the following:

- A minimum overall GPA of 2.5 in undergraduate course work.
- Completion of all professional prerequisite required courses with a grade of C or better.
- Completion of a bachelor's degree and the Rush University core curriculum requirements\*
- Senior standing at the time of application, and the ability to complete all preprofessional course work by the beginning of the fall quarter of the first year. Students admitted to the three-year track or advanced standing programs may be admitted with some program prerequisites or general education outstanding.
- Submission of GRE scores (from an examination taken within five years of the date of application to the program) is encouraged but not required.
- A personal interview with departmental faculty.
- Completed application to the program and submission of official transcripts for all college course work completed.

\* Total Rush core curriculum is 60 semester credits (90 quarter credit hours). Courses listed above will meet the core requirements (see General Education Requirements and Professional Prerequisites).

### Program Prerequisites

All program prerequisite courses must be taken prior to entry into the first year of the regular professional program (alterations in the student's planned program require **written approval** by the department chair or program director). Registration for the first sequence of professional courses in the program requires the following:

- Admission into the program
- Completion of human anatomy and physiology, chemistry, physics, microbiology, psychology, computer science and statistics with a grade of C or better
- Consent of the Committee on Progress and Promotions for Respiratory Care

**Please note:** Individuals holding the RRT credential may be admitted to the program prior to completion of all program prerequisites.

### Policy for Transfer Students

Students who have completed course work at other approved respiratory care programs may petition to have these courses transfer in lieu of specific course work in the Rush University program. Students must submit transcripts of their courses from the program and a copy of the course syllabus for each course in which they desire transfer credit. The syllabus must contain the following information: course objectives, lecture outlines, course content, evaluation procedures and related information. These courses will be evaluated on an individual basis for content and total contact hours and credit hours.

The department reserves the right to test the proficiency of any student in course work transferred from other respiratory care programs and the right to disallow transfer credit for such course work in cases in which the student cannot demonstrate acceptable proficiency. All transfer credit is subject to the approval of the Committee on Progress and Promotions for Respiratory Care. The student must also have a minimum grade of C (2.0) for each course being transferred. A student cannot receive transfer credit for any respiratory care course work if he or she left the previous program due to academic probation, suspension or exclusion. All University policies regarding transfer credit must be satisfied.

## Respiratory Care: Registered Respiratory Therapist Advanced Standing (RRT)

### Admissions Requirements — BS or MS Program

Individuals holding the RRT credential may apply to enter the respiratory care program prior to any quarter. Submission of an application for admission should be made to the Office of College Admission Services with all official transcripts, National Board for Respiratory Care (NBRC) RRT certificate and a personal interview at least 30 days prior to the first day of the quarter in which the individual desires to begin classes. General education and professional prerequisites must be completed prior to graduation. All other program policies and procedures apply.

### Introduction

Individuals may have acquired academic credit in respiratory care courses from other schools and universities. Some individuals may acquire knowledge through experience and on-the-job training. When such persons apply for admission into

the program, an attempt is made to grant academic credit for equivalent educational courses, equivalent knowledge acquired from experience or successful completion of the NBRC's certification and registry examinations.

All students graduating from the respiratory care program must meet the same standards for graduation; the awarding of advanced standing does not signify a lesser-quality education than that offered through regular course work. What it does, however, is attempt to exempt the student from those areas of the formal program where the student already has the knowledge and expertise in those skills that would be offered. The program has identified the minimum competencies that a respiratory therapist must have in order to provide safe, high-quality patient care. The identification of these competencies is a complex task, and a great deal of care must be taken to ensure a standard of excellence.

The following policies and procedures are designed to ensure that those individuals who receive advanced standing are qualified to do so, and that the screening process adheres to University as well as departmental policies at all times.

To allow individuals who are not qualified to receive advanced standing is not in the student's or the program's best interest.

### Definition

Advanced standing is defined as a special and individually determined status granted to a student in a formal educational setting who has already gained, through other sources or through nonacademic experiences, knowledge, skills and professional attitudes taught in the program courses.

### Purpose of Advanced Standing Procedures

The purpose of the advanced standing procedures is to recognize and give formal educational credit for knowledge or ability gained through previous training or experience.

### Methods of Granting Advanced Standing

- Advanced standing can be awarded through transfer credit.
- Advanced standing can be awarded through the passing of an equivalency examination covering a certain area of knowledge. (An equivalency examination is an instrument or means by which a student accepted into the respiratory care program can demonstrate mastery of a knowledge area, content area or skill and thus be exempted from a course in the program which teaches that area or skill.)
- Advanced standing can be awarded as credit for successful completion of national certification (CRT/CPFT) or registry examinations (RRT/ RPFT).

### Eligibility for Advanced Standing

- Transfer students who have been accepted into the program may receive transfer credit for equivalent courses within the program curriculum.
- Credentialed students (RRT, CRT, CPFT, RPFT) who have been accepted into the program may receive transfer credit and will also be eligible to take equivalency examinations in certain courses.

### Policy for Individuals Who Hold the CRT or RRT Credential

Advanced standing is available to individuals who have successfully completed the National Board for Respiratory Care's respiratory therapy certification (CRT) or respiratory therapy registry (RRT) examinations. Those eligible for advanced standing must submit the following documentation:

1. A notarized copy of the RRT certificate indicating that it is a true and accurate copy.
2. Official transcripts of all previous respiratory care and general education course work attempted or completed indicating award of the bachelor's degree from an accredited college or university.
3. A notarized copy of the certificate of completion from an approved respiratory care training program as applicable.
4. A completed application for admission to the advanced standing program. These are available in the Office of College Admission Services.
5. A letter directed to the Committee on Progress and Promotions for Respiratory Care requesting advanced standing.

### Respiratory Care: Bachelor of Science Curriculum

#### Program Prerequisites

All program prerequisite courses must be taken prior to entry into the first year of the regular professional program (alterations in the student's planned program require written approval by the department chair/program director). Registration for the first sequence of professional courses in the program requires:

- Admission into the program
- Completion of human anatomy and physiology, chemistry, physics, microbiology, psychology, computer science and statistics with a grade of C or better
- Consent of the Committee on Progress and Promotions for Respiratory Care

**Please note:** Individuals holding the RRT credential may be admitted to the program prior to completion of all program prerequisites.

## Professional Phase — Respiratory Care Professional Courses

### Two-Year Track— BS Degree

Students accepted into the professional phase begin course work in the fall quarter of the first year of the program. Course work in the professional phase is taken on a full-time basis in the following sequence:

Year 1		Credit Hours
<b>Fall Quarter</b>		
RC-311	Introduction to Respiratory Care	5
RC-312	Cardiopulmonary Physiology	5
RC-313	Respiratory Equipment and Techniques	5
CHS-510	Health Care in America	2
<b>Winter Quarter</b>		
RC-321	Patient Assessment	5
RC-322	Pulmonary Disease	5
RC-323	Mechanical Ventilation	4
RC-324	Pharmacology	3
<b>Spring Quarter</b>		
RC-331	Critical Care	5
RC-332	Cardiopulmonary Diagnostics and Pulmonary Function Testing	5
RC-333	Pediatric and Neonatal Respiratory Care	5
RC-334	Clinical Observation I	2
<b>Summer Quarter</b>		
RC-401	Education*	5
RC-402	Management*	5
RC-403	Introduction to Research*	5
RC-404	Clinical Observation II	2
*Electives		
Year 2		Credit Hours
<b>Fall Quarter</b>		
RC-411	Clinical Practice I	12
RC-412	Clinical Seminar I	3
<b>Winter Quarter</b>		
RC-421	Clinical Practice II	12
RC-422	Clinical Seminar II	3
<b>Spring Quarter</b>		
RC-431	Clinical Practice III	12
RC-432	Clinical Seminar III	3
<b>Total Hours Required for Respiratory Care</b>		<b>98–108</b>

## Respiratory Care: RRT Advanced Standing Curriculum for Bachelor of Science

### Credit Based on the RRT Credential

Individuals providing documentation that they hold the RRT credential will receive credit for the following theory courses:

RC-313	Respiratory Care Equipment and Techniques	5
RC-311	Introduction to Respiratory Care	5
RC-324	Pharmacology	3
RC-321	Patient Assessment	5
RC-411	Clinical Practice I	12
RC-421	Clinical Practice II	12
RC-334	Clinical Observation I	2
RC-404	Clinical Observation II	2
RC-412	Clinical Seminar I	3
RC-999	Ungraded Credit	14
<b>TOTAL</b>		<b>63</b>

### Required Courses

RRT students must enroll in and complete the following required courses:

RC-402	Management	5
RC-401	Education	5
RC-403	Introduction to Research	5
RC-431	Clinical Practice III	12
RC-413	Research Project I	2
RC-423	Research Project II	2
RC-433	Research Project III	2
RC-432	Clinical Seminar III	3
<b>TOTAL</b>		<b>36</b>

### Elective Courses

RRT students must select a minimum of nine quarter hours from the following courses:

RC-312	Cardiopulmonary Physiology	5
RC-322	Pulmonary Disease	5
RC-323	Mechanical Ventilation	4
RC-332	Cardiopulmonary Diagnostics and Pulmonary Function Testing	5
RC-331	Critical Respiratory Care	5
RC-333	Pediatric and Neonatal Respiratory Care	5
CHS-510	Health Care in America	2
<b>TOTAL</b>		<b>31</b>

Total credit awarded based on the RRT Credential	<b>63</b>
Credit hours that must be completed at Rush	<b>45</b>
Total respiratory care course hours required for the degree	<b>98–108</b>

### Sample Advanced Standing Program Student Schedule:

<b>Summer Quarter</b>		
RC-401	Education	5
RC-402	Management	5
RC-403	Research	5
<b>Fall Quarter</b>		
CHS-510	Health Care in America	2
RC-413	Research Project I	2
<b>Winter Quarter</b>		
RC-322	Pulmonary Disease	5
RC-423	Research Project II	2
<b>Spring Quarter</b>		
RC-331	Critical Care	5
RC-433	Research Project III	2
RC-432	Clinical Seminar III	3
<b>Summer Quarter</b>		
RC-431	Clinical Practice III	12

**Note regarding RC-431, Clinical Practice III:** The purpose of this clinical practice will be to allow the student to acquire special clinical skills and expertise that is not normally achieved in an associate's degree program or through work experience. The student may also use this course to refine or upgrade clinical skills that may have been used infrequently due to the nature of the student's work environment or experiences. A course proposal or prospectus for clinical practice will be designed by the student and submitted to the Director of Clinical Education. The prospectus or proposal must be reviewed and approved by the Committee on Progress and Promotion for Respiratory Care. The prospectus must include course goals and objectives; methodology to achieve these goals and objectives to include clinical or laboratory facilities to be utilized; time spent in a given clinical or laboratory area; and proposed method of evaluation. The following are areas of concentration that may be included:

- Pulmonary function laboratory
- Cardiac or pulmonary stress testing
- Diagnostic sleep laboratory
- Fiberoptic bronchoscopy

- Physiologic monitoring to include hemodynamics
- Adult critical care
- Pediatric or neonatal respiratory care
- ECMO
- Mechanical circulatory assistance
- Respiratory home care
- Sub-acute or long-term care facilities
- Pulmonary or cardiac rehabilitation
- Invasive or noninvasive cardiology
- Hyperbaric medicine
- Applied research
- Respiratory care education
- Management
- Advanced generalist (to include two or more subspecialties)

With the program director's permission, this 12-hour course (RC-431) may be divided into two parts — RC-431A (six hours) and RC-431B (six hours) — accomplishing the same course goals outlined above over two quarters.

**Substitutions** for the above courses to meet individual student needs may be made from other respiratory care curriculum course work if approved by the program director.

Students who desire additional course work related to supervision and management may request that specific courses taken at the graduate level in another Rush University department be substituted for specific required or elective courses.

### Summary of Requirements for the BS Degree for RRT Students:

Respiratory care required courses	45
Credit based on RRT credential	63
<b>TOTAL</b>	<b>108</b>

## Respiratory Care: Master of Science Curriculum

### Preprofessional Phase — Program Prerequisites

Professional Prerequisites*	Semester Credit Hours	Quarter Credit Hours
Human anatomy and physiology (or 4 hrs. anatomy and 4 hrs. physiology)	8	8
Chemistry (with lab)	4	4
Physics (with lab)	4	4
Microbiology (with lab)	4	4
Psychology (courses with prefixes PSYC)	3	3
Computer science (includes computer literacy)	3	3
Statistics	3	3
<b>Total</b>	<b>29</b>	<b>29</b>



## Professional Phase — Respiratory Care Professional Courses

### Two-Year Track — MS Degree

Students accepted into the professional phase begin course work in the fall quarter of the first year of the program. Course work in the professional phase is taken on a full-time basis in the following sequence:

Year 1		Credit Hours
<b>Fall Quarter</b>		
RC-511	Introduction to Respiratory Care	5
RC-512	Cardiopulmonary Physiology	5
RC-513	Respiratory Equipment and Techniques	5
CHS-510	Health Care in America	2
<b>Winter Quarter</b>		
RC-521	Patient Assessment	5
RC-522	Pulmonary Disease	5
RC-523	Mechanical Ventilation	4
RC-524	Pharmacology	3
<b>Spring Quarter</b>		
RC-531	Critical Care	5
RC-532	Cardiopulmonary Diagnostics and Pulmonary Function Testing	5
RC-533	Pediatric and Neonatal Respiratory Care	5
RC-534	Clinical Observation I	2
<b>Summer Quarter</b>		
RC-561	Education	5
RC-562	Management	5
RC-563	Introduction to Research	5
RC-564	Clinical Observation II	2
Year 2		Credit Hours
<b>Fall Quarter</b>		
RC-571	Clinical Practice I	12
RC-572	Clinical Seminar I	3
RC-573	Research Project I	2
<b>Winter Quarter</b>		
RC-581	Clinical Practice II	12
RC-582	Clinical Seminar II	3
RC-583	Research Project II	2
<b>Spring Quarter</b>		
RC-591	Clinical Practice III	12
RC-592	Clinical Seminar III	3
RC-593	Research Project III	2
<b>Total Hours for Respiratory Program:</b>		<b>119</b>

## Respiratory Care: RRT Advanced Standing Curriculum for Master of Science

### Credit Based on the RRT Credential

Individuals providing documentation that they hold the RRT credential may receive credit for the following theory courses:

RC-513	Respiratory Care Equipment and Techniques	5
RC-511	Introduction to Respiratory Care	5
RC-524	Pharmacology	3
RC-521	Patient Assessment	5
RC-571	Clinical Practice I	12
RC-572	Clinical Seminar I	3
RC-581	Clinical Practice II	12
RC-582	Clinical Seminar II	3
RC-999	Ungraded Credit	26
<b>TOTAL</b>		<b>74</b>

### Required Courses

RRT students must enroll in and complete the following required courses:

RC-562	Management	5
RC-561	Education	5
RC-563	Introduction to Research	5
RC-591	Clinical Practice III	12
RC-573	Research Project I	2
RC-583	Research Project II	2
RC-593	Research Project III	2
RC-592	Clinical Seminar III	3
<b>TOTAL</b>		<b>36</b>

### Elective Courses

RRT students must select a minimum of nine quarter hours from the following courses:

RC-512	Cardiopulmonary Physiology	5
RC-522	Pulmonary Disease	5
RC-523	Mechanical Ventilation	4
RC-532	Cardiopulmonary Diagnostics and Pulmonary Function Testing	5
RC-531	Critical Respiratory Care	5
RC-533	Pediatric and Neonatal Respiratory Care	5
CHS-510	Health Care in America	2
<b>TOTAL</b>		<b>31</b>

Total credit which may be awarded based on the RRT Credential	<b>74</b>
Credit hours that must be completed at Rush	<b>45</b>
Total respiratory care course hours required for the degree	<b>119</b>

### Sample Advanced Standing Program Student Schedule

<b>Summer Quarter</b>		
RC-561	Education	5
RC-562	Management	5
RC-563	Introduction to Research	5
<b>Fall Quarter</b>		
CHS-510	Health Care in America	2
RC-512	Cardiopulmonary Physiology	5
RC-573	Research Project I	2
<b>Winter Quarter</b>		
RC-522	Pulmonary Disease	5
RC-583	Research Project II	2
<b>Spring Quarter</b>		
RC-531	Critical Care	5
RC-593	Research Project III	2
RC-592	Clinical Seminar III	3
<b>Summer Quarter</b>		
RC-591	Clinical Practice III	12

**Note regarding RC-591, Clinical Practice III:** The purpose of this clinical practice will be to allow the student to acquire special clinical skills and expertise that is not normally achieved in an associate's degree program or through work experience. The student may also use this course to refine or upgrade clinical skills that may have been used infrequently due to the nature of the student's work environment or experiences. A course proposal or prospectus for clinical practice will be designed by the student and submitted to the Director of Clinical Education. The prospectus or proposal must be reviewed and approved by the Committee on Progress and Promotion for Respiratory Care. The prospectus must include course goals and objectives; methodology to achieve these goals and objectives to include clinical or laboratory facilities to be utilized; time spent in a given clinical or laboratory area; and proposed method of evaluation. The following are areas of concentration that may be included:

- Pulmonary function laboratory
- Cardiac or pulmonary stress testing

- Diagnostic sleep laboratory
- Fiberoptic bronchoscopy
- Physiologic monitoring to include hemodynamics
- Adult critical care
- Pediatric /or neonatal respiratory care
- ECMO
- Mechanical circulatory assistance
- Respiratory home care
- Subacute or long-term care facilities
- Pulmonary or cardiac rehabilitation
- Invasive or noninvasive cardiology
- Hyperbaric medicine
- Applied research
- Respiratory care education
- Management
- Advanced generalist (to include two or more subspecialties)

With the program director's permission, this 12-hour course (RC-591) may be divided into two parts — RC-591A (six hours) and RC-591B (six hours) — accomplishing the same course goals outlined above over two quarters.

Substitutions for the above courses to meet individual student needs may be made from other respiratory care curriculum course work if approved by the program director.

Students who desire additional course work related to supervision and management may request that specific courses taken at the graduate level in another Rush University department be substituted for specific required or elective courses.

### Summary of Minimum Requirements for the MS Degree for RRT Students Holding a Bachelor's Degree

Respiratory care required courses	45
Credit based on RRT credential	74
<b>TOTAL</b>	<b>119</b>

## Respiratory Care: Academic Policies

### Bachelor of Science

All professional courses (RC prefix) in the department are taught in a sequential manner. Each professional course in the program serves as the prerequisite for the subsequent course. Consequently, professional courses must be taken in sequence.

**Withdrawing or failure to successfully complete a professional course with a letter grade of C or better may result in the student being placed on the three-year track, given a leave of absence (LOA) and academic probation or dismissed from the program after review by the Committee on Progress and Promotions for Respiratory Care.** Students readmitted to the program at times other than the fall quarter of the second year will pick up the course sequence as prescribed by the chair, program director or Committee on Progress and Promotions for Respiratory Care.

### Standards of Performance for Respiratory Care and Major Field-Related Courses

90–100 = A

80–89 = B

75–79 = C

70–74 = D

Below 70 = F

Unless otherwise described in a given course syllabus, the minimum satisfactory grade for course credit is a letter grade of C, and all stipulated segments of a course must be passed by this standard. Students must demonstrate proficiency in all clinical skills presented in order to pass clinical courses. For all clinical courses, the final exam must be passed at the designated cut score and a grade of C or better must be maintained in order to successfully complete each clinical course to continue in the program.

Students are expected to maintain an overall GPA in the program of at least 2.0.

Failure of the student to maintain a cumulative GPA of at least 2.0 will subject the student to a review and may result in the student being placed on probation, given a LOA or dismissed from the program after review by the Committee on Progress and Promotions for Respiratory Care.

If a dismissed student wishes to re-enter the program, he or she must reapply and will be considered on the same basis as any new applicant. Students who voluntarily withdraw from the program either passing or failing have no guarantee of

reinstatement to the program. Students requesting readmission to the program should submit a letter to that effect to the Committee on Progress and Promotions for Respiratory Care. Students readmitted to the program will pick up the course sequence as prescribed by the chair, program director or Committee on Progress and Promotions for Respiratory Care.

### Clinical Final Examinations

All students are required to pass the clinical final examination after completing the clinical course to continue in the program. In the event a student fails the clinical final examination, the student is allowed to make one more attempt to pass. In the event that the student passes the clinical final exam on the second attempt, the student will continue in the program. The grade earned on the first attempt will be used to calculate the final clinical grade. In the event that the student does not pass the clinical final exam on the second attempt, the student will be placed in remediation. The student will be given a third attempt to pass the final by the end of the next quarter. In the event the student does not pass on the third attempt, the student will earn an F grade in the clinical course and may be suspended or released from the program.

### Comprehensive End-of-Program Competency Assessment Examination

Before graduating, the student will complete comprehensive end-of-program examination assessments, National Board for Respiratory Care (NBRC) secure therapist multiple choice (TMC). The TMC examination will be taken at the end of the winter quarter of the second year as a part of RC 421 Clinical Practice 2. The clinical simulation examinations will be given at the beginning of the spring quarter of the second year as part of RC 431, Clinical Practice 3. A passing score is required to successfully complete RC 421 and RC 431, as well as meet graduation and program completion requirements (see Graduation Requirements). Students who do not successfully complete the comprehensive self-assessment examinations will receive an Incomplete (I grade) for 421 and 431. Students receiving an I grade will be required to attend remediation over the following quarter. Those failing the examination after multiple attempts or failing to attend remediation may be subject to dismissal from the program. Those students may reapply to the program (see Procedures for Readmission).

### Conduct and Ethics

Students are expected to conduct themselves at all times in a dignified manner. This manner conforms to the ethics of the profession and instills patient confidence in one's abilities as a health care practitioner. Each student is expected to conform to the professional code of ethics as outlined in the student handbook and policies outlined in the University catalog.

Irresponsible, unprofessional or unethical behavior as determined by the instructor or failure to follow the instructions of a clinical instructor during clinical practice may result in dismissal from the program. All hospital regulations are to be followed by students when undergoing clinical training in a facility.

If employed by a clinical site in which the student is assigned a clinical rotation, the student must not complete clinical course work while in an employee status.

### Scholastic Dishonesty and Cheating

The department will not condone cheating in any form. Plagiarizing or copying others' writing or work is cheating. Any allegations of cheating will be reviewed by the Committee on Progress and Promotions for Respiratory Care and if merited, dealt with in a strict manner, including immediate dismissal from the program.

Any student found to be cheating on an examination, test, quiz or assignment will automatically receive a zero for the grade and will be subject to dismissal from the program at the discretion of the Committee on Progress and Promotions for Respiratory Care. Plagiarism on drafts of assignments may result in a zero grade for the entire assignment. Failure to report incidents involving scholastic dishonesty on the part of another student will be considered unprofessional conduct on the part of the student and may result in disciplinary action.

### Examination Administration

All examinations given by the department will be monitored by faculty or staff at all times. Students will be seated in such a manner as to minimize the opportunity for observation of other students' examination papers. No breaks will be allowed once an examination period has begun, and students may not leave the room during an exam until they are finished taking the examination, except in the event of an emergency, which will be judged by the faculty or staff monitoring the exam on a case by case basis.

If a student turns in an examination without answering all questions, he or she will NOT be given an opportunity to finish the examination after leaving the room.

Only marks made on the Scantron sheet will be used to compute a grade on all Scantron-graded examinations. Even if a student marks the answer correctly on his or her examination, but does not mark it correctly on the Scantron, only the Scantron answer will be used to compute the grade, not the answer marked on the examination.

Programmable calculators will NOT be allowed during examinations.

## Examination Review

At the discretion of the course instructor, during review of any examination given within the curriculum, no other papers or books will be allowed on the student's desk. No writing implements of any kind will be allowed. No note taking or recording of any kind will be permitted. This includes written note taking and recording with audiotape, videotape or any other form of electronic or mechanical recording. Violation of this policy will constitute academic dishonesty and will be referred to the Committee on Progress and Promotions for Respiratory Care for review and possible disciplinary action.

## Master of Science

All professional courses (RC prefix) in the department are taught in a sequential manner. Each professional course in the program serves as the prerequisite for the subsequent course. Consequently, professional courses must be taken in sequence.

**Withdrawing or failure to successfully complete a professional course with a letter grade of C or better may result in the student being placed on the three-year track, given a leave of absence (LOA) and academic probation, or dismissed from the program after review by the Committee on Progress and Promotions for Respiratory Care.** Students readmitted to the program at times other than the fall quarter of the second year will pick up the course sequence as prescribed by the chair, program director or Committee on Progress and Promotions for Respiratory Care.

## Standards of Performance for Respiratory Care and Major Field-Related Courses

90–100 = A

80–89 = B

75–79 = C

70–74 = D

Below 70 = F

Unless otherwise described in a given course syllabus, the minimum satisfactory grade for course credit is a letter grade of C, and all stipulated segments of a course must be passed by this standard. Students must demonstrate proficiency in all clinical skills presented in order to pass clinical courses. For all clinical courses, the final exam must be passed at the designated cut score and a grade of C or better must be maintained in order to successfully complete each clinical course to continue in the program.

Students are expected to maintain an overall GPA in the program of at least 3.0.

Failure of the student to maintain a cumulative GPA of at least 3.0 will subject the student to a review and may result in the

student being placed on probation, given a LOA or dismissed from the program after review by the Committee on Progress and Promotions for Respiratory Care.

If a dismissed student wishes to re-enter the program, he or she must reapply and will be considered on the same basis as any new applicant. Students who voluntarily withdraw from the program, either passing or failing, have no guarantee of reinstatement to the program. Students requesting readmission to the program should submit a letter to that effect to the Committee on Progress and Promotions for Respiratory Care. Students readmitted to the program will pick up the course sequence as prescribed by the chair, program director or Committee on Progress and Promotions for Respiratory Care.

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## Comprehensive End-of-Program Competency Assessment Examination

Before graduating, the student will complete comprehensive end-of-program examination assessments [NBRC secure therapist multiple choice (TMC) and clinical simulation examinations (CSE)]. The TMC examination will be taken at the end of winter quarter of the second year as a part of RC 581, Clinical Practice 2. The CSE will be given at the beginning of the spring quarter of the second year as part of RC 591, Clinical Practice 3. A passing score is required to successfully complete RC 581 and 591, as well as meet graduation and program course completion requirements. Students who do not successfully complete the comprehensive self-assessment examinations will receive an Incomplete (I) grade for RC 581 and 591. Those students receiving an I grade will be required to attend remediation over the following quarter. Those failing the examination after multiple attempts or failing to attend remediation may be subject to dismissal from the program. Those students may reapply to the program (see Procedures for Readmission).

## Conduct and Ethics

Students are expected to conduct themselves at all times in a dignified manner. This manner conforms to the ethics of the profession and instills patient confidence in one's abilities as a health care practitioner. Each student is expected to conform to the professional code of ethics as outlined in the student handbook and in policies outlined in the University catalog.

Irresponsible, unprofessional or unethical behavior as determined by the instructor or failure to follow the instructions of a clinical instructor during clinical practice may result in dismissal from the program. All hospital regulations are to be followed by students when undergoing clinical training in a facility.

If employed by a clinical site in which the student is assigned a clinical rotation, the student must not complete clinical course work while in an employee status.

## Scholastic Dishonesty and Cheating

The department will not condone cheating in any form. Plagiarizing or copying others' writing or work is cheating. Any allegations of cheating will be reviewed by the Committee on Progress and Promotions for Respiratory Care and, if merited, dealt with in a strict manner, including immediate dismissal from the program.

Any student found to be cheating on an examination, test, quiz or assignment will automatically receive a zero for the grade and will be subject to dismissal from the program at the discretion of the Committee on Progress and Promotions for Respiratory Care. Failure to report incidents involving scholastic dishonesty on the part of another student will be considered unprofessional conduct on the part of the student and may result in disciplinary action.

## Examination Administration

All examinations given by the department will be monitored by faculty or staff at all times. Students will be seated in such a manner as to minimize the opportunity for observation of other students' examination papers. No breaks will be allowed once an examination period has begun, and students may not leave the room during an exam until they are finished taking the examination, except in the event of an emergency, which will be judged by the faculty or staff monitoring the exam on a case by case basis.

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will be used to compute the grade, not the answer marked on the examination.

Programmable calculators will NOT be allowed during examinations.

## Examination Review

At the discretion of the course instructor, during review of any examination given within the curriculum, no other papers or books will be allowed on the student's desk. No writing implements of any kind will be allowed. No note taking or recording of any kind will be permitted. This includes written note taking and recording with audiotape, videotape or any other form of electronic or mechanical recording. Violation of this policy will constitute academic dishonesty and will be referred to the Committee on Progress and Promotions for Respiratory Care for review and possible disciplinary action.

## Respiratory Care: Graduation Requirements — Bachelor of Science

1. Completion of all required course work with a grade point average of 2.0 or better.
2. Completion of each required respiratory care professional course with a grade of C or better.
3. Successful completion of the National Board for Respiratory Care Registry SAE written examinations and CSE examinations for Advanced Respiratory Therapists (RRT) or an equivalent departmental examination.
4. Advanced Cardiac Life Support (ACLS), Pediatric Advanced Life Support (PALS) and Neonatal Resuscitation Provider (NRP) course completion.
5. Completion of all University requirements for graduation.

## Respiratory Care: Graduation Requirements — Master of Science

1. Completion of all required course work with a grade point average of 3.0 or better.
2. Completion of each required respiratory care professional course with a grade of C or better.
3. Basic Life Support (BLS), Advanced Cardiac Life Support (ACLS), Pediatric Advanced Life Support (PALS) and Neonatal Resuscitation Provider (NRP) course completion.
4. Successfully complete a departmental research project.
5. Completion of all University requirements for graduation.

## **Vascular Ultrasound and Technology: Mission and Goals**

### **Mission**

The mission of the Vascular Ultrasound and Technology Program is to improve the quality and availability of diagnostic vascular ultrasound examinations for patients by educating students in the knowledge, skills and behavior necessary to competently perform vascular ultrasound examinations.

### **Goals**

The primary goal of the program is to prepare competent entry-level vascular technologists in the cognitive (knowledge), psychomotor (skills) and affective (behavior) competencies necessary to perform vascular ultrasound examinations. A secondary goal is to offer a broader understanding of the profession to the students through basic education in laboratory management, professional practice and research areas.

## **Vascular Ultrasound and Technology: Overview**

### **Description of the Profession**

The vascular sonographer plays a vital role in the diagnosis and treatment of patients with disorders of arteries and veins. These include atherosclerosis that may result in strokes or gangrene of the extremities, blood clots in veins that may break off and travel to the lungs and possibly cause death, aneurysms that may burst, and many other pathologies of the circulatory system. A vascular sonographer is responsible for taking the patient's history; performing the appropriate test using high-tech, noninvasive equipment such as ultrasound; documenting and analyzing the data and images; and preparing a preliminary report for the physician to interpret. The sonographer has extensive direct interaction with patients, physicians, coworkers and other hospital personnel. The work requires physical, intellectual and communication skills.

### **Program Description**

Students in the Vascular Ultrasound and Technology Program are taught by vascular sonographers and physicians who are experienced practitioner-teachers in the field. The basic program is full time and consists of 21 months (seven quarters) of study. The first three quarters consist of nine months of classroom instruction, student laboratory work and observation of patient examinations. The second-year students perform the vascular examinations learned during the first year on patients under

the direction of credentialed and experienced vascular sonographers at two or more vascular laboratories during the year. The clinical sites include university hospitals in Chicago, as well as some community hospitals and out-of-state sites. During the second year, students also participate in senior lectures, patient case presentations and vascular conference. Students earn a Bachelor of Science degree and are eligible to take the certification examination to become a registered vascular technologist (RVT) before graduation due to the program's status as an accredited ultrasound program through CAAHEP (Commission on Accreditation of Allied Health Educational Programs).

### **Program Accreditation**

The program is accredited by the Commission on Accreditation of Allied Health Educational Programs (CAAHEP) at 25400 U.S. Highway 19 North, suite 158, Clearwater, Florida 33763, [www.caahep.org](http://www.caahep.org), (727) 210-2350, and through the Joint Review Committee on Education in Diagnostic Medical Sonography (JRC-DMS).

## **Vascular Ultrasound and Technology: Admission Requirements**

- A minimum of 90 quarter (60 semester) hours earned at an accredited college or university is required.
- The minimum cumulative GPA is 2.50 on a 4.0 scale. However, more than 90% of students admitted in the previous two years had a cumulative incoming GPA over 2.75.
- Effective Jan. 1, 2009, all entering students must complete the below core general education requirements with a minimum grade of C in order to be eligible for the Bachelor in Science degree awarded by Rush University:

Required Courses (these courses must be completed within the last 10 years. Please email the CHS admissions office at [chs\\_admissions@rush.edu](mailto:chs_admissions@rush.edu) if you have a question about which particular courses from your college will cover these prerequisites.)

Requirements	Semester Credit Hours	Quarter Credit Hours
<b>Two courses in communications</b> English composition is required. The second course may be in composition, speech, or other communication topic.	6	9
<b>One course in mathematics</b> College algebra or higher-level math is required. More math courses are highly recommended.	3	4
<b>Two courses in life sciences</b> Human anatomy and physiology is required. (Two semesters are highly recommended.) The second course may be in anatomy, biology, microbiology, pathophysiology, physiology or other life science topic.	6	9
<b>One course in physical sciences</b> General physics is required. Chemistry is highly recommended. Please be sure to fulfill this requirement by taking a physics course that is for science majors.	3	4
<b>One course in social sciences</b> (i.e., government, history, political science, psychology, sociology)	3	4
<b>One course in humanities</b> (i.e. ethics, fine arts, literature, philosophy) Ethics is highly recommended. Performance courses do not meet this requirement.	3	4
<b>Elective courses</b> in communications, computer science, ethics, fine arts, humanities, life sciences, literature, philosophy, physical sciences or social sciences to total 36 semester (56 quarter) hours.	36	56
<b>Total</b>	<b>60</b>	<b>90</b>

- Applicants who have taken their prerequisite course work at a university outside the United States must have their course work evaluated by the Educational Credential Evaluators (ECE).
- Three recommendations are required on the recommendation forms provided in the application. These recommendations should be from previous instructors and employers (preferably from two instructors and one employer).

## Vascular Ultrasound and Technology: Technical Standards

The purpose of this document is to advise potential students of the functional expectations of the vascular ultrasound and technology student during the program's classes, labs and clinical rotations. Students must do the following:

### Observation

- Have sufficient eyesight to observe details in black and white as well as color images, observe patients, equipment monitors, equipment controls and paperwork with easy transition from one to the other, with or without accommodation.

- Have a sufficient level of hearing to determine changes in frequency and amplitude of sounds.

### Communication

- Have a sufficient level of hearing and speech to be able to communicate clearly, efficiently, effectively and sensitively with patients, their families and the health care team in English.
- Have a sufficient level of writing skills to communicate clearly, efficiently, effectively and concisely with the health care team in English.

### Motor

- Have a normal range of motion and strength to perform large motor tasks, such as moving patients from chair to bed with a coworker, placing patients in correct position for the examination and pushing or pulling large wheeled equipment up and down ramps and long hallways.
- Have good hand-eye coordination, normal range of digital, hand and arm dexterity, and hand and arm strength and control.
- Be able to sit and stand for extended periods of time, ranging up to three hours in duration.



- Have a normal range of flexibility to reach, bend and stoop.
- Be able to move from room to room and in small spaces around equipment and patients.
- Travel to clinical sites.

### **Behavioral and Interpersonal Attributes**

Students must possess the emotional health required for full utilization of intellectual abilities. This includes but is not limited to the following:

- Exercise good judgment.
- Interact respectfully with all individuals.
- Maintain a clean, neat and healthy appearance at all times.
- Promptly complete all responsibilities.
- Safely perform all tasks.
- Function effectively under average amounts of stress with occasional periods of taxing workloads.
- Adapt to changing environments.
- Display flexibility.
- Function in the face of uncertainties inherent in clinical practice.
- Function compassionately, with integrity and concern for others.
- Interact with the staff as a team member and with integrity.
- Maintain the confidentiality of patients and medical information.
- Perform tasks in a timely manner.

### **Academic Performance**

- Obtain information from lectures, labs, reading assignments, audio-visual materials and written materials including texts, graphs, images and video.
- Use a computer keyboard.
- Perform analyses, measurements, calculations, reasoning and problem-solving tasks.
- Take multiple-choice, short-answer and essay tests.
- Deliver presentations.
- Take proficiency lab examinations.
- Perform vascular exams on patients in a clinical setting.
- Perform tasks in a timely manner.

## **Vascular Ultrasound and Technology: Academic Policies**

### **Good Academic Standing**

High academic performance is expected in required courses. Students will be considered in good standing unless placed on academic probation. An annual cumulative grade point average of at least 2.0 is required to be eligible to continue in the program. A grade of C or higher in the required courses is necessary to be eligible to continue in the program; a grade of D or F may result in dismissal from the program. The faculty reserves the right to request the withdrawal of a student whose conduct, health or performance demonstrates lack of fitness for continuance in a health profession. Any such student not voluntarily withdrawing will be dismissed from the University.

### **Academic Probation**

Academic probation is assigned to any student who receives a quarterly grade point average below 2.0, or whose cumulative GPA falls below 2.0. Students placed on probation have one quarter in which to regain good standing. Failure to do so may result in dismissal from the University.

### **Clinical Work**

A student may not be paid as an employee during clinical credit hours. Also, a student may not count any paid work as an employee for clinical credit hours in the program.

### **Blood-Borne Pathogen and Communicable Disease Policy**

If a student is exposed to a blood-borne pathogen or communicable disease, he or she should report to the emergency room for care.

### **Student Academic Appeals and Grievance Procedure**

A student wishing to appeal an academic decision should follow the College of Health Sciences appeal process in the College of Health Sciences policies section of the University catalog.

### **College of Health Sciences/Rush University Academic Policies**

Please see the College of Health Sciences academic policies section of the University catalog. In addition, the Academic Resources and Policies section of this catalog contains Rush University academic policies.

## Vascular Ultrasound and Technology: Curriculum

Year 1		Credit Hours
<b>Fall Quarter</b>		
VAS-301	Vascular Anatomy, Physiology and Pathophysiology	3
VAS-304	Vascular Medical Terminology	1
VAS-311	Ultrasound Physics and Physical Principles I	3
VAS-311L	Ultrasound Physics and Physical Principles I Lab	1
VAS-321	Patient Care Practices	2
VAS-321L	Patient Care Practices Lab	1
VAS-331	Venous Ultrasound Procedures	2
VAS-331L	Venous Ultrasound Procedures Lab	1
<b>Winter Quarter</b>		
VAS-310a	General Pathophysiology I	2
VAS-313	Ultrasound Physics and Physical Principles II	3
VAS-341	Arterial Physiologic Procedures	3
VAS-341L	Arterial Physiologic Procedures Lab	1
VAS-351	Cerebrovascular Ultrasound Procedures	2
VAS-351L	Cerebrovascular Ultrasound Procedures Lab	1
VAS-405	Laboratory Management	2
VAS-354	Transcranial Doppler (TCD)	1
<b>Spring Quarter</b>		
VAS-310b	General Pathophysiology II	3
VAS-361	Abdominal Vascular Ultrasound Procedures	2
VAS-361L	Abdominal Vascular Ultrasound Procedures Lab	1
VAS-371	Advanced Vascular Testing and Topics	3
VAS-371L	Advanced Vascular Testing Lab	1
VAS-381	Introduction to Research	2
VAS-381L	Introduction to Research Lab	1
VAS-401	Professional Practice in Ultrasound	3
<b>Summer Quarter</b>		
VAS-415A	Clinical Skills in Vascular Ultrasound I	10
VAS-420A	Professional Skills I	1
VAS-431	Senior Lectures/Case Presentations I	1

Year 2		Credit Hours
<b>Fall Quarter</b>		
VAS-415B	Clinical Skills in Vascular Ultrasound II	6
VAS-420B	Professional Skills II	1
VAS-425A	Cumulative Clinical Skills in Vascular Ultrasound I	4
VAS-432	Senior Lectures/Case Presentations II	1
CHS-510	Health Care in America	2
<b>Winter Quarter</b>		
VAS-415C	Clinical Skills in Vascular Ultrasound III	6
VAS-420C	Professional Skills III	1
VAS-425B	Cumulative Clinical Skills in Vascular Ultrasound II	4
VAS-480	Vascular Ultrasound Comprehensive Review	2
<b>Spring Quarter</b>		
VAS-415D	Clinical Skills in Vascular Ultrasound IV	6
VAS-420D	Professional Skills IV	1
VAS-425C	Cumulative Clinical Skills in Vascular Ultrasound III	4
VAS-433	Senior Lectures/Case Presentations III	1
<b>Hours Required for BS Degree:</b>		<b>96</b>

### Advanced Placement

Admitted students who have passed the American Registry for Diagnostic Medical Sonography (ARDMS) Sonography Principles and Instrumentation (SPI) exam or earned the RVT (Registered Vascular Technologist) credential may request advanced placement status in the program. With proof of passing these credentialing exams, students can qualify to receive credits according to the advanced placement description on the Vascular Ultrasound Program website: [www.rushu.rush.edu/vastech](http://www.rushu.rush.edu/vastech).



RUSH UNIVERSITY

## The Graduate College



## Welcome to The Graduate College



On behalf of the faculty and staff, let me welcome you to the Graduate College. This is a time of explosive growth in biomedical knowledge occurring simultaneously with rapidly expanding health care need. We have an unprecedented challenge in optimally preparing graduate professionals to contribute to progress in health outcomes for this dynamic world.

At the Graduate College, we have recently re-engineered our laboratory-based doctoral program, as well as our laboratory-based two-year master's program, so that our students will be better prepared to address emerging biomedical challenges. The redesign of our graduate curriculum was the collaborative work of the faculty working with students to synthesize many disciplinary perspectives in better managing major chronic diseases.

Our faculty includes a wide range of highly accomplished and nationally impactful researchers and educators who are deeply committed to biomedical professional development.

The Graduate College is an institution that is invested in the success of each and every student that walks through our doors. Our goal is to sharpen analytical skills and to hone problem solving approaches so that our graduate students are prepared to bring value in creatively addressing complex biomedical problems. We live and work in a vibrant urban center that enjoys a productive and collaborative biomedical community. Rush Graduate College is a superb environment for biomedical training, and we look forward to working together in advancing your professional career goals while we make real progress in improving health.

James L. Mulshine, MD  
Professor, Acting Dean of the Graduate College

## **The Graduate College: Mission, Vision and Philosophy**

### **Mission**

The mission of the Graduate College of Rush University is to promote and assure excellence in research education and mentoring programs responsible for training outstanding and diverse candidates in the basic and clinical sciences. At Rush, the translation of bench research to the clinic is the primary focus of the institution. The faculty works side by side with the students to devise better detection approaches or to develop more effective interventions that improve patient outcomes. The Graduate College promotes respectful, collaborative efforts and provides a rich educational and research environment for students to prepare for challenging careers in the fast moving world of biomedical research.

### **Vision**

Basic and clinical scientist graduates of the Graduate College will become leaders in their respective research fields, secure leadership positions in academia or industry, compete successfully for extramural grants, and train the next generation of research scientists. Success in this regard relates to embracing the culture of team science and understanding how your efforts can ensure sustained productivity through strategic planning.

### **Philosophy**

*Rush University provides outstanding health sciences education and conducts impactful research in a culture of inclusion, focused on the promotion and preservation of the health and well-being of our diverse communities.* This statement outlines a vibrant role for the Graduate College in preparing leaders to help Rush, and other institutions that share similar aspirations, to achieve success in transforming our health care system.

The Graduate College was originally established in 1981 to provide opportunities for students to work with nationally recognized faculty to earn doctoral degrees in the sciences basic to health care. Students are engaged in highly individualized training to maximize opportunities for self-realization. Faculty members share their scholarly development, expertise and experiences with students in a variety of settings.

While still committed to this goal, the Graduate College is also responding to concerns communicated by the National Institutes of Health regarding optimal biomedical workforce preparation. To address issues with the pace of innovation and the realities of the rapidly evolving workplace, we have recently completed a comprehensive re-engineering of our laboratory-based doctoral

and master's curricula. In this process, we have placed a deeper emphasis on presenting course material from an integrated conceptual framework so that students are better prepared to manage the rapidly expanding body of complex biomedical information. Our curriculum moves from a disciplinary perspective to a more systematic, interdisciplinary orientation. Thus, all laboratory-based graduate students will now jointly participate in a common, integrated first year curriculum exploring the shared foundations of biomedical sciences. This approach leverages the significant interaction of students with interests across the spectrum of biomedical sciences and provides a common knowledge base to allow students to move more fluidly into the team-based research phase of their specific programs. This Integrated biomedical sciences curriculum also creates a more inclusive and welcoming feeling among students to encourage group learning and problem solving.

The new integrated biomedical sciences master's program starts with a shared first year course plan, but in the second year, students can personalize their research activities in any of five areas of shared disease or system focus.

The Graduate College also includes other specialized master's programs for laboratory-based biotechnology research and another program focusing on clinical science research. These course offerings address the expanding need for clinical scientists and highly trained technical staff, respectively, to advance science in the 21st century. This program preserves the Rush organizational pattern, including a high degree of individualized faculty and student interaction in the educational processes of the College consistent with the teacher-practitioner model. Students find the open, collaborative environment across the College with a shared focus on translational research to constitute a highly favorable educational environment.

## **The Graduate College: Organization**

The Graduate College Council is the senior representative body of the college. Its membership includes all program directors including the directors of the Integrated Biomedical Sciences, Biotechnology and Clinical Research programs, the directors of the PhD in nursing science and PhD in health sciences programs (that run jointly with the College of Nursing and College of Health Sciences, respectively), as well as an elected faculty member from each of the programs serving for a term of two years, and three students from these programs (elected by the students annually). Only the elected members and students are allowed to vote. The Dean or his or her designee serves as the chair of the council. The council is responsible for setting policies

for the admission of students; the formulation and adoption of general operating policies, oversight of the educational programs, standards and procedures of the college; the appointment of the Graduate College faculty; and the approval of those recommended for degrees. Although the Dean and the council maintain significant oversight of programs in the Graduate College, the programs also establish policies and procedures, consistent with the policies and procedures of the College and the University. The Graduate College Council periodically reviews all program policies and procedures.

The faculty of the Graduate College is drawn from the faculty of the other colleges of Rush University who hold the same rank in the Graduate College as in their primary colleges.

### **Integrated Biomedical Sciences**

To facilitate its educational mission, the laboratory-based research PhD and MS programs, called the integrated biomedical research programs, are organized into five tracks corresponding to interdisciplinary areas of research excellence at Rush that are also highly aligned with areas of clinical strength. This alignment forms a fertile nexus for sustained, innovative translational collaboration. The tracks typically involve fluid interactions of relevant scientists, clinicians and other professionals working in flexible team structures. This new organizational approach builds on the strong legacy of the Graduate College but is redesigned to create a more stimulating learning environment for the students. This entails moving from the traditional discipline-focused curriculum to a more integrated, systems biology approach embracing multidisciplinary team-based science required for greater success in addressing existing complex biomedical challenges. The learning environment in the new program format will enhance student-to-student interaction as they are immersed into the Rush research environment. All students participate in a shared integrated curriculum and then choose to conduct their doctoral or thesis research in one of five interdisciplinary tracks related to areas of excellence in clinical care at Rush. At the same time, we have broadened the array of faculty representing a wider range of disciplines from basic to clinical to community working together to address critical biomedical problems in the five track areas.

The five educational/research tracks of the college are as follows:

- Cardiovascular and respiratory biology
- Function and disorders of the musculoskeletal system
- Function and disorders of the nervous system
- Infection, immunity and inflammation research
- Translational cancer research

The primary goal of each track is to provide excellent graduate education in the sciences, from basic to medicine. The tracks of the college are flexible and responsive to the changing needs and experiences in their disciplines. This approach is highly aligned with our shared vision: The Rush learning community will be the leading health sciences university committed to transforming health care through innovative research and education.

The educational process for the first year integrated curriculum is coordinated by an associate program director who works to ensure that the integrated first year curriculum is delivered in a fashion that supports student mastery in approaching complex biomedical problem solving. The overall program director is responsible for the learning environment for the remainder of the dissertation years and is charged with achieving full programmatic integration including learning assessment, as well as timely student progression. Each track leader interacts with the other track leaders and the integrated biomedical sciences directors through the educational committee to ensure smooth functioning of this program.

### **Additional Graduate College Programs**

The Graduate College oversees four additional programs:

- Master of Science in clinical research
- Master of Science in biotechnology
- PhD in nursing science (administered jointly with the College of Nursing)
- PhD in health sciences (administered jointly with the College of Health Sciences)

All of our programs are administered out of the Dean's office, and are overseen by the Graduate College Council. Faculty members from several programs participate in the education of students in each program.

### **The Graduate College: Admission Requirements**

The faculty of the Graduate College encourages diversity among the student population and therefore seeks to admit persons from various backgrounds. The Graduate College uses the following guidelines to evaluate candidates for admission. Individual programs within the college may have additional requirements and criteria for admission. Applicants are encouraged to first check with the program of interest. The College's requirements are listed below.

**Deadline for applications:** Priority deadline for Doctor of Philosophy programs is Jan. 1; final deadline is March 1. Priority deadline for Master of Science is March 30; final deadline is May 1. Final deadline for clinical research is July 1; final deadline for Rush and Stroger affiliates is July 15. (International students and some programs may have earlier deadlines. Please check with the individual program director early in the application process.)

Applications to the Graduate College are reviewed considering all parts of the application when determining admission. The following documents must be completed and submitted to be considered for admission (minimum requirements listed under each point below):

1. Online application submitted by the deadline.
2. Statement of purpose that includes, in a maximum of 500 words, a statement about the applicant's research interests as they pertain to graduate school in the biomedical sciences. Applicants should include past undergraduate studies, research experience and activities that have influenced their specific areas of interest. Previous research experience is strongly preferred for admission into the PhD program.
3. Curriculum vitae or resume.
4. Three letters of recommendation (a minimum of two should come from academic sources). Letter must be on an official letterhead and submitted by the recommender.
5. GRE scores, or scores of an equivalent test (e.g., MCAT, DAT, PCAT, or USMLE scores).  

Applicants must perform at least at the 50th percentile on these standardized examinations.

GRE will be waived for applicants with a PhD degree in the basic sciences and may be waived for applicants with a professional degree in the health sciences (e.g., MD, DO, DDS, PharmD).
6. Applicants with an international medical degree must submit USMLE Step 1 and Step 2 scores with a minimum performance at the 50th percentile.
7. Official transcripts from all institutions attended.
  - Applicants must hold a bachelor's degree from an accredited U.S. institution with a minimum GPA of 3.0 on a 4.0 scale. Students with an international degree must submit official transcripts along with a course by course evaluation from ECE, which confirms the equivalence of at least a U.S. bachelor's degree with a minimum GPA of 3.0 on a 4.0 scale.

- Completion of the following courses with a B grade or better is preferred: two semesters of biology with laboratory, two semesters of chemistry with laboratory, biochemistry or cell biology with laboratory, calculus, and college physics.
8. TOEFL scores must be submitted for all non-native English speakers.
    - The minimum TOEFL score required for admission is an 80.
    - TOEFL scores will be waived for non-native English speakers who have completed a bachelor's degree or higher from a U.S. accredited institution.
  9. Completion of an interview with Graduate College faculty is required. All competitive PhD applicants will be asked to interview over the phone, in person or via Skype.

**Acceptance of transfer credit:** Petition for transfer of graduate credit is consistent with University policy. Graduate level transfer credit is subject to the approval of the faculty advisor, program director or designated college administrator based on an evaluation of quality and equivalence. For graduate level programs, no more than one-third of the total number of required credits that contributed to one's GPA may be granted to a student as transfer credit for work done at another graduate institution.

## The Graduate College: Core Curriculum

The Graduate College curriculum is designed to enhance interaction among students from all the programs while at the same time provide the basic knowledge base the faculty have deemed necessary to become successful in science. The Graduate College curriculum runs for two consecutive semesters (fall and spring) and provides introductory training in molecular genetics, genomics, cellular biochemistry, cell biology, tissue biology and cell signaling, as well as provides a comprehensive and systematic overview of physiology and pharmacology. Students will also learn basic theories underlying modern scientific technique. In addition, the student will take courses in ethics, scientific writing and basic statistics. These courses will be supplemented by specialized, advanced courses offered by the individual programs.

The following courses constitute the Graduate College core (GCC) curriculum:

- GCC-501 Molecular Biology: Genome to Proteome
- GCC-502 Cellular Biochemistry: Proteins, Transport and Signaling
- GCC-503 Functional Cell Biology

- GCC-504 Functional Tissue Biology
- GCC-505 Techniques in Biomedical Sciences
- GCC-506 Research Ethics
- GCC-507 Biomedical Statistics
- GCC-508 Scientific Writing
- GCC-511 Readings in Molecular Biology
- GCC-512 Readings in Cellular Biochemistry
- GCC-513 Readings in Functional Cell Biology
- GCC-514 Readings in Functional Tissue Biology
- GCC-520 Introduction to Physiology and Pharmacology I
- GCC-521 Introduction to Physiology and Pharmacology II
- GCC-546 Principles of Biostatistics I
- GCC-547 Principles of Biostatistics II
- GCC-551 Ethics in Biomedical Research and the IRB
- GCC-593 Introduction to Grantsmanship

In addition to these requirements, full-time PhD candidates in the Graduate College must attend a minimum of four ethics seminars per year following their first year of classes. Failure to attend the required number of lectures or equivalent will delay graduation.

## **The Graduate College: MS and PhD Degrees**

The Graduate College prepares students for the Master of Science and Doctor of Philosophy degrees. The Doctor of Philosophy is awarded in recognition of high achievement in a particular field of scientific research as evidenced by submission of a dissertation that demonstrates the power of independent investigation and contributes to the body of existing knowledge. An undergraduate record of scholastic excellence is an important background for the Graduate College experience. The Graduate College also provides excellent research and training opportunities for advanced medical students who want to take time out of their medical school studies to enroll in the Graduate College in an MS or PhD program. The process of application review includes a search for evidence of creativity and scholarly potential in the applicant. Non-degree students are not admitted with advanced degree objectives and are ineligible to become candidates for advanced degrees. Upon approval by a course director and appropriate registration, any individual may audit a course. In all cases, a student considering

application for admission should first establish contact with the director of his or her choice of program to determine program requirements. The student must meet all of the requirements for progress and graduation in the graduate studies program. In this regard, individualized studies will be programmed to meet the student's need in achieving essential knowledge in preparation for these requirements.

## **Doctor of Philosophy**

The degree of Doctor of Philosophy (PhD) is the highest degree conferred by Rush University. The PhD is restricted to those scholars who have demonstrated superior ability in a recognized academic discipline. While each program has identified requirements, the PhD degree is not awarded following the completion of any specific number of formal courses nor on the basis of miscellaneous course studies and research. The entire PhD program must be integrated and highly research oriented. It should culminate in a work of literary and scholarly merit, which is indicative of the candidate's ability to conduct original research in a recognized specialty (generally in the form of a first-author manuscript). PhD programs are directed by selected faculty members who work closely with graduate students. In practice, each program is composed of formal courses, guided individual study in a chosen field or discipline; study in such cognate subjects as may be required by the candidate's advisory committee and original research that serves as the basis of a required scholarly dissertation.

## **Admission to Candidacy**

Admission to candidacy is evidence that the doctoral student has successfully completed all preliminary course work and is prepared to move into his or her intensive research experience. Depending upon the program's requirements, these exams will test accumulated knowledge, scientific reasoning and the ability to develop hypotheses and test them with appropriate designs. Admission to candidacy is a demonstration of confidence that the student will successfully accomplish the remaining requirements of the program. Students failing to achieve admission to candidacy, but who have otherwise completed all other prerequisites, will be granted a terminal master's degree.

## **Dissertation**

A doctoral student must complete a dissertation. This document is developed through faculty-guided independent research projects. Review of the dissertation will follow the sequence of steps described in the manual "Preparation of Theses and Doctoral Dissertations." Copies of this manual are available in each graduate program and in the Library of Rush University Medical



Center. The dissertation must be original and cannot have been used to meet the requirement of any other degree, either at Rush University or at any other university.

Each student will have a dissertation committee whose role it is to assure that the student's dissertation is of high quality and meets the standards of the program, the College and the University for originality, contribution to the field and scholarly presentation. The committee is also to assure that the student is making satisfactory progress toward completion of the degree. The dissertation committee is chosen by the student in conjunction with the student's primary advisor and should consist of at least five total members. The primary advisor must be a member of the Graduate College. At least one member of the committee should be from outside of the program or track, and preferably from outside of the institution. Once the committee convenes, it will choose a chairperson, who cannot be the student's primary advisor. The chairperson will oversee the scheduling and activities of the committee.

At or near the completion of the dissertation, each student will share, by means of a public presentation with the academic community at large, the knowledge that the student has developed. Students are responsible for posting announcements (at least two weeks prior to the presentation) on institutional bulletin boards and emailing all faculty and students of the Graduate College the title of the dissertation, the student's name, and the location, date and time of the public presentation. This public presentation must precede the final approval of the dissertation by the dissertation committee.

Upon completion of the public presentation, the student will meet with the dissertation committee to review the presentation, the dissertation document and the student's preparedness to enter the scientific community. A majority of members of the committee must sign the dissertation certifying the completion of all requirements for the Doctor of Philosophy degree.

## Master of Science

The Master of Science degree is offered in many programs. This degree is designed to offer students an intermediate step in a career path, provide research experience to supplement their primary professional path or provide supplementary training for other reasons. The college offers two types of MS degrees: 1) the research MS is a thesis-requiring program that traditionally takes two years to complete; and 2) a non-thesis MS that is a consequence of the successful completion of a series of classes and laboratory skills (i.e., the MS in biotechnology).

## Thesis

The research MS degree requires the successful completion of course work and publication of a scientific thesis that reflects the research experience of the student. This thesis should reflect original work, which can be published in a peer-reviewed journal. The student, together with the advisor, will form a thesis committee composed of three members: the advisor (who must be a member of the Graduate College) and two additional members. The advisor will work with the student to develop a research project that can be completed within the framework of the program. The committee members will assure the quality of the work and of the thesis document. Upon completion of the thesis, the student will present the findings in a public forum open to the University. The members of the committee that includes the student's advisor must sign off on the thesis, certifying the completion of all requirements for the MS degree.

## The Graduate College: Academic Policies

The Graduate College adopts college-wide policies and procedures and reviews program-specific regulations. Students follow the college and program-specific policies in effect at the time of initial matriculation in the Graduate College. However, the Graduate College reserves the right to make substantive changes in its programs after the student's matriculation. Students will be informed in writing by the program director of any changes made during their tenure in the program. Students re-entering the college after an absence will be guided by policies and procedures in effect at the time of re-entry.

## Examination Policy

Re-enforcing the examination policy of the college is the responsibility of the individual course director, who will inform students and the proctors about the examination requirements for that particular course. A period at the end of the semester is provided for examinations; however, any form of assessment can be conducted at any week of the semester. This information will be included in the course schedule and syllabus.

## Pass/No Pass Grades

Each program identifies all courses required of its students. Required courses are usually taken for letter grade and not under the pass/no pass (P/N) option. Research hours are generally graded using the P/N option. However, a program may opt to provide a letter grade for research classes. The grading policy for postcandidacy research hours (over 600) for doctoral students is graded as P/N.

## Good Academic Standing

To remain in good academic standing, students must maintain a cumulative grade point average of 3.0 and meet the requirements of their program. A student must be in good academic standing to be admitted to candidacy and to graduate. Students failing to maintain a GPA of 3.0 will be notified by the Dean in writing that their student status has been changed to “on probation.” Students who fail to remediate their deficiencies within one academic year or are placed on probationary status a third time are subject to dismissal by the Graduate College.

## Academic Difficulty

Each program has policies and procedures regarding students who fail to maintain good academic standing. While the responsibilities of informing students of their academic problems and of establishing conditions for regaining good academic standing reside within the program, the Graduate College Council monitors the progress and promotion of all students and gives final approval to award students’ degrees.

## Dismissal

Each program establishes grounds for dismissal beyond the minimal criteria established by the Graduate College. Should a program recommend the dismissal of a student, the director will forward such recommendation to the Graduate College Council for final action. Letters of dismissal come from the Dean. Appeal of a dismissal action begins within the appropriate program.

## Full-time Enrollment

Full-time enrollment is required of all Graduate College students with the exception of clinical research students and students within the PhD programs in nursing science and health sciences. Full-time students must register for at least nine semester hours for each term, except when advised differently. Students must obtain written permission from the program director for exceptions to this policy. Students receiving a thesis-requiring master’s degree from the Graduate College as a full-time student must be enrolled for all terms between their matriculation and graduation. The average length of this program is five semesters. Part-time students earning a master’s degree must be enrolled a minimum of two semesters per academic year. The accelerated, non-thesis master’s program’s length is two semesters. The minimum requirement for graduation from the college is program-specific. At the time of graduation, the student must be enrolled in the college. The maximum time allowed to graduate from a full-time thesis-requiring master’s degree program is four years starting with the first semester of official enrollment, and the maximum time allowed for the PhD degree is five years.

## Residency

Doctor of Philosophy (PhD) candidates are expected to meet all requirements for graduation within five enrolled academic years in the Graduate College (excluding leaves of absence; see below). This period begins with the semester in which the student formally matriculates. A student exceeding that time limitation must submit to the graduate council, in writing, a request to extend his or her candidacy beyond that time period. This request must identify the reasons for the extension and provide a written plan with reasonable deadlines for completion. This document will be co-signed by the student’s advisor and program director. The council will then vote whether to accept the extension or not (passed by simple majority). The student’s advisor will then provide an update on the student’s progress after six months. One year after the extension is granted, the student is expected to complete all requirements. A second request may be made by the student’s advisor and program director, but will be accepted only through a two-thirds majority of the voting members present at a formal hearing of the Graduate College Council. Within one year of that second request, the student must complete all requirements for the PhD degree or face dismissal. Alternatively, the student may be awarded an MS degree upon the recommendation of the student’s graduate program.

## Readmission

Any student who has withdrawn from the University or any dismissed student may apply for readmission by submitting an application for this purpose to the Graduate College admission office. An interview may be required. A re-entering student must meet the conditions for re-enrollment stated in his or her dismissal or re-entry acceptance letter and all policies, requirements and course sequences in effect at the time of re-entry. The student will pay tuition and fees at the rates in effect at the time of re-enrollment. Application deadlines may vary by program.

## Academic Progression

The graduate program, in concert with the rules of the College and Rush University, develops specific regulations governing the process that results in final awarding of the degree. While such regulations differ slightly from one program to another, the Graduate College Council reviews each program’s regulations for approval. In all cases, graduate programs are required to be explicit and clear about regulations that will affect the candidate. This must be stringently observed in program regulations concerning selection of principal advisors, advisory committees and plans of study. Similarly, programs will be explicit and clear concerning academic policies and procedures surrounding qualifying, preliminary and final examinations when they are

required. The programs are also responsible for providing the candidate with the support needed to plan and conduct the dissertation research. At the same time, a major responsibility of the student is to become familiar with the regulations and expectations of his or her chosen program. These regulations and expectations are included in this catalog within the sections devoted to each program and are also included within program publications. The student is responsible for understanding the regulations and monitoring changes that may occur during his or her tenure in the program.

### Student Academic Appeals Policy

Any student of the Graduate College may appeal a final course grade, failure on a preliminary or comprehensive examination, or failure of the thesis or dissertation that results in his or her academic probation or dismissal from the University. A student may also appeal an unreasonable delay in his or her graduation from the University. No other issues may be appealed through this process.

The process for filing an appeal is maintained by each program. The student may request a copy of the program appeal process from the program director. This process will be completed within one semester. If a resolution cannot be achieved at the program level, the following procedure must be followed. At any step in the process, the student may withdraw the appeal by written notification to the program director with a copy to the Dean. In the event of a dismissal decision, a student may continue to enroll until the appeal process is completed or the student withdraws the appeal.

**Step 1:** If the student wishes to appeal the decision beyond the program, within two weeks of receiving a decision from the program, the student will submit a written statement to the Dean requesting consideration of his or her case by an advisory panel. The student must provide the following in the written statement:

- Course number and grade being appealed or other cause for probation or dismissal, i.e., failure of preliminary or comprehensive examination, or thesis or dissertation
- Action being requested
- Justification for the request
- An outline of the efforts and actions already taken to obtain consideration of the request

The student will send copies of this communication to the program director and the Dean's office. In addition, if a course grade is being appealed, the student will send a copy to the course director. If the evaluation of a thesis or dissertation is being appealed, the student will send a copy to the chairperson

of the thesis or dissertation committee. The advisory panel will be the Graduate College Council. Its chairperson will be appointed by the Dean from among the members. The program director of the student's program and any other member who is evaluating the student's academic status will not vote.

**Step 2:** Within two weeks after notification to the Dean, the chairperson of the advisory panel will arrange a meeting of the advisory panel. It will submit a written recommendation to the Dean.

**Step 3:** Within two weeks following receipt of the advisory panel's recommendation and upon discussion with the student and with others as appropriate, the Dean shall reach a final decision and notify each party of the decision. The decision reached by the Dean is final.

The issues discussed and the outcomes of all meetings in this appeal process are documented. This record-keeping is the responsibility of a faculty member who is to be designated at each meeting. Copies of the documentation should be distributed to the individuals present at a meeting, to the program director, and to the Dean and placed into the student's academic file.

### Academic Honesty and Student Conduct

The Graduate College and its programs follow the University policies on academic honesty and the University statement on student conduct. Each student is expected to conduct himself or herself at all times in a professional manner — a manner which conforms to the ethics of the profession, and which instills confidence in one's abilities as a working scientist. Irresponsible, unprofessional or unethical behavior, as determined by the Graduate College Honor Code Committee may result in dismissal from the program.

The College and its programs will not condone cheating in any form. Allegations of cheating will be reviewed by the program director with the help of an ad hoc committee. If merited, the report will be forwarded to the Graduate College Honor Code Committee.

### Rush University Academic Policies

The Academic Resources and Policies section of this catalog contains additional Rush University academic policies.

This Rush University catalog also details the policies regarding inclusion of minorities and those with disabilities, as well as the policies and procedures for reporting harassment. Students who may need special accommodations can access this information at <https://www.rushu.rush.edu/students-disabilities>.

## **The Graduate College: Committees**

### **The Graduate College Council**

The Graduate College Council is the senior representative body of the college. Its membership includes all program directors including the directors of the Integrated Biomedical Sciences, Biotechnology and Clinical Research programs, the directors of the PhD in nursing science and PhD in health sciences programs (that run jointly with the College of Nursing and College of Health Sciences, respectively), as well as an elected faculty member from each of the programs serving for a term of two years, and three students from these programs (elected by the students annually). Only the elected members and students are allowed to vote. The Dean or his or her designee serves as the chair of the council. The council is responsible for setting policies for the admission of students; the formulation and adoption of general operating policies, oversight of the educational programs, standards and procedures of the college; the appointment of the Graduate College faculty; and the approval of those recommended for degrees. Although the Dean and the council maintain significant oversight of programs in the Graduate College, the programs also establish policies and procedures, consistent with the policies and procedures of the College and the University. The Graduate College Council periodically reviews all program policies and procedures.



## The Graduate College: Academic Programs

Anatomy and cell biology (MS\*\* and PhD\*)  
*for continuing students only*

Biochemistry (MS\*\* and PhD\*)  
*for continuing students only*

Biomechanics (MS\*\* and PhD\*)  
*for continuing students only*

Biotechnology (MS)

Clinical research (MS)

Health sciences (PhD)

Immunology/microbiology (MS\*\* and PhD\*)  
*for continuing students only*

Integrated biomedical sciences (MS and PhD)

Molecular biophysics and physiology (PhD\*)  
*for continuing students only*

Neuroscience (PhD\*)  
*for continuing students only*

Nursing science (PhD)

Pharmacology (MS\*\* and PhD\*)  
*for continuing students only*

*\*PhD program is closed for entry beginning fall 2015.*

*\*\*MS program is closed for entry beginning fall 2016.*

## **Integrated Biomedical Sciences: PhD Program**

Philosophy The PhD in integrated biomedical sciences is designed to educate science professionals for leadership in research and academic positions, as well as to provide career path education relevant to their specialized fields. In the past, Rush offered doctoral degrees in anatomy, biochemistry, immunology, neurological science, physiology and pharmacology. Since collaborative interdisciplinary teams of scientists perform current and future biomedical research, we no longer offer, individual basic science degrees. Instead our new doctoral program emphasizes an integrated interdisciplinary approach to biomedical research. Graduates of this program will perform high-quality, impactful biomedical research at colleges and universities, government agencies, hospitals and nonprofit agencies and in industry. Students in the program will work with faculty and scientists to generate new knowledge in the fields of biomedicine using sophisticated research methods and statistics. As a part of the program, students are required to pass a comprehensive preliminary examination and demonstrate their knowledge of core and concentration-specific course work. They will design and conduct research that culminates in a dissertation, and they will disseminate their scientific findings through scholarly publications and presentations.

## **Integrated Biomedical Sciences: PhD Admission Requirements**

Applicants must enter the program in the fall semester in order to begin the required course work in the core curriculum. The deadline for submission of applications is generally March 1. International applications can be accepted after March 1 but must take into consideration the delays associated with the necessary visa arrangements. The Integrated Biomedical Sciences Program has the following requirements for admission to the program:

- A baccalaureate degree from an accredited college.
- Course work in biology, cellular biology, molecular biology, physics, chemistry, organic chemistry, physical chemistry and mathematics, including calculus, is highly recommended. Upper-level biochemistry or physiology courses are also highly recommended.
- Official academic transcripts from all baccalaureate and post-baccalaureate educational experiences are required. These should provide a minimal grade point average of 3.0 overall (A = 4.0). Higher grades are expected in science courses, and evidence of research experience is preferred.

- GRE or MCAT scores are required. All applicants whose native language is not English are required to take the Test of English as a Foreign Language (TOEFL). Applicants from foreign countries must have their transcripts evaluated by the independent agency, ECE.
- A statement of the applicant's interests, previous research experience, and goals needs to be included as an essay in the application. The personal statement must include a ranking of the student's interest in the five different research tracks. If the student's research track interest is not clear, then the student should list "undecided."
- Three letters of recommendation, two from academic resources, are required. We prefer these to be from science faculty who can evaluate the character of the applicant, the applicant's academic and research performance, and the applicant's ability to think and work independently.

The admissions committee will evaluate applications. All prior academic experience and the letters of recommendation will be evaluated for an indication of the applicant's potential for success as a graduate student and future independent investigator. With rare exceptions, PhD applicants will be required to interview with faculty members before admission to the program.

Acceptance into the doctoral program is limited by the availability of stipends, and also by the availability of faculty to act as mentors. All accepted doctoral students receive a competitive stipend and tuition scholarship. The stipend and tuition scholarship is renewed each year providing the student is making satisfactory progress towards the degree.

## Integrated Biomedical Sciences: Curriculum

Year 1	HR
<b>Fall Semester</b>	
BTN-523 Tools for Research	1
GCC-501 Molecular Biology	2
GCC-502 Cellular Biochemistry	2
GCC-505 Techniques in Biomedical Sciences	1
GCC-511 Readings in Molecular Biology	1
GCC-512 Readings in Cellular Biochemistry	1
BTN-525 Experimental Design and Models of Disease	2
GCC-711 Advanced Readings in Molecular Biology	1
GCC-712 Advanced Readings in Cellular Biochemistry	1
GCC-530 Lab Rotation I*	V
<b>Spring Semester</b>	
GCC-503 Functional Cell Biology	1
GCC-504 Functional Tissue Biology	2
GCC-506 Research Ethics	1
GCC-507 Biomedical Statistics	2
GCC-513 Readings in Functional Cell Biology	1
GCC-514 Readings in Functional Tissue Biology	1
GCC-531 Topics in Biomedical Integration	1
GCC-508 Writing Practicum	2
GCC-713 Advanced Readings in Functional Cell Biology	1
GCC-714 Advanced Readings in Functional Tissue Biology	1
GCC-530 Lab Rotations I	V
GCC-533 Lab Rotations II	V
GCC-534 Lab Rotations III*	V
<b>Summer Term</b>	
GCC 532 Topics in Biomedical Integration	4
GCC 534 Lab Rotations III	V
GCC 598 Pre-Dissertation Research*	V

\* Registration during this semester requires permission.

GCC = Graduate College Core Curriculum

GCC XXX\* = Actual course numbers will vary with elective or cognate required by the track.

BTN = Biotechnology course

V = Variable amount of credits

The specific courses or hours of cognates and electives will vary each semester depending upon the student's choice of track and specific course selections.

Year 2	HR
<b>Fall Semester</b>	
GCC-593 Introduction to Grantsmanship	1
GCC-694-698 Advanced Topic Seminar (Track-Specific Cognate)	1
GCC-598 Pre-Dissertation Research	V
GCC-XXX* Track-Specific Cognates	2-4
GCC-XXX* Electives	2-4
<b>Spring Semester</b>	
GCC-694-698 Advanced Topic Seminar (Track-Specific Cognate)	1
GCC-698 Pre-Dissertation Research	V
NEU-544 Advanced Biostatistics	2
GCC-XXX* Track-Specific Cognates	2-4
BTN-524 Communication and Laboratory Management	1
<b>Summer Term</b>	
GCC-532 Topics in Biomedical Integration	4
GCC-534 Lab Rotations III	V
GCC-598 Pre-Dissertation Research*	V
<b>Spring Term</b>	
GCC-699 Dissertation Research	2

In years two through five, the emphasis is on research. A student works with the track director, dissertation advisor and committee to determine the most appropriate mix of electives and research hours each semester. A typical registration is listed below.

- Electives: nine credit hours total may be taken at any time, primarily in years two and three.
- Cognates (track-specific requirements): 16 hours total
- GCC 694-698 Advanced Topics Seminar courses count as cognates and are taken for one semester hour of credit each fall and spring term starting in the second year for a maximum of eight credits. The Advanced Topics Seminar course should align with the student's research track
- GCC 598 Pre-Dissertation Research (Pre-Dissertation Research and laboratory rotation hours are part of the core curriculum.)

- GCC 699 Dissertation Research (variable (V) credits : Students are expected to register for a low number of research credits each semester since only 17 credits of dissertation research are required. Seventeen hours of GCC 699 are required for graduation. A low number of credit hours are considered to be a full time commitment to research.

While registrations appear similar in years three through five, the nature and character of the research changes, and the student passes through a number of steps towards completion of the PhD.

## **Integrated Biomedical Sciences: PhD Dissertation Program Progression**

### **Year 1: Classes and Comprehensive Exam**

The goal of the course work in the first year is to expose students to the biomedical sciences to enable them to design and approach a research problem from molecular, biochemical, cellular and organ system perspectives. The reading courses provide a critical understanding of the literature and existing base of knowledge. They will also show students how new knowledge in these areas can help us understand diseases and use this information to identify new therapeutics. This broad-based approach to disease is the core of the Integrated Biomedical Sciences Program. The Topics in Biomedical Integration course (GCC 531) is offered in the spring semester. In this course, a specific disease will be studied from the molecular perspective to organ system failure, under faculty direction. The students will then be assigned a group project in which they use the approaches they have learned to study another disease. This project will strengthen student skills in preparation for the comprehensive exam. In the summer, GCC 532, Topics in Biomedical Integration II, is the comprehensive exam in which students will be given an individualized disease topic related to their planned research. They will be required to write a literature review approaching the topic from each biomedical perspective.

### **Year 1: Research Experience**

During the first year, students will have three lab rotations. Each rotation must be in a different laboratory. The laboratory rotations will expose students to a range of research environments. Students are expected to learn techniques and attend all lab meetings, etc. Based on these rotations, uncommitted students (funded by the Graduate College or the NIH), will submit the names of three potential advisors with a priority ranking to the Integrated Biomedical Sciences Education Committee. The education committee, in consultation with the potential advisors, will decide which student will be matched with which

advisor. Students committed to particular laboratories (funded by a research advisor's grants) are still required to take three laboratory rotations. During the first year, the student will select a track and will identify potential research advisors. The program director and track director will then select the student's comprehensive exam topic. Advisors will be identified after three rotations are completed.

### **Year 2: Track Selection, Research Experience and Qualifying Exam**

The selection of a research advisor will significantly influence the student's selection of a research track. Subsequent classes will be dictated by the track cognates and electives, and by relevant electives offered in other tracks. The selection of electives should complement research activity and the interests of the student, and should help prepare him or her for the career choice identified through the use of the Individual Development Plan (IDP) website and additional resources provided by the Graduate College. When the student is not in class or studying, the student should be working on his or her research project. The goals of the 2nd year are to learn the relevant laboratory techniques and to develop a research proposal in conjunction with the research advisor. The research project will advance knowledge in a specific discipline and yield first-author scientific publications for the student. The student's research proposal should include a hypothesis and specific aims and be written up as an F31 grant (See the Dissertation Proposal and Presentation section below). The student must select a dissertation committee and present the proposal to the committee by the end of the second year. The presentation and defense to the committee is considered the qualifying exam. Acceptance of the proposal by the dissertation committee means that the student is a candidate for the PhD.

The student's assessment at this time relates to the following student outcomes:

- The graduate is able to acquire research skills, collect and analyze data, and interpret results in order to address an original research question.

In addition, this step begins the continuing assessment of the following outcomes:

- A graduating student is capable of independent critical thinking and writing, as well as proposing, performing and effectively presenting his or her research.
- The graduate is able to work collaboratively with other scientists, physicians and health care professionals to give and obtain feedback concerning the approach to research problems, data analysis and implications of research.



The student creates an IDP to better define his or her areas of interest including teaching, administration, research in industry, or academic research. Upon graduation, the graduate will have used the IDP, mentorship and training opportunities to refine his or her career path.

Student progress is evaluated at the end of each year in years two through five. For year two, the student's mentor and track director will assess progress relative to expected outcomes. In years three through five, the student will submit a written report documenting progress toward expected outcomes. The mentor and track director will also submit their assessment of student progress for the year. Then a meeting with the student, mentor and track director will take place at the end of each year to discuss progress.

### **Year 3-5: Research Progress, Publications and Dissertation**

The research advisor monitors the day-to-day progress of the student. The dissertation committee will meet at least once per year to monitor progress and to approve any changes to the proposed research project. The committee may meet more frequently, especially after the approval of the student's research proposal. The student is expected to attend national meetings, make presentations, present posters, etc., and become a part of the scientific community. Likewise, the student should be submitting research articles. The program requires that the research project yield at least one first-authored research article accepted for publication in a peer-reviewed journal. The publication requirement is necessary but not sufficient for graduation. The dissertation committee will continue to assess student progress on the aims and determines when the student has completed his or her dissertation. (See the Dissertation Proposal and Presentation section below.)

The student's assessment continues on the outcomes listed above with emphasis on the growth of research and communication skills. Likewise, it is expected that the communication outcomes will also become more centered on written communication in the form of abstracts, peer-reviewed journal articles and the dissertation as the student begins to complete the following outcome:

- The graduate is able to contribute to the scientific literature in an area of expertise via published abstracts, a dissertation and by the publication of a first-authored research article in a refereed journal.

### **Minimal Credit Hours Required for the Integrated Biomedical Sciences PhD Degree**

The PhD in integrated biomedical sciences should be completed in five years and requires completion of 80 semester hours of credit distributed as follows: core courses (37), concentration specific cognates (16), electives (9), and dissertation research (18). The core curriculum, which is common to all students, builds knowledge and skills in research theories and methodology, data analysis and statistics, laboratory applications and skills, and the molecular and cellular sciences basic to health and disease. These courses provide systematic exposure to the contemporary process of scientific discovery and will serve as the basis for the remainder of the curriculum. Advanced students entering with a Master of Science (MS) degree in a biomedical science or a Doctor of Medicine (MD) degree may have satisfied the requirement for some of the core classes based on their prior records. When core course requirements are waived, the requirement of core course hours can be compensated by taking extra hours of laboratory rotations or pre-dissertation research. These students may be able to complete the degree in a shorter time period providing that they progress through the other program requirements.

Students will be required, in conjunction with their advisors, to select from concentration-focused cognates in one of five tracks: translational cancer research; cardiovascular and respiratory biology; immunity, inflammation and infection; disorders of the musculoskeletal system; and disorders of the nervous system. All students will be required to participate in track-specific advanced topic seminars and to complete a minimum of 18 semester hours of dissertation research following admission into candidacy for the PhD. Dissertation hours in the Graduate College encompass laboratory research required for completion of the dissertation, including analyzing published data; developing a research proposal; learning and applying advanced methodologies and statistical data analyses; developing skills to write and submit a pre-doctoral training grant application; practicing presentation skills to disseminate one's own research findings in national conferences; writing a research publication; and developing and defending a dissertation project.

### **Integrated Biomedical Sciences: Academic Policies**

#### **Academic Advisor or Principal Advisor**

The IBS program director functions as the academic advisor to the students during the first year of matriculation in the program. At the end of the first year, each student will identify the

track that he or she wishes to enter and will begin working in the laboratory of his or her research advisor. At this time, the track director along with the research advisor will serve as mentors for the student.

### Research Advisor Selection

During the first year, the student, in consultation with the program director and track directors in areas related to the student's interests, will select three laboratories for research rotations. Based on these rotations, the student will identify the track he or she is interested in and submit the names of three potential advisors with a priority ranking to the IBS education committee. The IBS education committee, in consultation with the potential advisors, will match students with advisors. Students who are already committed to a particular laboratory (funded by the research advisor's grants) are still required to take three laboratory rotations. The student's research project should advance knowledge in a specific discipline and yield first-author scientific publications for the student.

### Integrated Biomedical Sciences: Track/Research Opportunities

The research tracks for the Integrated Biomedical Sciences PhD Program are translational cancer research; cardiovascular and respiratory biology; immunity, inflammation and infection; functions and disorders of the musculoskeletal system; and functions and disorders of the nervous system. The tracks include qualified faculty from Rush University Medical Center who have an interest in research in these tracks. They come from academic departments as well as clinical departments, which enables students to select a variety of individuals with basic and clinical expertise to serve on their advisory committees and guide them through their projects.

### Qualifying Exams

- Comprehensive exam: In the summer term, following the first year of classes, each student will take GCC 532, Topics in Biomedical Integration II. This course is a comprehensive exam in which the student will be given an individualized disease topic related to his or her planned research. The student will be required to write a literature review approaching the topic. This comprehensive exam assures that the student can approach a research or clinical problem from a variety of perspectives, accounting for the published literature that illuminates the molecular, cellular and organ system manifestations of the disease process.

- Qualifying exam (dissertation proposal and presentation): The student must select a dissertation committee and present the proposal to the committee by the end of the second year. The student's research proposal should include a hypothesis and specific aims and be written up as a NIH F31 grant. Acceptance of the proposal by the dissertation committee means the student is a candidate for the PhD.

### Dissertation Research Committee

After passing comprehensive exams, the student selects a research advisor and begins to collect preliminary data. By the end of spring of the second year, the student and advisor will select a research committee in consultation with the track director. This committee will advise the student and evaluate his or her dissertation. The Graduate College requires that the committee include five members and that one member be the student's mentor or advisor. A majority of the committee (at least three members) must be faculty at Rush who are members of the Graduate College. The chair of this committee, who cannot be the student's mentor or advisor, will be chosen at the first committee meeting and will preside at all subsequent meetings and arrange for a timely completion of the dissertation work. The dissertation committee will strive for consensus in all its actions; however, a majority vote of the committee's membership is sufficient for all activities except the final approval of the dissertation, in which case only one member may disagree with the final decision. In addition to the five committee members, either the director of the graduate program, the associate director or a track director will serve as an ex officio member of the committee.

### Dissertation Proposal and Presentation

Each student will present a thesis proposal before the end of the spring semester of the second year that the student has developed with a thesis advisor and graduate committee. The format for the written portion of this requirement is the standard *Individual National Research Service Award* (F31) mechanism. In addition, a comprehensive review of the literature relevant to the proposed studies is highly recommended as an adjunct document for this requirement. All students are highly encouraged to submit these proposals to the National Institutes of Health for consideration of funding. The schedule for submission deadlines is April 8, Aug. 8 and Dec. 8 of every year.

Once the written document is completed, the thesis proposal will be presented, in seminar format, to the Integrated Biomedical Sciences Program, with the written portion provided to the student's committee at least one week prior to the presentation date. A formal committee meeting with dissertation proposal defense will follow this presentation. During this meeting, the

quality and merit of the project will be assessed, and a determination as to whether the work satisfies the degree requirements or what measures for remediation are required to satisfy this requirement will be made at this time. Upon successful completion of this requirement, the status of doctoral candidate is conferred on the student. It is recommended that this requirement be satisfied as early in the second year as is reasonably attainable. In the event that a student does not satisfy this requirement before the end of the summer of the second year, the student and advisor will need to present to the IBS education committee a reason as to why this requirement has not been satisfied and provide a plan for remediation.

Once the dissertation proposal requirement has been satisfied, each student will present an oral and written annual update to his or her committee, which details progress made in the previous year. The committee will review progress of the project and the candidate's career development. In addition to this, the website that helps students identify career goals, my individual development plan (myIDP), should be used whenever possible to track and report all professional development activities.

### **Completion of the PhD Degree**

In the candidate's final year, a dissertation data defense will be presented to the candidate's committee demonstrating that satisfactory progress has been made on the project to justify development of a plan to complete all experiments and to initiate dissertation preparation. Upon completion of this phase, the student will present the dissertation to the University in written form (approved by the director of the Library of Rush University Medical Center) and present the work in a public one-hour lecture attended by the dissertation committee and faculty and students of the University. The dissertation committee will then meet in closed session with additional questions and will approve the dissertation. Typically the meeting immediately follows the public lecture. In line with the rules and procedures of the Graduate College, the committee strives for a consensus, but the dissertation can be approved over the objections of a single committee member. However, if two committee members disapprove the dissertation, then it is not approved. The awarding of the PhD degree requires the demonstration of a capability for independent research and a contribution to scientific knowledge.

It is assumed that one or more research articles will be included in the dissertation. Since a peer-reviewed, first-authored research article is required for the degree, the dissertation is not considered complete until the publication of this article. If publication is pending, the committee may sign off on the dissertation, but the program director will not sign off until the paper is published.

The registrar's office must be notified of impending completion of the degree by submission of an Intent-to-Graduate Form at the beginning of the final semester. As the dissertation is reaching final form, the student should consult with the University librarian to assure that the dissertation is formatted correctly. Once the dissertation is approved, the student will complete the final checklist to assure that all necessary approvals have been obtained. Students will be required to have an exit interview and provide feedback concerning their experience at Rush University.

### **Student Grievance Procedure**

A student who is having difficulty with a course, anticipates being absent from class, or faces an emergency that will impact his or her attendance or performance should contact his or her course director. A student with a problem in laboratory rotations or research should attempt to resolve the issue through direct communication with the laboratory advisor or mentor. A good faith attempt to plan or resolve any issues directly with the course director, laboratory advisor or mentor should always be the first course of action. If this fails, the student should bring the concern to the program director if the student is a first-year student or to their track director if the student has already identified a track. The program director or track director will work with the student and faculty member(s) to resolve the issue. If it is a serious issue, the program director, track director or faculty member may involve the education committee. The student may also appeal directly to the education committee by requesting in writing that it meet to discuss the issue. The education committee will meet within 10 days to render a judgment to best address the interests of the student within the guidelines of the Integrated Biomedical Sciences PhD Program.

Students must maintain a B average in the first year. If they drop below a B average, they should discuss the possibility of remediation with the director of the course they had difficulty with. The course director may issue an incomplete grade for a limited time in accordance with university policy while agreed-upon remediation takes place. However, once a failing grade (No Pass or letter grade less than B) has been given, the education committee must approve a remediation plan. Until the grade is remedied or the average is improved in some other way, the student is on probation. A student who remains on probation for two semesters will be dismissed.

Students who have entered a track must receive at least a B grade in any courses deemed required by their track director. Failure to remediate a grade of less than B in a required course, a no-pass grade in a pass/no-pass course, or the receipt of another such grade while on probation will result in dismissal.

The education committee will also hear complaints concerning academic dishonesty, nonprofessional behavior and student misconduct. The council may become involved through a direct request from a student or faculty member or by a referral from the honor code committee. If the committee has not been involved, the council may refer the initial request to the honor code committee. They will hear testimony from any involved faculty and students and may recommend remediation or disciplinary measures. Recommendations for expulsion or suspension are made to the Office of the Dean of the Graduate College. Appeals will be heard by the Graduate College Council (GCC) or a subcommittee of the GCC that will be organized solely for the purpose of hearing the appeal and making a recommendation to the Dean. The ultimate decision regarding student expulsion or suspension rests in the Office of the Dean of the Graduate College.

### **Graduate College/Rush University Academic Policies**

Academic policies specific to the Graduate College are located earlier in this catalog. In addition, the Academic Resources and Policies section of this catalog contains Rush University academic policies.

### **Integrated Biomedical Sciences: PhD Tuition Scholarship and Stipend**

All students who are admitted to the IBS PhD program at Rush will receive a tuition waiver and stipend. The stipend is awarded annually and renewed if the student remains in good standing. To remain in good standing, the Graduate College requires that students maintain at least a B average. Failure to do so will result in the student being on probation. If the student does not have a B average following one semester of probation, the student may lose the stipend. Students are expected to attend all classes and spend the appropriate time in the lab. All outside employment is forbidden without prior graduate college approval as it interferes with the time and effort necessary to complete the program. This excludes activities that would be in line with individual development plan goals like tutoring, teaching and proctoring.

### **Integrated Biomedical Sciences: MS Philosophy**

The MS in integrated biomedical sciences (IBS) is a research master's degree that will introduce students to the scientific approach. Students who do well in the IBS MS program are encouraged to apply for the IBS PhD program. Graduates will be prepared to perform advanced biomedical research at colleges and universities, government agencies, hospitals, non-profit agencies and industry. In the past Rush offered master's degrees in Anatomy, Biochemistry and Immunology/Microbiology; however the IBS master's program includes additional basic science disciplines, such as neurological science, physiology and pharmacology, as well as the original three areas. Since collaborative interdisciplinary teams of scientists perform transformative biomedical research, single-discipline based science degrees will no longer be offered. Instead our new integrated program emphasizes an interdisciplinary approach to biomedical education and research. Students in the program will work with faculty to generate new knowledge in biomedicine using sophisticated research methods and statistics.

### **Integrated Biomedical Sciences: MS Admission Requirements**

Applicants must enter the program in the fall semester to begin the required course work in the core curriculum. The priority deadline for admission consideration is March 30 and the final date that applications will be accepted is May 1. The program has the following requirements for admission:

- A baccalaureate degree from an accredited college.
- Course work in biology, cellular biology, molecular biology, physics, chemistry, organic chemistry, physical chemistry and mathematics, including calculus, is highly recommended. Upper-level biochemistry or physiology courses are also highly recommended.
- Official academic transcripts from all baccalaureate and post-baccalaureate educational experiences are required. These should provide a minimal grade point average of 3.0 overall (out of 4.0). Higher grades are expected in science courses. Applicants from foreign countries must have their transcripts evaluated by the independent agency, ECE.
- GRE or MCAT scores are required. All applicants whose native language is not English are required to take the Test of English as a Foreign Language (TOEFL).

- A statement of the applicant's interests, previous research experience, and goals needs to be included as an essay in the application. The personal statement must include a ranking of a student's interest in the five different research tracks. If the student's research track interest is not clear, then he or she should list "undecided."
- Three letters of recommendation, two of which must come from academic resources, are required. Letters will preferably be from science faculty who can evaluate the character of the applicant, the applicant's academic and research performance, and the applicant's ability to think and work independently.

The admissions committee will evaluate applications. All prior academic experience and the letters of recommendation will be evaluated for an indication of the applicant's potential for success in the program. With rare exceptions, MS applicants will interview online or by phone with faculty members before admission to the program. Acceptance is on a rolling basis and will be limited by the availability of faculty to act as mentors. We will begin accepting qualified applicants after the priority deadline until the cohort is complete.

## Integrated Biomedical Sciences: MS Curriculum

Year 1	HR
<b>Fall Semester</b>	
BTN-523 Tools for Research	1
GCC-501 Molecular Biology	2
GCC-502 Cellular Biochemistry	2
GCC-511 Readings in Molecular Biology	1
GCC-512 Readings in Cellular Biochemistry	1
BTN-525 Experimental Design and Models of Disease	2
GCC-529 Introduction to the Laboratory	1
GCC-530 Lab Rotation I	1
<b>Spring Semester</b>	
GCC-503 Functional Cell Biology	1
GCC-504 Functional Tissue Biology	2
GCC-506 Research Ethics	1
GCC-507 Biomedical Statistics	2
GCC-513 Readings in Functional Cell Biology	1
GCC-514 Readings in Functional Tissue Biology	1
GCC-508 Writing Practicum	2
GCC-533 Lab Rotation II	1
<b>Summer Term</b>	
GCC-534 Lab Rotation III (Only if No Mentor Is Chosen After Lab Rotation II)	V
GCC-599 Thesis Research	V

Year 2	HR
<b>Fall Semester</b>	
GCC-694-698 Advanced Topic Seminar (Track-Specific Cognate)	1
GCC-599 Thesis Research	V
GCC-XXX* Track-Specific Cognates	2-4
GCC-XXX* Electives	2-4
<b>Spring Semester</b>	
GCC-694-698 Advanced Topic Seminar (Track-Specific Cognate) (1)	1
GCC-XXX* Track-Specific Cognates	2-4

GCC = Graduate College Core Curriculum

GCC XXX\* = Actual courses numbers will vary with elective or cognate required by the track.

BTN = Biotechnology course

V = Variable number of credit hours

The specific courses or hours of cognates and electives will vary each semester depending upon the student's choice of track and specific course selections.

A low number of credit hours are considered to be a full-time commitment to research.

## **Integrated Biomedical Sciences: MS Program Progression**

### **Year 1 Classes**

The goal of course work in the first year is to expose students to the biomedical sciences in a logical progression and to provide the students with tools for approaching their future research experience. The reading courses provide a critical understanding of the literature and existing base of knowledge. They will also show students how new knowledge in these areas can help us understand diseases and use this information to identify new therapeutics. This broad-based approach to disease is the core of the integrated biomedical sciences program.

### **Year 1: Research Experience, Advisor and Research Track Selection**

During the first year, students will typically have two lab rotations in different laboratories. Laboratory rotations will expose students to diverse research environments and allow them to assess how they fit in to a particular laboratory or mentor situation. Students are expected to learn techniques and attend all scheduled experiments, lab meetings, mentor-student discussions, etc. Based on these rotations, students will submit the name of a potential advisor and their track choice to the Integrated Biomedical Sciences Education Committee. The committee, in consultation with the potential advisor, will approve advisor-student matches. Specific research projects will be determined by the thesis advisor after advisor-student discussions. If a student cannot choose a thesis advisor based on the first two laboratory rotations, a third rotation may be taken in the spring or summer. The selection of a research advisor and project will determine the student's selection of a research track.

### **Year 2: Classes, Research Experience, Thesis Committee, Thesis Proposal and Thesis Presentation**

Any classes will be dictated by the track cognates and electives available that academic year. Course selection should complement research activity and the student's interests and should help prepare him or her for the career choice identified through the use of the individual development plan website and additional resources provided by the Graduate College. When the student is not in class or studying, the student should be working on his or her research project.

The student's assessment at this time relates to the following student outcomes:

- The student is able to acquire research skills, collect and analyze data, and interpret results to address an original research question.

In addition, this step begins the continuing assessment of the following outcomes:

- A graduating student is capable of independent critical thinking and writing, as well as proposing, performing and effectively presenting his or her research.
- The graduate is able to work collaboratively with other scientists, physicians and health care professionals to give and obtain feedback concerning the approach to research problems, data analysis and implications of research.

The student creates an individual development plan (IDP) to better define his or her areas of interest, including teaching, administration, and research in industrial or academic environments or further professional education. Upon graduation, the graduate will have used the IDP, mentorship and training opportunities to refine his or her career path.

In consultation with an advisor, the student chooses a thesis committee consisting of the advisor, and two additional Graduate College faculty members. Committee members should be familiar with either the research area or crucial technical aspects of the student's project. Each student will write a succinct research project proposal which will be presented to the committee for approval. The proposal serves to keep the student focused on achieving project aims and allows the committee to track student progress based on the stated aims. Students should view the committee members as a resource for didactic and technical assistance.

The student is expected to write a thesis and present his or her research to the Rush research community (thesis presentation). The thesis committee will then meet with the student to address any questions or issues related to the data or format of the thesis document. The student may be asked to make revisions before final committee approval.

## **Minimal Credit Hours Required for the Integrated Biomedical Sciences MS Degree**

The program is designed to be completed in five consecutive semesters and requires completion of at least 37 semester hours. These hours include 20 credit hours of core courses, seven credit hours of track-specific cognates, four credit hours of elective courses, and six hours of thesis research credit.

The core curriculum focuses on developing knowledge and skills in research theories and methodology, data analysis and statistics, laboratory applications and skills, and the molecular and cellular sciences basic to health and disease. In addition, students will work with faculty advisors to select one area from five available tracks: translational cancer research; cardiovascular and respiratory biology; immunity, infection and inflammation; function and disorders of the musculoskeletal system; and function and disorders of the nervous system. Students will each have a research project, write a thesis and give a thesis presentation at project completion.

The core curriculum, which is common to all students, builds knowledge and skills in research theories and methodology, data analysis and statistics, laboratory applications and skills, and the molecular and cellular sciences basic to health and disease. These courses will provide systematic exposure to the contemporary process of scientific discovery and will serve as the basis for the remainder of the curriculum.

Students will be required, in conjunction with their advisors, to select seven credit hours of courses from concentration-focused cognates in their chosen tracks and a minimum of four elective credits from the Graduate College courses offered. Finally, students will be required to accrue a minimum of six credit hours of thesis research. Master's students will be encouraged to participate in track-specific advanced topic seminars in the second year.

## **Integrated Biomedical Sciences: Academic Policies**

### **Academic Advisor/Principal Advisor**

The program's assistant director functions as the academic advisor to the students during the first year of matriculation in the program. After two rotations, the student will identify the track that he or she wishes to enter and will begin working in the laboratory of his or her research advisor. At this time, both the track director and research advisor will serve as mentors for the student.

### **Research Advisor Selection**

During the first year, the student, in consultation with the assistant program director and track directors in areas related to the student's interests, will select two laboratories for research rotations. Based on these rotations, the student will identify the track that he or she is interested in and submit the name of a potential advisor to the IBS education committee. The committee will match students with advisors.

## **Integrated Biomedical Sciences: Track/Research Opportunities**

The research tracks for the program are translational cancer research; cardiovascular and respiratory biology; immunity, inflammation and infection; functions and disorders of the musculoskeletal system; and functions and disorders of the nervous system. The tracks include qualified faculty from Rush University Medical Center who have an interest in research in these tracks. They come from academic departments as well as clinical departments, which enables students to select a variety of individuals with basic and clinical expertise to serve on their advisory committees and guide them through their projects.

### **Master's Thesis Research Committee**

After the student selects a research advisor and begins to collect preliminary data, the student and advisor will select a research committee in consultation with the track director. This committee will advise the student and evaluate his or her proposal and thesis documents. The thesis committee will consist of the advisor and two additional Graduate College faculty members. Committee members should be familiar with either the research area or crucial technical aspects of the student's project. Committee members are intended to be a resource for the student and their advisor to enhance didactic and technical knowledge towards the completion of the student's project. The track director (or designated representative) will serve as an ex officio non-signing member of the thesis committee to oversee the procedural aspects of the committee meetings and student progression through the program. The thesis committee will strive for consensus in all its actions; however, a majority vote of the committee's membership is sufficient for all activities except the final approval of the thesis, in which case only one member may disagree with the final decision.

### **Research Proposal**

Each student will write a succinct research project proposal to be presented to the committee for approval. The proposal serves to keep the student focused on achieving project aims and allows the committee to track student progress based on the stated aims. Proposals should contain the following elements:

- A background section with relevant literature citations in the specific research area
- The specific aim or aims (appropriately limited in scope)
- The experimental design and methods to be utilized
- Any preliminary data collected

The target date for proposal presentations is within the first 45 days of the fall semester of year two; it is also acceptable for the proposal presentation to be held in the summer term between years one and two. The thesis committee evaluates the feasibility and scope of the project and recommends alterations as needed to ensure adequate student progress through the program in a timely fashion.

### **Thesis Document, Presentation and Approval**

The student is expected to write a thesis document (approved by the director of the Library of Rush University Medical Center) and present the work in a public lecture attended by the thesis committee, and University faculty and students. The thesis committee will then meet with the student in a closed session to address any additional questions and to deliberate on approval of the thesis. Typically the meeting immediately follows the public lecture. The student may be asked to make revisions before final thesis approval by the committee.

The registrar's office must be notified of impending completion of the degree by submission of an Intent to Graduate Form at the beginning of the final semester. As the thesis is reaching final form, the student should consult with the University librarian to assure that the document is formatted correctly. Once the thesis is approved, the student will complete the final checklist to assure that all necessary approvals have been obtained. Each student will be required to have an exit interview and provide feedback concerning his or her experience at Rush University.

### **Student Grievance Procedure**

A student who is having difficulty with a course, anticipates being absent from class, or faces an emergency that will impact his or her attendance or performance should contact the course director. A student with a problem in laboratory rotations or research should attempt to resolve the issue through direct communication with the laboratory advisor or mentor. A good faith attempt to plan or resolve any issues directly with the course director, laboratory advisor or mentor should always be the first course of action. If this fails, the student should bring the concern to the program director if the student is a first-year student or to their track director if the student has already identified a track. The program director or track director will work with the student and faculty member(s) to resolve the issue. If it is a serious issue, the program director, track director or faculty member may involve the education committee. The student may also appeal directly to the education committee by requesting in writing that it meet to discuss the issue. The committee will meet within 10 days to render a judgment to best address the interests of the student within the guidelines of the Integrated Biomedical Sciences Program.

The education committee will also hear complaints concerning academic dishonesty, nonprofessional behavior and student misconduct. The council may become involved through a direct request from a student or faculty member or by a referral from the honor code committee. If the honor code committee has not been involved, the council may refer the initial request to the committee. The council will hear testimony from any involved faculty and students. The council may recommend remediation or disciplinary measures. Recommendations for expulsion or suspension are made to the Office of the Dean of the Graduate College. Appeals will be heard by the Graduate College Council (GCC) or a subcommittee of the GCC that will be organized solely for the purpose of hearing the appeal and making a recommendation to the Dean. The ultimate decision regarding student expulsion or suspension rests in the Office of the Dean of the Graduate College.

### **Graduate College/Rush University Academic Policies**

Students must maintain a B average in the first year. If they drop below a B average, they should discuss the possibility of remediation with the director of the course causing difficulty. The course director may issue an incomplete grade for a limited time in accordance with university policy while agreed-upon remediation takes place. However, once a failing grade (No Pass or letter grade less than B) has been given, the education committee must approve a remediation plan. Until a grade is remedied or the average is improved in some other way, the student is on probation. A student who remains on probation for two semesters will be dismissed.

Students who have entered a track must receive at least a B grade in any courses deemed required by their track director. Failure to remediate a grade of less than B in a required course or a no-pass grade in a pass/no-pass course or the receipt of another such grade while on probation will result in dismissal.



## Biotechnology: Program Overview

The Graduate College offers a nine-month, non-thesis academic and laboratory master's-level training program designed to prepare the student for a research career in the pharmaceutical and biotechnology industries or the university laboratory. This program is also an excellent preparation for further training in graduate school or professional programs.

Courses and laboratory experiences ensure proficiency in a wide variety of laboratory and research techniques, making the students highly competitive for employment in the ever expanding and understaffed job market of academic and industry research. This program in its entirety also gives an excellent expansion in basic sciences and its applications, thus serving those students who wish to further their studies in professional schools or join a PhD program.

## Biotechnology: Curriculum

The students will take the Graduate College's curriculum series of didactic courses covering principles of molecular genetics, cellular biochemistry, cell biology, tissue biology and system physiology and pharmacology. Additional courses that are designed specifically to prepare students for a career in the laboratory and research, including Experimental Design and Models in Disease, Tools for Research, Biomedical Statistics, Research Ethics, are also required. Students may select between taking either the Communication or Laboratory Management course. Students will also participate in hands-on laboratory courses designed to cover the common and most important techniques and methods employed in research today. Finally, students will also participate in the Inter-Professional Education university-wide course. Biotechnology students will spend a total of about 20 hours over the two semesters to work on interprofessional teams with students from other University programs to target topics that move team-based health care forward. Completion of this IPE program will appear on the students' transcripts.

## Biotechnology: Curriculum

Fall Semester		SH
BTN-523	Tools for Research	1
BTN-525	Experimental Design and Models of Disease	2
BTN-531	Laboratory Techniques I (Introduction to Laboratory, Good Laboratory Practices, Data Management)	2
BTN-532	Laboratory Techniques II (Tissue Culture, Cell Sorting)	2
GCC-501	Molecular Biology and Human Genetics	2
GCC-502	Cellular Biochemistry: Proteins, Transport and Signaling	2
GCC-520	Introduction to Pharmacology/Physiology I	3
		<b>14</b>
Spring Semester		
*BTN-524	Communications	1
*BTN-526	Laboratory Management	1
BTN-533	Laboratory Techniques III (Electrophoresis, Genomics, Transfection, PCR)	2
BTN-534	Laboratory Techniques IV (Study Design; Animal Handling; Surgical Techniques)	2
BTN-535	Laboratory Techniques V (Advanced Quantitative Techniques, Independent Research)	2
BTN-536	Laboratory Techniques VI (Histology and Immunohistochemistry, Microscopy)	2
GCC-503	Functional Cell Biology	1
GCC-504	Functional Tissue Biology	2
GCC-506	Research Ethics	1
GCC-507	Biomedical Statistics	2
GCC-508	Scientific Writing	2
GCC-521	Introduction to Physiology and Pharmacology II	3
		<b>20</b>
<b>Semester Hours Required for MS Degree:</b>		<b>34</b>

\*Either BTN 524 or BTN 526 must be taken.

## Biotechnology: Admission Requirements

Admission to the biotechnology program is offered for the fall semester only. The Graduate College feels that a qualified and dedicated student can complete the requirements of the full-time curriculum within the two-semester academic plan. It must be emphasized that this is a rigorous program that will require full attention and commitment by the student.

The faculty of the Graduate College encourages diversity among the student population and therefore seeks to admit persons from various backgrounds. The Graduate College uses the guidelines below to evaluate candidates for admission.

1. **Deadline for applications:** All F-1 visa holders are encouraged to apply by March 15. For U.S. students, the application deadline for priority consideration is March 30; final application deadline is May 1.

### 2. Application requirements:

- a. Complete the online application by following the steps below.
  - Fill out the online application document.
  - Upload your resume.
  - Upload your statement of purpose. In a maximum of 500 words, address (A) any past activities, work and research experience that influenced your decision to enter this program, (B) the path you took to prepare, both academically and personally, for a career related to this degree, and (C) your career goals, and how a Rush University degree can be instrumental to achieving them.
  - Pay the application fee.
- b. Official transcripts need to be sent from all institutions attended at the college or university level. Unofficial transcripts can be used for review and preliminary admission decisions; however, official documents will be required for a final admission decision. Students with a GPA of 3.0 or better on a 4.0-point scale are encouraged to apply.

**Note:** Applicants from institutions outside of the U.S. must provide an ECE course-by-course evaluation of their official transcripts. Evaluation from other credentialing agencies will not be accepted.
- c. Submit three letters of recommendation (two should come from academic sources).
- d. Submit scores of the GRE or an equivalent test (e.g., MCAT, DAT, PCAT or other equivalent exam in the sciences). Although no specific score on these exams is required, students scoring above the 50th percentile are strongly encouraged to apply. GRE is waived for applicants with a PhD degree in basic science or a professional degree in health sciences (e.g., MD, DO, DDS or PharmD).

e. Applicants whose native language is other than English and who do not hold an equivalent of a U.S. bachelor's degree from an institution in a country where English is the official language, must submit TOEFL scores. Other language proficiency exams are not accepted.

f. An interview may be required.

3. **Acceptance letters:** Official acceptances for students will come only from the Dean's office. No students will be accepted after Aug. 1 unless they were officially placed on a wait list.

Specific admission requirements may be waived by the Graduate College Council. These will be addressed on a case-by-case basis.

Applicants who consider themselves to have special or unique qualities that make them strong candidates for graduate education are also encouraged to apply. Research and related job experience are valued highly in the admissions process and will be taken into account. Interviews with applicants are extremely helpful and can play a significant part in the admission decision. Beyond these measures, the faculty attempts to determine the applicant's motivation and potential for advanced study and a research career in the sciences. Once the Office of College Admissions Services has received all required documents, including the application fee, the applicant's admission materials are reviewed by the program director and approved by the Dean. In special circumstances, the application file is sent to the Graduate College Council, where a review of the application takes place. The Graduate College Admissions Office then notifies the applicant of the decision. Additional information and the admission application are available at <http://www.rushu.rush.edu/gradcol>.

## Biotechnology: Academic Policies

### Academic Standing

All students who maintain a cumulative grade point average of 3.0 while completing the required course sequence with full-time enrollment will be considered to be in good academic standing within the Graduate College and are eligible for graduation with the MS degree.

Any student who fails to maintain a 3.0 grade point average will be considered to be in academic difficulty until the deficiency is corrected. Those requirements will be determined by the biotechnology program director with the advice of the Dean and Graduate College Council. A student in academic difficulty is not eligible for graduation.

Students are expected to attend all classes and spend an appropriate amount of time in the laboratory.

The biotechnology program follows the University Policies on Academic Honesty and the University Statement on Student

Conduct. Each student is expected to conduct himself or herself at all times in a professional manner — a manner which conforms to the ethics of the profession and which instills confidence in one's abilities as a working scientist. Irresponsible, unprofessional or unethical behavior, as determined by the instructor, may result in dismissal from the program.

The program will not condone cheating in any form. Allegations of cheating will be reviewed by the program director with the help of an ad hoc committee. If merited, the report will be forwarded to the Graduate College Honor Code Committee.

Any student found to be cheating on an examination will automatically receive a zero for the examination and will be referred to the above committee.

This Rush University catalog details the policies regarding inclusion of minorities and those with disabilities, as well as the policies and procedures for reporting harassment.

## Biotechnology: Graduation Requirements

The successful completion of the biotechnology curriculum with a minimum 3.0 (on a 4.0 scale) cumulative GPA will qualify the student for graduation. No thesis or other activity is required. The Master of Science degree is conferred to biotechnology students.

## Student Academic Appeals Policy

Numerous checks are in place to assure the fair treatment of students. Any student of the Graduate College may appeal a final course grade that results in his or her academic probation or dismissal from the University. A student may also appeal an unreasonable delay in graduation from the University.

The process for filing an appeal is maintained by each program.

## Graduate College/Rush University Academic Policies

Academic policies specific to the Graduate College are located earlier in this catalog. In addition, the Academic Resources and Policies section of this catalog contains Rush University academic policies.

## Clinical Research: Philosophy

This Master of Science program is designed to provide physicians and other health care professionals the tools necessary to undertake and evaluate clinical research. This program is part of the Graduate College. The two-year, thesis-requiring program involves one year of didactic lectures scheduled in the late afternoon followed by a one-year, mentored clinical research experience.

Both years are designed to provide the necessary skills needed to perform clinical research in the 21st century. The course work covers experimental design and historically important clinical trials, as well as clinical research with a faculty mentor.

## Clinical Research: Admission Requirements

This program is targeted to health care professionals with advanced degrees including MD, PhD or PharmD degrees. Students with other advanced degrees including nursing and pharmacy degrees and experience in clinical trials may also apply. However, an advanced degree is not required and some students pursue the course of study following a BS or BA degree. The Graduate College uses the guidelines below to evaluate candidates for admission.

- Complete the online application:
  - Fill out the online application document.
  - Upload your resume.
  - Upload your statement of purpose: in a maximum of 500 words, address (A) any past activities, work and research experience that influenced your decision to enter your intended field of study, (B) the path you took to prepare, both academically and personally, for a career in health care, and (C) your career goals, and how a Rush University degree can be instrumental to achieving them.
  - Pay the application fee.
- Official transcripts need to be sent from all institutions attended at the college or university level.

**Note:** Applicants from institutions outside of the U.S. must provide an ECE course-by-course evaluation of their official transcripts. Evaluation from other credentialing agencies will not be accepted.

Rush and Stroger residents and fellows do not need to submit their official transcripts.
- Submit three letters of recommendation (two should come from academic sources).
- Submit GRE scores or USMLE Step 1 and Step 2 (both CS and CK) scores.
- Official TOEFL score are required for non-native English speakers only. The score from USMLE Step 2 CS can replace TOEFL. Other language proficiency exams are not accepted.

The only term of entry is in the fall.

### Application Deadlines:

- All applications are strongly encouraged to be in by June 1 for best consideration.

- July 1 is the final deadline for all international applicants.
- July 15 is the final date for Rush and Stroger affiliates to be considered for admission, although the program may be full by then.

## Clinical Research: Curriculum

The curriculum for the program is single track the first year and self-directed the second year. All students in the program are required to maintain a cumulative average of B or greater (or pass). Courses are graded in year one as either pass/no pass or with a letter grade. With the exception of the IRB modules, all classes in the first year are scheduled on Tuesdays and Thursdays from 3:30 to 6:30 p.m.

Students may take electives in topics dealing with epidemiology and bioinformatics in the first year and grantsmanship in the second year. Students are encouraged to take the recommended readings courses in the second year. Elective choices should be discussed with the program director prior to registration. Students will also meet periodically with the program director

during the second year to monitor progress on their master's thesis research projects.

## Credit Hour Requirements

Of the 32 semester hours required to complete the program, 13 credit hours should come from required courses, a minimum of 12 semester hours from thesis research, and a minimum of two semester hours of electives. Students may take additional credit hours beyond the required 32 credit hours, but are financially responsible for the additional tuition cost.

### Required Courses

Required courses include CRE 557, CRE 558, GCC 546, GCC 547, GCC 551, GCC 552 and PHR 556 (a minimum of 13 credit hours).

### Required Research Course

CRE 597 is a required research course (a minimum of 12 credit hours).

### Elective Courses

Elective courses include CRE 523, CRE 559, GCC 548, GCC 549, GCC 593 and PVM 553 (a minimum of two credit hours).

Year 1		Credit Hours
<b>Fall Semester I</b>		
*CRE-557	Clinical Trials I (Intro to Clinical Research)	2
*CRE-558	Clinical Trials II	2
*GCC-551	Ethics in Biomedical Research and the IRB	2
*PHR-556	Tools for Research	1
*GCC-546	Principles of Biostatistics I	2
GCC-548	Bioinformatics	1
<b>Spring Semester I</b>		
*GCC-552	Introduction to the Regulatory Process: Drug Discovery and Development	2
*GCC-547	Principles of Biostatistics II	2
GCC-549	Bioinformatics II	1
PVM-553	Observational Epidemiology	1
<b>Summer Semester I</b>		
*CRE-597	Thesis Research	Variable Credit Hours
<b>Year 2</b>		
<b>Fall Semester II</b>		
GCC-593	Grantsmanship	1
*CRE-597	Thesis Research	Variable Credit Hours
CRE-559	Readings in Special Populations	1
<b>Spring Semester II</b>		
*CRE-597	Thesis Research	Variable Credit Hours
CRE-523	Readings in Clinical Research	1

\*International students must consult the program director for required credit hours prior to registration.

## Clinical Research: Thesis Process

The second year is designed for the student to undertake a mentored clinical research project. After identifying a mentor, the student and mentor will begin to outline the research project during the spring and summer of the first year. This can be of the student's own design or, alternatively, a student may participate in a large multi-center trial provided permission is received in advance for publication of the subset of that data collected by the student as a thesis. Any project that involves patient-oriented research (which requires IRB approval or involves a systematic review of patient data) can be submitted.

By midterm of the spring semester of the first year, the student can submit the project in the form of a scientific abstract with anticipated methods, statistical analyses, power analysis and projected outcomes. The program director must approve the abstract. Once approved, an IRB application can be submitted. Only clinical projects will be considered for this program.

The student and faculty mentor will identify a clinical research project. The student will submit that project in the form of a proposal abstract by the end of the spring semester of year one. The student and mentor will further refine the proposal in the summer between the first and second years. The student is expected to complete all of the data collection by the beginning of the spring semester of the second year for submission of the written thesis, and then deliver an oral defense by the end of that the second semester of the second year. The student will be encouraged to write an original manuscript where he or she is the first author, summarizing his or her work and submitting that manuscript for review and publication. This manuscript can then be modified to meet the University standards for thesis submission and serve as the master's thesis. If a manuscript is not written and submitted, the student must still submit a written thesis followed by an oral defense for consideration for degree completion. The mentor and program director must sign the completed thesis document accepting the thesis for completion of the program. There are no written or oral qualifying exams for this program.

## Clinical Research: Academic Policies Student Grievance Procedure

Each student in the program, at the start of the first year classes, will be issued a program manual detailing program policies, procedures and schedules.

A student who fails a class or receives a no-pass in a course will have an opportunity to retake the exam or rewrite the paper to

reverse the no-pass grade. The course director will develop a remediation plan to ensure that the student has mastery of the subject area covered. Failure to remediate the no-pass grade will automatically require the program director to review the student's status and officially place the student on academic probation for a period of one semester.

Students are expected to attend all classes and participate in discussions. Students are also expected to participate in the various computer laboratories that are routinely held in the McCormick Educational Technology Center throughout the first year of the program.

Students are expected to conduct themselves in a professional manner. This includes respecting the rights of others and being kind and courteous to students, faculty, staff and patients. Intimidation of other students, faculty or staff will not be tolerated and is grounds for dismissal. Sexual harassment as well as harassment related to race, color, religion, sexual orientation, national origin, ancestry, age, marital or parental status, or disability is prohibited. The University Bulletin details the policies regarding inclusion of minorities and those with disabilities, as well as the policies and procedures for reporting harassment.

The Master of Science in clinical research program follows the University Policies on Academic Honesty and the University Statement on Student Conduct.

## Student Academic Appeals Policy

A student who fails a class or receives a no-pass in a course will have an opportunity to retake the exam or rewrite the paper to reverse the grade to pass. A cumulative average of B or greater in required courses is needed to continue in the program. Failure to remediate the no-pass grade will automatically require the program director to review the student's status and officially place the student on academic probation for a period of one semester. The course director will develop a remediation plan to ensure that the student has mastery of the subject before continuing in the program.

Numerous checks are in place to assure the fair treatment of students. However, if a grievance does develop, the student should speak with the program director first in an attempt to resolve the problem. If this is unsuccessful or the grievance involves the program director, the student's grievance can be appealed to the Dean of the Graduate College. Any student may appeal a final course grade or failure of their thesis to be accepted that results in his or her academic probation or dismissal from the University. A student may also appeal an unacceptable delay in graduation from the University, or the result of a disciplinary proceeding to the Dean of the Graduate College.

## Graduate College/Rush University Academic Policies

Academic policies specific to the Graduate College are located earlier in this catalog. In addition, the Academic Resources and Policies section of this catalog contains Rush University academic policies.

## Clinical Research: Graduation Requirements

The successful completion of the master's in clinical research curriculum with the required credit hours and a minimum of a B cumulative GPA will qualify the student for graduation. The student must submit and defend a master's thesis work. The student's advisor and the program director must approve the student's thesis.

## Clinical Research: Faculty Research Interests

Because this is a multidisciplinary program, there are no identified faculty members aside from those who teach in the curriculum. Please see the various clinical departments and sections for their respective research interests.

## Health Sciences

**For program details, please read the Health Sciences PhD section of this catalog. The information can be found within the College of Health Sciences pages.**

The program is intended to advance the science and practice of health care by providing a link between the biomedical sciences, clinical research and practice. By incorporating a required research project, the program will increase knowledge within the discipline, provide for interdisciplinary collaboration, and help train future faculty for the field.

This program is offered in collaboration with the College of Health Sciences at Rush University, and core faculty hold appointments in both the Graduate College and the College of Health Sciences. The Division of Health Sciences is dedicated to the mission, vision and values of the Graduate College, the College of Health Sciences, the University and the Medical Center.

## PhD in Health Sciences: Program Goals

1. To prepare students to discover and disseminate new knowledge to provide high-quality, accessible and cost-effective health care and related services in the allied health sciences.
2. To prepare students to conduct outcomes research to improve patient care and inform health policy.
3. To prepare students to develop interprofessional and interdisciplinary collaboration in the design and conduct of research.
4. To prepare students to conduct research that is ethical and responsible.
5. To provide core competencies in the areas of research, education and leadership.
6. To provide advanced, discipline-specific cognate courses to ensure these practitioners are well versed in the latest science related to their specific allied health disciplines.
7. To prepare future faculty and leaders in the allied health sciences to teach, practice and perform research across the continuum of health care.

## Transfer of Credit

The PhD program in health sciences consists of four major core areas:

- Education (12 QH)
- Research and statistics (21 QH)
- Leadership (10 QH)
- Professional track (6 QH)

Students holding a master's degree will be able to transfer 30 to 45 quarter hours (QH) into the PhD program at no cost. A formal research project culminating in a dissertation constitutes 12 QH of credit. In addition to the core courses, students will be able to take elective and independent study courses to obtain the 120 QH required for the degree.

Additional graduate course work may be accepted subject to the approval of the major advisor and the section director for doctoral level courses taken at other institutions, if they are judged to meet divisional requirements. Grades from courses transferred from another institution are not recorded on the student's academic record; the number of credits is recorded and added to the cumulative number of credits.

The minimum number of quarter hours required for the PhD degree in health sciences is 120 QH. A minimum of 45 credit hours must be taken at Rush to fulfill residency requirements.

Students entering the program at the bachelor's level will be required to complete one of the currently offered Master of Science degree programs in their area of specialty or complete 30 to 45 QH of acceptable graduate credit.

### Professional Track (16 QH)

Professional track cognate courses in the various professional areas in which students hold certification or licensure are provided with associated learning outcomes as follows. Upon completion of the program, the student will demonstrate the following:

1. An increased knowledge base in the professional specialty area.
2. Synthesis of an interdisciplinary perspective related to everyday activities and application of these perspectives, as well as knowledge generated in health science to promote evidence-based practice.
3. Presentation of research related to the professional track at state and national meetings.
4. Teaching allied health-health science students in undergraduate or graduate programs.
5. Initiation and participation in communities of practice and other collaborations with professionals and community members to mobilize resources to best meet learner needs and enhance professional growth.
6. Development of expertise in ways that cross conventional disciplinary lines.
7. Identification of professional venues, including conferences and journals, for publication and dissemination of results.
8. Presentation of research findings to peers during organized extracurricular research seminars.
9. Preparation of research manuscripts suitable for submission for publication.
10. Maintenance of a research portfolio.
11. Use of evidence-based practice as part of daily clinical decision-making.

Education Core Courses		Credit Hours
HSC-601	Education Theories and Methods	3
HSC-602	Curriculum and Instruction	3
HSC-603	Methods and Evaluation	3
HSC-604	Teaching Practicum	3
Research Core Courses		
HSC-610	Research Design I	4
HSC-611	Research Design II	4
HSC-612	Statistics I	4
HSC-613	Statistics II	4
HSC-614	Grantsmanship	3
HSC-615	Research Seminar I	1
HSC-616	Research Seminar II	1
Leadership Core Courses		
HSC-620	Leadership Theory	3
HSC-621	Issues in Health Care	3
HSC-622	Ethics in Clinical and Research Settings	1
HSC-623	Management and Supervision in Higher Education	3
Professional Tracks*		
See Professional Sections for Listings		6
Elective Courses**		
Electives (Variable)		4-19
Independent Study (variable credit)***		
Independent Study		variable
Dissertation****		
HSC-617	Dissertation Research	12
MS Graduate Transfer Credit		
Graduate Course Credit Transfer		30-45
<b>Quarter Hours Required for PhD</b>		<b>120</b>

\* Variable: Minimum of 6 QH

\*\* Elective courses may be taken at Rush or other appropriate institutions

\*\*\* Variable credit with advisor approval

\*\*\*\* Variable: Minimum of 12 QH

## Nursing Sciences

For program details, please read the Nursing Sciences PhD section of this catalog. The information can be found within the College of Nursing pages.

Graduates of the PhD program develop the skills of a clinical researcher. These skills are based on the integration of knowledge from biological, behavioral and clinical sciences. Their

clinical research skills contribute to the scientific basis of care provided to individuals across the life span and in any setting where care is provided. Graduates also have leadership skills necessary to serve as senior academicians and influence health care systems and policy.

## Nursing Science: Curriculum

### Doctor of Philosophy (PhD) – Nursing Science

Theory Courses		CreditHours
NSG-680	Understanding Scientific Paradigms	3
NSG-681	Understanding Theoretical Framework Development	3
<b>Subtotal</b>		<b>6</b>
Statistics Courses		CreditHours
NSG-522	Applied Epidemiology and Biostatistics for Nursing Practice*	3
NSG-684	Intermediate Statistics	3
NSG-685	Multivariate Statistics	3
<b>Subtotal</b>		<b>9</b>
Research Courses		Credit Hours
NSG-686	The Research Process: Quantitative Design and Methods Part I	3
NSG-687	The Research Process: Quantitative Design and Methods Part II	3
NSG-688	The Research Process: Qualitative Design and Methods	3
NSG-691	Advanced Clinical Research Practicum (ACRP)	8
<b>Subtotal</b>		<b>17</b>
Ethics Course		CreditHours
NSG-683	Ethical Conduct in Research Settings	3
<b>Subtotal</b>		<b>3</b>
Role Courses		Credit Hours
NSG-614	The Leader and Policy, Politics, Power, and Ethics	3
NSG-600	Leadership in Evolving Health Care Environments	3
NSG-690	Grantsmanship	3
NSG-679	Academic Scholarship in Nursing <i>Variable Credit Based on Prior Teaching Experience</i>	3
<b>Subtotal</b>		<b>12</b>
Cognates		Credit Hours
<b>Subtotal</b>		<b>8</b>
Dissertation		Credit Hours
NSG-699	Dissertation	12
<b>Subtotal</b>		<b>12</b>
Independent Study		Credit Hours
NSG-900A	Independent Study	Varies

\* Required if student has not previously taken a graduate level biostatistics course





## Rush University Course Descriptions

## Rush University Course Descriptions

Courses are listed alphabetically by course prefix (not by discipline).

ANA	Anatomy and Cell Biology
BCH	Biochemistry
BHV	Behavioral Science
BMC	Biomechanics
BTN	Biotechnology
CDS	Communication Disorders and Sciences
CHS	College of Health Sciences Interdisciplinary Courses
CLM	Clinical Lab Management
CLS	Clinical Laboratory Science
CRE	Clinical Research
DRM	Dermatology
EMD	Emergency Medicine
FAM	Family Medicine
GCC	Graduate College Core
HHV	Religion, Health and Human Values
HSC	Health Sciences
HSM	Health Systems Management
IMM	Immunology
IS	Imaging Sciences
MED	Internal Medicine
MIC	Microbiology
MLS	Medical Laboratory Science
MPH	Medical Physics
NEU	Neuroscience
NFA	Nurse First Assistant
NGT	Nursing Transition Course
NRS	Nursing
NSG	Nursing Graduate
NTR	Clinical Nutrition
NUR	Nursing Core Classes
OBG	Obstetrics and Gynecology
OCC	Occupational Therapy
PAS	Physician Assistant Studies
PED	Pediatrics
PHR	Pharmacology

PHY	Biophysics/Physiology
PMR	Phys Med and Rehab
PRF	Perfusion Technology
PSY	Psychiatry
PTH	Pathology
PVM	Preventive Medicine
RAD	Radiology
RC	Respiratory Care
RMC	Rush Medical College
RMD	Rush Medical College Multidisciplinary Course
RSA	Research Administration
SBB	Specialist in Blood Bank
SUR	Surgery
VAS	Vascular Ultrasound

### Discipline Abbreviations

Courses listed and described in this section have been approved by the several faculties of Rush University. The courses are listed alphabetically according to the discipline to which the course content is most closely related. These disciplines do not necessarily reflect a department in the University or in the Medical Center. An abbreviation for the discipline precedes the course number for each course listed.

### Course Numbers

A three-digit course number follows the course abbreviation. It indicates the level of offering for that course as shown below:

### Course Numbering System (Effective 2007)

300-399	Upper-level undergraduate courses
400-499	Upper-level undergraduate courses
500-599	Graduate-level courses
600-699	Doctoral-level courses
700-799	Rush Medical College clinical rotations
800-899	Rush Medical College clinical electives at John H. Stroger, Jr. Hospital of Cook County and also used by other university programs for externships
900	Independent Study
999	Continuous Enrollment

## Course Content

A course title is followed by a brief description of course content and information pertaining to the course.

## Course Prerequisites or Corequisites

Specific prerequisites are noted for some courses. Where no prerequisite is listed, it is assumed that students enrolling will have an adequate background. Students who have any questions about preparation should consult with the instructor of the course. If a corequisite is listed, that course must be taken either during the same term or prior to the course which has a corequisite.

## Course Credit

The number of credit hours for a course appears between parentheses. Rush Medical College courses will display "NA" since course credit hours are not assigned.

## Independent Study Courses

Students may enroll in an independent study course in any discipline of the University under the direction of appropriate faculty with his or her written permission and the approval of the program director. The course number 900 will be used for independent study with the appropriate discipline prefix.

### **ANA-500: Intro to Neurobiology**

The development, morphology and functional significance of the human nervous system are presented in lecture and by demonstrations. Fixed human brain preparations and series of neurological slides are used as visual aid materials. Prerequisite: courses in human biology or anatomy and physiology or comparative anatomy, and permission of instructor.

3.00-4.00 Classroom | Web Component

### **ANA-501: Medical Histology**

The microscopic anatomy of cells, tissues, and organ systems of the human body is studied through laboratories, lectures and self-instructional material. Fine structural specializations relating to tissue function are emphasized along with the histological architecture that characterizes each.

1.00 Classroom | Laboratory | Web Component

### **ANA-501E: Med Histology-Exam Makeup**

Medical Histology examination makeup only.

1.00 RMC Exam Makeup

### **ANA-502: Medical Human Anatomy I**

The structure and function of the human body are examined topographically through laboratory dissection, lectures and

preceptorials. Laboratory dissection is conducted regionally, encompassing the thorax, abdomen, pelvis, perineum, head and neck, back, and extremities. Radiological anatomy, living anatomy and clinical correlations are emphasized. The course also provides a survey of embryology and organ-system development.

1.00 Classroom | Laboratory | Web Component

### **ANA-502E: Med Human Anat I-Exam Makeup**

Med Human Anat I exam makeup only.

1.00 RMC Exam Makeup

### **ANA-503: Human Anatomy II**

Continuation of ANA 502. Embryology is introduced where pertinent.

1.00 Classroom | Laboratory | Web Component

### **ANA-503E: Med Human Anat II-Exam Makeup**

Med Human Anat II exam makeup only.

1.00 RMC Exam Makeup

### **ANA-511: Graduate Histology**

The microscopic anatomy of cells, tissues and organ systems of the human body is studied through laboratories, lectures and self-instructional material. Fine structural specializations relating to tissue function are emphasized along with the histological architecture that characterizes each. This course designation for graduate students includes additional discussion, microscopic slide work and exam components adapted for graduate study.

3.00 Classroom | Laboratory

### **ANA-512: Graduate Neurobiology**

This course designation for graduate students includes discussion and additional readings for graduate students, and exam components adapted for graduate study. An integrated approach to the central and peripheral nervous system is presented from an anatomic, physiologic and neurochemical standpoint. Based on neuroanatomy, major systems are developed and discussed in terms of anatomic arrangement, physiologic functioning and related synaptic pharmacology. In all systems clinical lectures highlight the practical applications of basic science concepts in patient evaluation and management.

8.00 Classroom | Web Component

### **ANA-513: Graduate Human Anatomy I**

The structure and function of the human body are examined topographically through laboratory dissection, lectures and preceptorials. Laboratory dissection is conducted regionally, encompassing the thorax, abdomen, pelvis, perineum, head and neck, back, and extremities. Radiological anatomy, living

anatomy and clinical correlations are emphasized. The course also provides a survey of embryology and organ-system development. This course designation for graduate students includes additional discussion, dissection and exam components adapted for graduate study.

5.00 Classroom | Laboratory

#### **ANA-514: Graduate Human Anatomy II**

Continuation of ANA 513. Embryology is introduced where pertinent. This course designation for graduate students includes additional discussion, dissection and exam components adapted for graduate study.

5.00 Classroom

#### **ANA-581: Research Methods in Anatomy**

Discussion, demonstrations and directed laboratory work provide exposure to general histological techniques, as well as an introduction to selected methods adopted by the student's research advisor.

3.00 Classroom

#### **ANA-589: Proseminar in Skeletal Biology**

Proseminars are offered on topics of skeletal biology by faculty or visiting faculty. They provide knowledge on background of the following topics in skeletal biology: molecular biology, cell biology, biomechanics, biomaterials, and diseases in musculoskeletal tissue.

1.00 Classroom

#### **ANA-590: Special Topics in Anatomy**

Exploration of literature dealing with cell and molecular mechanisms and topics related to ongoing research in the department. A paper is generally required that can serve as the basis for background literature review for development of thesis or dissertation documents. Consult program director. 1.00 Classroom

#### **ANA-591: Teaching Assistantship**

Provides a directed experience in instruction and presentation techniques. Prerequisite: consult program director.

1.00-4.00 Classroom

#### **ANA-595: Journal Club**

Discussion and presentation of both historical and current journal articles. Often the articles are chosen to correspond to the topics being covered in the other anatomy and cell biology classes.

1.00-3.00 Classroom

#### **ANA-599: Master's Thesis Research**

Laboratory research project and preparation of the master's thesis. A letter grade is provided for this course.

1.00-12.00 Laboratory

#### **ANA-699: Doctoral Research**

Research devoted to the preparation of a dissertation in partial fulfillment of the requirements of the degree program.

Prerequisite: permission of program director. This is a pass/no pass course.

1.00-9.00 Laboratory

#### **ANA-781: Research in Anatomy**

Students may arrange research rotations individually with faculty at Rush. To receive credit for such a rotation, the person to whom the student will be responsible must write a letter describing the student's activities, responsibilities, amount of supervision, and the specific dates of the rotation. Credit toward graduation is granted assuming that the research project is ongoing throughout the academic year. Students must submit a proposal to the Office of Clinical Curriculum for approval at least eight weeks before the rotation and must have written approval from the Director of Clinical Curriculum before beginning the rotation. Research rotations are scheduled for a minimum of four weeks of credit with the expectation that the full project will extend beyond the formal course duration. Depending on the proposal, the weeks of credit may or may not apply to the rule of eight-weeks maximum credit for course work in a single subspecialty. This decision is at the discretion of the Office of Clinical Curriculum.

4.00 Classroom

#### **ANA-791: Surgical Anatomy**

A laboratory program of special dissections and demonstrations. The applied, clinical and surgical aspects of anatomical regions are emphasized.

2.00-4.00 Clinical

#### **ANA-793: Advanced Histology/Cell Biology**

The program will focus on in-depth study of histology/cell biology of regions designated by the participant and agreed upon by the course director. The program will incorporate didactic material with special emphasis on independent study and presentations on topics of interest at the forefront of the designated field.

2.00 Clinical

### **ANA-7EI: Basic Sci Individualized Elec**

A student may receive credit for an individually arranged elective with a Rush faculty member. In order to receive credit for such a rotation, the person to whom the student will be responsible must write a letter stating the student's activities, responsibilities, amount of supervision, and specific dates of the rotation. The sponsoring faculty member must complete an evaluation of the student's performance at the conclusion of the elective. The student must submit a proposal to the Office of Clinical Curriculum for approval at least eight weeks before the rotation and must have written approval from the Assistant Dean of Clinical Curriculum before beginning the rotation. A student may receive four weeks of credit for an individually arranged elective. Credit for only one individually arranged elective will count toward graduation requirements. Elective.

4.00 Classroom

### **ANA-900: Independent Study**

Independent study courses give students a unique opportunity to pursue a course of study not commonly included in the curriculum. If you are interested in pursuing an independent study, meet with the faculty member you want to work with to define the course work and expectations.

1.00-12.00 Independent Study

### **ANA-999: Continuous Enrollment**

The requirement for continuous enrollment applies to all students admitted or re-admitted for fall 2015 or later. Doctoral students should follow program requirements for continuous enrollment and degree completion. Students who have not completed their degree requirements are required to maintain continuous enrollment through the college of their program until the degree is earned. Continuous enrollment courses are graduate-level courses set up by departments at Rush University for students who need to remain actively enrolled in the University while they finish their graduate work.

1.00 Continuous Enrollment

### **BCH-501: Biochemistry I**

Biochemistry of biologically important compounds and molecular biology for medical students. DNA, RNA, structure, replication, transcription, translation, protein structure, protein modifications, hemoglobin, immunoglobulin, sickle cell anemia, fibrillar proteins, enzymology and kinetics, enzyme regulation, blood clotting, membranes, membrane proteins, hormones, gene regulation, recombinant DNA, cystic fibrosis, transgenic animals, oncogenes, chemotherapeutic agents, small group clinical case studies on hepatitis, fragile X, DNA repair and pertussis. Multiple choice tests.

1.00 Classroom | Web Component

### **BCH-502: Biochemistry II**

Biochemistry of intermediary metabolism and nutrition for medical students. Bioenergetics, redox reactions, Krebs cycle, carbohydrate metabolism, glycolysis, gluconeogenesis, pentose phosphate pathway, glycoproteins, osteoarthritis, lipid metabolism, synthesis and degradation, special lipids, cholesterol, coronary heart disease, amino acid metabolism, urea cycle, bioactive amino acid products, glutathione, amino acid disorders, nucleotide metabolism and disorders, biotransformations, nutrition, small group clinical case studies on pancreatic insufficiency, Gaucher disease, diabetes and urea cycle disorders. Multiple choice tests.

1.00 Classroom | Web Component

### **BCH-571: Med Biochem for Grad Students**

Medical biochemistry for graduate students. Graduate students take same lecture classes as medical students (BCH 501, 502). Instead of classes devoted to clinical studies or case studies in small group discussions, graduate students receive supplemental lectures focused on experimental techniques, experimental design and biochemical calculations, pH and buffers, bioenergetics and redox chemistry, proteomics, carbohydrate chemistry, lipids, hormone receptors, signaling, and protein turnover. Essay examinations.

3.00 Classroom | Web Component

### **BCH-572: Med Biochem for Grad Students II**

Medical biochemistry for graduate students. Graduate students take same lecture classes as medical students (BCH 501, 502). Instead of classes devoted to clinical studies or case studies in small group discussions, graduate students receive supplemental lectures focused on experimental techniques, experimental design and biochemical calculations, pH and buffers, bioenergetics and redox chemistry, proteomics, carbohydrate chemistry, lipids, hormone receptors, signaling, and protein turnover. Essay examinations.

5.00 Classroom | Web Component

### **BCH-581: Biochemical Methodology I**

Graduate students complete a laboratory rotation in one faculty member's laboratory for the whole term. They learn several research techniques, experimental design, and data collection and analysis. Research projects are related to ongoing efforts in the laboratory. Students complete a written laboratory report at the end of the term and also give an oral presentation of their work.

3.00 Laboratory | Web Component

### **BCH-582: Biochemical Methodology II**

Graduate students complete a second laboratory rotation in a different laboratory. This laboratory experience is meant to

complement the first quarter rotation and learn a new set of research techniques.

3.00 Classroom

#### **BCH-585: Extramural Research**

An eight to ten week experience at an industrial research laboratory or a different academic laboratory in Europe or the United States. Student will focus on major and minor research areas. Assigned reading, a final examination and a written report are required.

1.00-10.00 Classroom

#### **BCH-595: Journal Club**

Discussion and presentation of both historical and current journal articles. Often the articles are chosen to correspond to topics covered in other biochemistry classes.

1.00 Classroom | Web Component

#### **BCH-598: Master's Thesis Rsrch-Biochem**

Biochemistry thesis research for master's students.

1.00-9.00 Laboratory

#### **BCH-624: Connective Tissue Biochemistry**

Biochemistry of the extracellular matrix in connective tissues. Topics include collagen genes, structure, types, biosynthesis and diseases; proteoglycan structure, synthesis and diseases, and hyaluronan; calcification of connective tissues, bone morphogenic proteins, basement membranes, elastin, fibronectin, extracellular matrix receptors, matrix metalloproteinases, and matrix metalloproteinase gene regulation.

2.00 Classroom | Web Component

#### **BCH-624: Connective Tissue Biochemistry**

Biochemistry of the extracellular matrix in connective tissues. Topics include collagen genes, structure, types, biosynthesis and diseases; proteoglycan structure, synthesis and diseases, and hyaluronan; calcification of connective tissues, bone morphogenic proteins, basement membranes, elastin, fibronectin, extracellular matrix receptors, matrix metalloproteinases, and matrix metalloproteinase gene regulation.

3.00 Classroom | Web Component

#### **BCH-698: Introduction to Research**

Each faculty member in the department of biochemistry discusses the research performed in their laboratory with the first year graduate students.

1.00 Laboratory

#### **BCH-699: Doctoral Research-Biochem**

Biochemistry dissertation research for doctoral students. P/N only.

1.00-9.00 Laboratory

#### **BCH-900: Independent Study**

Independent study courses give students a unique opportunity to pursue a course of study not commonly included in the curriculum. If you are interested in pursuing an independent study, meet with the faculty member you want to work with to define the course work and expectations.

1.00-12.00 Independent Study

#### **BCH-999: Continuous Enrollment**

The requirement for continuous enrollment applies to all students admitted or re-admitted for fall 2015 or later. Doctoral students should follow program requirements for continuous enrollment and degree completion. Students who have not completed their degree requirements are required to maintain continuous enrollment through the college of their program until the degree is earned. Continuous enrollment courses are graduate level courses set up by departments at Rush University for students who need to remain actively enrolled in the University while they finish their graduate work.

1.00 Continuous Enrollment

#### **DBHV-751: Sleep Disorders**

Diagnosis and treatment of sleep and arousal disorders as recognized by the Association of Sleep Disorders Centers. Major diagnostic categories are reviewed in terms of clinical presentation, etiology, laboratory findings, and potential therapies. Students sit in with outpatients, interview inpatient consults, and review sleep studies. Prerequisite: approval of course director.

2.00-4.00 Clinical

#### **BHV-781: Research in Psych/Behav Sci**

Students may arrange research rotations individually with faculty at Rush. To receive credit for such a rotation, the person to whom the student will be responsible must write a letter describing the student's activities, responsibilities, amount of supervision and the specific dates of the rotation. Credit toward graduation is granted assuming that the research project is ongoing throughout the academic year.

4.00 Clinical

#### **BMC-501: Statics & Dynamics**

Introduction to statics and dynamics, including general principles of mechanics and standard procedures for solving problems. Force vectors, free body diagram construction, moments, equilibrium and friction concepts are covered in the statics portion of the course. Equations of motion, energy and momentum principles, rigid body movement concepts are covered in the dynamics portion of the course.

3.00 Classroom | Web Component

### **BMC-502: Strength & Properties of Materials**

Axially loaded members, torsion of circular and non circular members, stress and strain and their relationships including three dimensions, combined loadings, components with pressure, moment of inertia, symmetrical and unsymmetrical bending.

3.00 Classroom | Web Component

### **BMC-503: Introduction to Research**

Introduces students to methods of scientific research including review of literature, research designs, sampling techniques, measurement, and related issues. Research articles and research thesis that exemplify various research designs, presentation of results, and conclusions will be reviewed and discussed.

1.00 Classroom

### **BMC-504: Journal Club**

Discussion and presentation of both historical and current journal articles.

1.00 Classroom

### **BMC-505: Gross Anatomy Musculoskeletal System**

This four and a half week course is entitled Gross Anatomy of the Musculoskeletal System. This course is a laboratory-driven survey of the musculoskeletal system that also includes lecture components. Beyond an understanding of the normal structure and function of this system, students study the development of the musculoskeletal system, as well as changes noted in the maturation and ageing processes within this system. The basic knowledge of the structure and function of the components of the musculoskeletal system will then be applied to the abnormal functions that are the basis for disorders and diseases of this system. The overall course objectives below were developed by the faculty and represent the content of this course. Individual learning objectives for each lecture, as well as for the lab, are contained within the educational materials for these sessions. (1) Describe the embryologic development of musculoskeletal structures. (2) Describe the structure, function/s and control of the musculoskeletal system in normal movement and posture. (3) Describe the organization of the nervous system at the gross anatomic, tissue and cellular level. (4) Apply your understanding of the anatomic basis of musculoskeletal abnormalities to specific clinical scenarios.

4.00 Classroom | Web Component

### **BMC-505: Gross Anatomy Musculoskeletal System**

This course is a laboratory-driven survey of the musculoskeletal system that also includes lecture components. Beyond an understanding of the normal structure and function of this system, students will study the development of the musculoskeletal

system, as well as changes noted in the maturation and ageing processes within this system. The basic knowledge of the structure and function of the components of the musculoskeletal system will then be applied to the abnormal functions that are the basis for disorders and diseases of this system. – The overall course objectives below were developed by the faculty and represent the content of this course. Individual learning objectives for each lecture, as well as for the lab, are contained within the educational materials for these sessions. (1) Describe the embryologic development of musculoskeletal structures. (2) Describe the structure, function/s and control of the musculoskeletal system in normal movement and posture. (3) Describe the organization of the nervous system at the gross anatomic, tissue and cellular level. (4) Apply your understanding of the anatomic basis of musculoskeletal abnormalities to specific clinical scenarios.

3.00 Classroom | Web Component

### **BMC-508: Techniques in Orthopedic Biomechanics**

Orthopedic material testing methods with focus on fatigue testing, corrosion and tribological testing, sensing and measuring techniques in orthopedics, testing methods for hard and soft tissues, motion measurements in Gait Lab, regulatory aspects of orthopedic implants, use of biomedical imaging in orthopedic biomechanics, and modeling of human joints.

2.00 Classroom | Web Component

### **BMC-509: Mechanics of the Musculoskeletal System**

Loads in the musculoskeletal system: static analysis, joint stability, contact forces, Newton's law, impulse, moment of inertia, center of mass, and impulse-moment relationship. Tissue mechanics including hard tissue: composition of bone, anisotropy, cortical and cancellous bone, and bone adaptation. And soft tissue: articular cartilage, intervertebral disc, and muscles. Structural analysis of musculoskeletal systems: bending of beams, twisting and contact stress. Bone-implant systems: implant materials, joint replacements and their design, hip replacement, knee replacement, shoulder replacement, and spinal-disc replacement.

2.00 Classroom | Web Component

### **BMC-511: Biomechanics**

Application of mechanics principles to the study of the human body. Primary focus on musculoskeletal biomechanics: study of forces and their interaction with joints, bone, cartilage and tendon tissue. Background in mechanical engineering, including statics, dynamics, and strength of materials is advantageous.

3.00 Classroom | Web Component

### **BMC-512: Bioengineering Materials**

A comprehensive introduction to biomaterials used in implants and medical devices with an emphasis on orthopedic biomaterials

and preparation for working in the implant industry. This course reviews the properties, clinical significance, and regulatory implications of materials and devices relevant to their application to the human body. It covers metals, ceramics, polymers, composites, natural biomaterials, soft and hard tissue implants and implant failure case studies. The fundamentals of implant material biocompatibility and federal regulations are also covered.

3.00 Classroom

### **BMC-513: Kinematics of Human Motion**

Introduces students to the fundamentals of motion analysis measurement, research, and clinical applications. After a survey of current and historical motion analysis systems and techniques, students will learn methodology and interpretation of motions accelerations and forces produced by or applied to body segments during daily activities. Focus will be on the lower extremities, but spine and upper body will be introduced as well. Students will also gain familiarity with complementary measurement tools, such as electromyography.

3.00 Classroom | Web Component

### **BMC-514: Spine Biomechanics**

Study of the effects of spine conditions, surgical techniques and implants on the function, motion and stability of the spine. In vitro, in silico and in vivo analyses of spinal kinematics and dynamics as well as the corresponding experimental methods used. Spinal tissue mechanical properties and function characterization will also be covered.

3.00 Classroom

### **BMC-521: Master's Thesis Research**

Students must choose an area of concentration to complete the thesis requirements of the degree program. The overall aim of the thesis is to make the students work on a clinically relevant topic in the following musculoskeletal biomechanics categories: human motion, implant design and analyses, spine biomechanics, bone mechanics, cartilage mechanics, biomechanics and biochemical analyses of ligaments, tendons and muscles. Variable hours, minimum 29 quarter hours.

1.00-9.00 Classroom

### **BMC-611: Non-Linear Tissue for BMC**

Covers viscoelasticity and advanced biomechanics of skeletal tissues, with a focus on soft orthopedic tissues (e.g., cartilage, tendon and ligament). Topics include tissue composition and structure, establishment of basic governing mechanical principles and constitutive relations for tissues, and non-linear models of fibrillar and viscoelastic porous matrices. Experimental determination of various tissue properties will be introduced and demonstrated.

3.00 Classroom

### **BMC-612: Advanced Strength of Materials**

Topics include principal stresses and strains, relationship between stress and strain, bending of straight and curved bars, composite beams in bending and torsion, thin rods under complex loading, instantaneous center of rotation, and mechanical design considerations.

3.00 Classroom

### **BMC-613: Implant Biomechanics**

Provides students with a basic understanding of the design of artificial human joints, in particular, knee, hip and spine. Material and mechanical considerations of joint replacement will be addressed. Topics include forces and moments at human joints, stress analysis of implant, manufacture of implants, and standards, control and approval.

3.00 Classroom

### **BMC-614: Bone Biology**

Designed to give a graduate level overview of bone biology. Topics to be covered include material compositions, structure (bone architecture), tissue biomechanics, cells and turnover, mineralization, growth and development, serum calcium homeostasis, bone as an endocrine organ, laboratory and clinical imaging strategies, and metabolic bone diseases including osteoporosis.

3.00 Classroom | Web Component

### **BMC-615: Advanced Biomaterials**

Focuses on current issues of implant materials science and biological principles that impact the design of implants and tissue-engineered products. Topics addressed include structural hierarchies of materials and tissues, physical and chemical properties of surfaces, degradation of materials, federal regulatory issues and advanced biocompatibility and implant immunology encompassing cell-surface/cell/matrix interactions. The course also covers normal and excessive inflammatory, immunological and pathological events associated with implant biomaterials with a focus on orthopedic biomaterials and fundamentals required for working in the orthopedics industry. Prerequisites: BMC 501 Statics and Dynamics, BMC 502 Strength and Properties of Materials, and BMC 512 Bioengineering Materials.

3.00 Classroom

### **BMC-616: Tribology of Implants**

Introduces the system aspects of tribology. Regardless of the tribological system, friction and wear are based on certain combinations of acting mechanisms, which depend on the structure of the system as well as on the introduction of tribological stresses. The major mechanisms of friction and wear under solid contact conditions will be highlighted and related to basic physical, mechanical and chemical properties of the surfaces.

3.00 Classroom



**BMC-631: Doctoral Research in Biomechanics**

Biomechanics dissertation research for doctoral students.  
Variable hours.  
1.00-9.00 Laboratory

**BMC-699: Elective: Recent Advances in Orthopedics**

New, up-to-date developments in gait analysis, spine kinematics, and modeling of human joints.  
3.00 Classroom

**BTN-521: Experimental Models in Disease**

This is a journal club, which requires the student to critically evaluate published work.  
2.00 Classroom | Web Component

**BTN-523: Tools for Research**

Application of computer, digital imaging and other supporting technologies are presented and practiced.  
1.00 Classroom | Web Component

**BTN-524: Communication & Lab Management**

All aspects of seeking and obtaining the career start with employment are covered. Laboratory management is introduced.  
1.00 Classroom | Web Component

**BTN-525: Exper Models in Disease & Exper Design**

This course will study the role of experimental models in research. The various aspects of experimental models, computer (in silico) to animal models, will be discussed building on principles of experimental design. This course requires students to critically evaluate published works and develop their models for given diseases. Research problems posed by faculty will be understood, developed and solved by students in a cooperative, interactive application of computer and library resources.  
2.00 Classroom | Web Component

**BTN-526: Laboratory Management**

The course introduces the theory, practical application and evaluation of laboratory management principles in research and health care, including safety, research, educational methodology, quality control, ethics, laboratory operations and laboratory information systems. Opportunities for building critical thinking, problem-solving and teamwork, communication, management and leadership skills are provided.  
1.00 Laboratory | Web Component

**BTN-531: Laboratory Techniques I**

Introduction to laboratory techniques, basic techniques with proteins and cells, laboratory safety training and Good Laboratory Practices training with qualifying examination.  
2.00 Classroom | Laboratory | Web Component

**BTN-532: Laboratory Techniques II**

Cell isolation and cell culture techniques; experimentation with cell cultures; cell cycle, survival, protein and DNA content determination.  
2.00 Classroom | Laboratory | Web Component

**BTN-533: Laboratory Techniques III**

Basic and extended molecular biology techniques; DNA and RNA work, cloning and protein expression techniques.  
2.00 Laboratory | Web Component

**BTN-534: Laboratory Techniques IV**

Animal husbandry, experimental procedures and techniques  
2.00 Laboratory | Web Component

**BTN-535: Laboratory Techniques V**

Modern techniques in sample analyses. Protein sample preparation and analysis by HPLC, 2-D electrophoresis, IEF and mass spectrometry. Introduction to proteomics.  
2.00 Laboratory | Web Component

**BTN-536: Laboratory Techniques VI**

Histology and immunohistochemistry techniques.  
2.00 Laboratory | Web Component

**BTN-999: Continuous Enrollment**

The requirement for continuous enrollment applies to all students admitted or re-admitted for fall 2015 or later. Doctoral students should follow program requirements for continuous enrollment and degree completion. Students who have not completed their degree requirements are required to maintain continuous enrollment through the college of their program until the degree is earned. Continuous Enrollment courses are graduate level courses set up by departments at Rush University for students who need to remain actively enrolled in the University while they finish their graduate work.  
1.00 Continuous Enrollment

**CDS-501: Audiologist Methods for SLP**

This course introduces methods for basic audiologic assessment of adults and children for use by speech-language pathologists.  
1.00 Classroom | Web Component

**CDS-503: Hearing Screen/Service Delivery for SLP**

This course reviews the anatomy and physiology of hearing and the basics of hearing science. Types of hearing loss, forms of hearing assessment, and principles of intervention and rehabilitation are presented as foundations for practicing speech-language pathologists. Skills related to participating in assessment and intervention are developed through laboratory activities.  
2.00 Classroom

**CDS-504: Sph Product'n/Speech Percept'n**

This course addresses the physiology of speech production, the acoustic characteristics of speech, the relationship between articulation and acoustics, and processes by which listeners perceive speech. Theories of speech production and perception will be discussed. The life span issues related to speech, dialectal and cultural characteristics of normal speech, and the acoustic and perceptual characteristics of abnormal speech are also addressed. The course includes lectures, class discussions and laboratory work.

4.00 Classroom | Web Component

**CDS-505: Clin Mthds Speech-Lang Path I**

This course emphasizes basic clinical methods and skills for beginning graduate students in speech-language pathology with an emphasis on assessment. Topic areas include Rush note-writing and documentation. Students will practice administering, scoring and interpreting common standardized tests.

2.00 Classroom | Web Component

**CDS-506: Clin Mthds Speech-Lang Path II**

This course emphasizes more advanced clinical methods and skills for beginning graduate students in speech-language pathology with an emphasis on intervention. Topic areas include Rush clinical protocols and operational procedures.

2.00 Classroom | Web Component

**CDS-507: Neuro Bases Sph/Hearing/Lang**

Central and peripheral nervous system structures that form the neurologic foundation for speech, hearing and language are presented.

4.00 Classroom | Web Component

**CDS-510: Prof Issues-Spch Language Path**

This course provides an overview of professional issues for speech-language pathologists. Topics include regulatory, licensure and scope of practice issues, professional ethics, healthcare reimbursement, risk management and legal issues, and other current professional areas.

2.00 Classroom | Web Component

**CDS-511P: Speech-Language Practicum I**

Supervised clinical experience with patients presenting speech, language, voice, fluency or swallowing impairments. Students develop evaluative, therapeutic, counseling and report-writing skills. Relationship of speech-language pathology to other health care professions is examined. Experience includes patients across the life span and from diverse cultural backgrounds.

2.00-3.00 Classroom | Practicum | Web Component

**CDS-512P: Speech-Language Practicum II**

Supervised clinical experience with patients presenting speech, language, voice, fluency or swallowing impairments. Students develop evaluative, therapeutic, counseling and report-writing skills. Relationship of speech-language pathology to other health care professions is examined. Experience includes patients across the life span and from diverse cultural backgrounds.

2.00-3.00 Practicum | Web Component

**CDS-513P: Speech-Language Practicum III**

Supervised clinical experience with patients presenting speech, language, voice, fluency or swallowing impairments. Students develop evaluative, therapeutic, counseling and report-writing skills. Relationship of speech-language pathology to other health care professions is examined. Experience includes patients across the life span and from diverse cultural backgrounds.

4.00-6.00 Practicum | Web Component

**CDS-514P: Speech-Language Practicum IV**

Supervised clinical experience with patients presenting speech, language, voice, fluency or swallowing impairments. Students develop evaluative, therapeutic, counseling and report-writing skills. Relationship of speech-language pathology to other health care professions is examined. Experience includes patients across the life span and from diverse cultural backgrounds.

4.00 Practicum | Web Component

**CDS-521: Language Disord Preschool Child**

Language development and disorders of preschool children including primary and secondary disorders. Underlying constructs and clinical markers, assessment and intervention strategies. Prerequisite: completion of undergraduate course in normal speech and language development.

4.00 Classroom | Web Component

**CDS-522: Lang Disords School Age Child**

Language development and disorders in spoken and written language of school age children and adolescents, including both primary and secondary language disorders. Underlying constructs and clinical markers leading to differential diagnosis. Assessment and intervention strategies are examined.

4.00 Classroom | Web Component

**CDS-524: Fluency Dysfluency/Stuttering**

This course addresses child and adult fluency disorders. Current research findings on stuttering will be discussed. Students learn to describe pertinent characteristics of speech fluency,

identify the presence of a clinically significant fluency problem, and determine etiologic and maintaining factors. Differential diagnosis of neurogenic and psychogenic stuttering will also be discussed. Appropriate management strategies are considered.  
2.00 Classroom | Web Component

#### **CDS-526: Speech Sound Disorders**

Development and disorders of articulation and phonology in pediatric populations. Topics include research-based typologies including childhood apraxia of speech. Assessment skills are developed. Theories and procedures of contemporary interventions are presented.  
4.00 Classroom | Web Component

#### **CDS-528: Current Issues in AAC Service Delivery**

This short term, intensive course serves as an introduction to current methods and basic strategies associated with the use of augmentative and alternative communication aids and approaches.  
1.00 Classroom | Web Component

#### **CDS-535: Clin Issues: Cultural & Ling Diversity**

This course surveys topics in cultural and linguistic diversity relevant to clinical practice in the profession of speech-language pathology. It provides graduate students with a solid foundation for clinical practice with children who speak a dialect or language other than, or in addition to, English.  
2.00 Classroom | Web Component

#### **CDS-537: Anat & Physio of Speech System**

This course reviews the anatomy and physiology of the speech systems of respiration, phonation and articulation. A review of hearing anatomy and physiology is included. Development of the speech mechanism across the life span is discussed. A one-hour weekly laboratory experience complements didactic information.  
2.00 Classroom | Laboratory | Web Component

#### **CDS-540: Spchpath Mgt Head/Neck Canc Pt**

This course covers assessment and management of speech, voice and swallowing disorders resulting from treatment for head and neck cancer. All forms of alaryngeal speech available to laryngectomized individuals are studied. The voice and speech changes expected with other head and neck surgeries and treatments are discussed. Swallowing evaluation and treatment specific to the head and neck population is included.  
2.00 Classroom | Web Component

#### **CDS-542: Speech-Language Mgt of Tracheostomized Ventilator Dependent Patients**

This course covers the unique challenges of evaluation and treatment of speech, voice and swallowing impairments demonstrated by patients requiring tracheostomy tube placement or ventilator support. Basic understanding of various tracheostomy tubes, one-way speaking valves, and ventilators/ventilator settings will be covered. Short and long term options for communication will be discussed. Swallowing evaluation for this specialized population will be covered in detail. A team approach to patient care will be stressed.  
2.00 Classroom | Web Component

#### **CDS-558: Dysphagia**

Normal anatomy and physiology of swallowing, evaluation of disordered oropharyngeal swallowing, and treatment for swallowing disorders are studied. Topics include instrumental and non-instrumental examinations with special emphasis on videofluoroscopic swallow study procedures and analysis. Swallowing disorders in various populations across the age span are discussed.  
4.00 Classroom | Web Component

#### **CDS-562: Craniofacial Anomalies**

This course reviews the embryology, anatomy, and physiology of normal and abnormal development of orofacial structures. The focus is on cleft-palate and craniofacial anomalies with associated syndromes. Surgical, dental, audiological and feeding aspects are addressed. Speech, language and resonance evaluation and intervention strategies are discussed with a focus on current literature. The emphasis is on a multidisciplinary approach to treatment through the craniofacial team. This course includes lectures, discussions, observation in the Rush Craniofacial clinic, class presentations and literature review papers.  
2.00 Classroom | Web Component

#### **CDS-563: Voice Disorders**

This course examines the acoustic, perceptual and physiological dimensions of normal and abnormal voice. Predisposing, precipitating and perpetuating etiologic factors are considered. Skills for assessment, differential diagnosis, and management of hyperfunctional, psychogenic and organic voice disorders are developed.  
4.00 Classroom | Web Component

#### **CDS-564: Aphasia**

Adult onset aphasia, apraxia of speech, and related language disorders are examined. Emphasis includes theoretical foundations, pathophysiology, symptomatology, assessment and diagnosis, and clinical management. Theoretical models and past or current controversies are included. Prerequisite: CDS 507.  
4.00 Classroom | Web Component

**CDS-567: Dysarthria**

This course focuses on the diagnosis and treatment of a group of speech disorders that affect either single or combined speech subsystems of respiration, phonation, resonance, articulation and prosody. The speech disorders are caused by changes in speech musculature or its movement patterns due to central or peripheral nervous system damage. This course includes lectures, class discussions, laboratory work, hands-on class projects and literature review papers.

4.00 Classroom | Web Component

**CDS-568: Cognition/Communicative Disord**

This course examines normal cognition and the effects of aging, dementia, agnosia, injury to the non-dominant cerebral hemisphere, and traumatic brain injury on communication. Assessment and management of communication disorders arising from these conditions are reviewed. Prerequisites: CDS 507 and CDS 564.

4.00 Classroom | Web Component

**CDS-575: Issues in Counseling**

The major focus is on understanding the process of the helping relationship. Students will consider the impact of cultural and age-related issues, and they will develop skills and competencies needed to influence effectiveness as a communicator. Knowledge of selected counseling theory as it integrates into practice will be acquired.

2.00 Classroom | Web Component

**CDS-581: Research Methods: Comm Disorders**

The development of skills in understanding and critiquing research reports is emphasized. Principles and criteria for evaluating research, including statistical analyses, issues of validity, and evidenced-based practice are studied. Consideration is given to both group and single subject research designs. Prerequisite: completion of a course in statistics.

4.00 Classroom | Web Component

**CDS-589P: Advanced Practicum I**

Students are placed at practicum sites at Rush or other facilities for an extended clinical experience.

6.00-9.00 Practicum | Web Component

**CDS-590P: Advanced Practicum II**

Students are placed at practicum sites at Rush or other facilities for an extended clinical experience.

12.00-15.00 Practicum | Web Component

**CDS-591: Appl Topics: Comm Disorders/Sci**

Scientific, clinical and professional issues in audiology and speech-language pathology are examined using a variety of formats that include guest speakers in student development sessions, clinical rounds and journal club. Development of oral presentation skills, as well as analytical and clinical problem-solving skills, is emphasized. The course meets weekly during regular sessions of the fall, winter and spring quarters, but students register only in the fall.

1.00 Classroom | Web Component

**CDS-598: Thesis**

Under the guidance and direction of a faculty member and committee, the student originates, proposes and executes an experiment. The project must reflect a high degree of scholarship.

1.00-6.00 Classroom | Web Component

**CDS-601: Anat & Physio-Auditory System**

This course includes anatomy and physiology of the outer, middle and inner ear and central auditory pathways. Anatomy and physiology of the vestibular system and theories of hearing are included. An overview of the anatomy and physiology of structures related to speech production is presented.

4.00 Classroom | Web Component

**CDS-601L: Anat & Phys of Aud System Lab**

This laboratory course examines the structures important for hearing through various activities that may include cadavers, models, specimens, computer images, and slides. This course is taken in conjunction with CDS-601, Anatomy and Physiology of the Auditory System.

1.00 Laboratory

**CDS-602 and 6XX: Research Design in Communication Disorders and Sciences**

This series of two courses prepares students to undertake doctoral level research. Students will be asked to read and critique the programmatic record of published research in several topics, with an emphasis on research design and methodology. Although certain topics will be assigned, students may also pursue topics of particular interest in greater depth. Completion of a pre-dissertation research project is required.

6.00

**CDS-603: Acoustics & Psychoacoustics**

This course includes the basic principles underlying the acoustics, analysis and perception of sound. Psychoacoustic principles, theories of hearing and their relationship to normal hearing are presented.

4.00 Classroom | Web Component

**CDS-604: Acoustic Phonetics Sph Percept**

This course examines the roles of major acoustic, phonetic, linguistic and cognitive factors in speech perception and considers relevant theoretical models. Cross-language and developmental aspects of speech perception are also examined.

2.00 Classroom | Web Component

**CDS-605: Embryology/Genetics Aud Sys**

After reviewing basic biology, this course presents basic patterns of biological inheritance and basic human genetics terminology. Focus is on genetics and hearing loss, and topics include gene therapy and hearing loss, syndromic and nonsyndromic hearing loss and consideration of pharmacogenomics. The importance of genetic counseling, family history and beliefs, prevention and ethical or legal issues are discussed. Embryologic development of the auditory, vestibular and craniofacial systems is presented and related to auditory/speech/balance function following birth.

2.00 Classroom | Web Component

**CDS-608: Pharmacology**

The general principles of drug action related to hearing and balance function will be presented. Emphasis will be on activity, mode of action, side effects, toxicity and drug interactions relevant to the practice of audiology.

3.00 Classroom | Web Component

**CDS-609: Clinical Observation-Audiology**

Students learn to identify and apply key elements necessary for introduction to clinical practice including relevant policies and procedures, infection control, electronic medical records, ethics and multicultural issues. Students also observe diagnostic and rehabilitative audiologic and speech and language procedures with infants, children, adults and geriatrics in outpatient, inpatient and short-term care settings.

1.00 Classroom | Web Component

**CDS-610: Seminar in Current Professional Issues**

This course includes exploration, discussion and analysis of 21st century professional issues facing audiologists. Topics will reflect current issues and may include career planning and development, credentialing, specialty certification and licensure, diversity and inclusion, scope of practice and the use of technology in the clinic.

2.00 Classroom | Web Component

**CDS-612: Practice Management Across Settings**

Service delivery models including private practice, clinics, medical centers, non-profit agencies, industry, government and other settings are introduced. Issues associated with clinical operations and practice management include business plan development,

private practice orientation, trends in health care, marketing, cost/benefit ratios, financial and accounting considerations. Personnel issues, conflict management and strategic planning are discussed.

3.00 Classroom

**CDS-616P: Audiology Practicum I**

Students are involved in supervised clinical experience with patients of all ages displaying various hearing impairments. Practicum experiences focus on development of specific skills and competencies in the areas of clinical writing, diagnostic evaluation, obtaining case histories, counseling, and treatment techniques for patients from diverse cultural backgrounds. The relationship of audiology to other health care professions is also examined. Prerequisites: check with course director.

1.00 Practicum | Web Component

**CDS-617P: Audiology Practicum II**

Students are involved in supervised clinical experience with patients of all ages displaying various hearing impairments. Practicum experiences focus on development of specific skills and competencies in the areas of clinical writing, diagnostic evaluation, obtaining case histories, counseling, and treatment techniques for patients from diverse cultural backgrounds. The relationship of audiology to other health care professions is also examined. Prerequisites: check with course director.

3.00 Practicum | Web Component

**CDS-618P: Audiology Practicum III**

Students are involved in supervised clinical experience with patients of all ages displaying various hearing impairments. Practicum experiences focus on development of specific skills and competencies in the areas of clinical writing, diagnostic evaluation, obtaining case histories, counseling, and treatment techniques for patients from diverse cultural backgrounds. The relationship of audiology to other health care professions is also examined.

3.00 Practicum | Web Component

**CDS-619P: Audiology Practicum IV**

Students are involved in supervised clinical experience with patients of all ages displaying various hearing impairments. Practicum experiences focus on development of specific skills and competencies in the areas of clinical writing, diagnostic evaluation, obtaining case histories, counseling, and treatment techniques for patients from diverse cultural backgrounds. The relationship of audiology to other health care professions is also examined.

3.00 Practicum | Web Component

**CDS-626: Hearing Conservation**

This course includes an introduction to the effects of noise on hearing, sound measurement, noise descriptors, testing and follow-up. Prevention, hearing conservation procedures and devices are presented. Federal, state and local regulations, workmen's compensation and litigation are also discussed.

3.00 Classroom | Web Component

**CDS-627: Pathophysiology of Auditory System**

Students discuss risk factors, symptoms and pathogenesis of various ear diseases and auditory system disorders. Audiologic assessment as well as medical and surgical treatments are explained. Students will also be introduced to concepts related to the origins of tinnitus, clinical assessment and treatment efficacy.

3.00 Classroom | Web Component

**CDS-628: Audiologic Assessment**

This course presents assessment of auditory function including comprehensive behavioral testing and tests measuring otoacoustic emissions (OAEs). This course is taken in conjunction with CDS 629, Clinical Methods in Audiology.

4.00 Classroom

**CDS-629: Clinical Methods in Audiology**

This lab course teaches key clinical protocols, methods, procedures and audiologic assessment techniques necessary for clinical practicum experience. The course includes obtaining case histories, performing otoscopy, practice of standard audiometric techniques and lab exercises promoting skill development.

2.00 Classroom | Laboratory | Web Component

**CDS-631: Basic Amplification**

This course introduces the hearing aid fitting process, including candidacy, selection, verification, orientation and validation. Students will learn about the role of compression in providing audibility and maintaining comfort. Students will obtain hands-on experience, including making earmold impressions, analyzing and troubleshooting hearing aids and measuring real-ear responses.

3.00 Classroom | Web Component

**CDS-632: Adult Amplification**

This course expands upon basic hearing instrument technology presented in Basic Amplification. Selection, verification and validation issues surrounding hearing aid fittings with adults are presented. Emphasis is on advanced concepts and practices, as well as current research and trends.

5.00 Classroom | Web Component

**CDS-633: Adult & Geriatric Rehab Audiol**

Examination of adult audiologic rehabilitation. Visual, auditory and bi-sensory stimuli in communication are considered along with assessment of communicative function, auditory training, speechreading, amplification, assistive listening devices, rehabilitative strategies and the psychosocial aspects of adult hearing impairment. The geriatric population and working-age adults will be considered as separate rehabilitative challenges.

4.00 Classroom | Web Component

**CDS-634: Pediatric Ampli & Habilitation**

Students will learn about strategies involved in the management of children with hearing impairment and deafness. Topics include the pediatric fitting process for infants and children, assistive listening devices for classroom and home, communication modalities, auditory skills development, and case management.

3.00 Classroom | Web Component

**CDS-634S: Pediatric Aural Rehabilitation**

Pediatric aural rehabilitation is one of the important domains where speech-language pathology and audiology overlap. Hearing loss affects communication, and, in children, hearing loss also impedes language development. This course will cover topics related to the effects of hearing loss on communication and language, the assessment thereof, rehabilitative techniques that scaffold listening skills and language development, educational options, and communication strategies. Students will develop knowledge and skills to empower educators, families and children to reach their communication potential within their cultural identity.

2.00 Classroom | Web Component

**CDS-635: Auditory Implants**

This course describes and compares various types of cochlear, middle ear, and osseointegrated implant technologies. Appropriate assessment, treatment and management options for implant patients are described. Principles of speech processing and psychoacoustics are related to the cochlear, middle ear, and osseointegrated implant technology.

3.00 Classroom | Web Component

**CDS-636: Educational Audiology**

The practice of audiology in the school setting involves special issues and considerations. This course covers federal legislation, identification and assessment practices, case management, IEP development, and the effects of hearing loss on educational programming.

3.00 Classroom | Web Component

**CDS-638: Auditory Processing**

Students learn the neurophysiologic bases of central auditory processing. The course includes consideration of screening, diagnostic and management approaches to central auditory disorders.

2.00 Classroom | Web Component

**CDS-643: Electrophys Assessment Aud Sys**

This course introduces principles and practices of electrophysiologic methods in audiologic assessment. Special emphasis is on the auditory brain-stem response and its use with both pediatric and adult patients. The course includes basic information on electrocochleography and otoacoustic emissions. Lab assignments are included.

4.00 Classroom | Laboratory | Web Component

**CDS-644: Pediatric Audiology**

Topics in this course include an overview of cognitive, motor and language development, pediatric auditory behaviors, the impact of hearing loss on speech and language development, and age-appropriate procedures for the audiologic evaluation of children. Issues related to audiologic intervention, multiculturalism, team approaches to case management and family counseling are also presented.

3.00 Classroom | Web Component

**CDS-646: Vestibular Assessment & Rehab**

Anatomy and physiology of the vestibular and ocular motor systems will be reviewed. Disorders of patients presenting vertiginous symptoms will be discussed with emphasis on technique and interpretation of ENG and VNG findings. Acceleration measurements will be introduced.

4.00 Classroom | Web Component

**CDS-646L: Vestibular Assessment Lab**

Taken in conjunction with CDS-646. Students develop basic skills in the practical application of ENG, VNG and vestibular rehabilitation.

1.00 Laboratory | Web Component

**CDS-648: Adv Electrophysiologic Asmnt**

This course builds on the content presented in CDS-643. Topics include advanced concepts in ABR and OAEs, visual and somatosensory responses, and intra-operative monitoring. Theoretic bases and clinical applications are considered for ASSR and late potentials. Prerequisite: CDS-643.

4.00 Classroom | Web Component

**CDS-648: Advanced Electrophysiology**

This course builds on the content presented in CDS-643. Topics include advanced concepts in ABR and OAEs, visual and somatosensory responses, and intra-operative monitoring. Theoretic bases and clinical applications are considered for ASSR and late potentials. Prerequisite: CDS-643.

2.00 Classroom | Web Component

**CDS-654: Instrumentation in Audiology**

This course provides an introduction to instrumentation used in the measurement of hearing processes. Basics of electricity and electronic components are introduced. Personal computers and their interfacing with audiologic equipment are examined. Calibration and record keeping requirements will be examined for basic and advanced instrumentation used in audiology.

2.00 Classroom

**CDS-657: Seminar in Teleaudiology**

This seminar focuses on audiologic services delivered via telehealth including screening, diagnosis, rehabilitation and counseling. Contemporary teleaudiology models will be presented and examined. Consumer input, administrative planning, legal and ethical implications and technology needs will be discussed.

1.00-9.00 Classroom | Web Component

**CDS-658: Seminar in Tinnitus Assessment & Mgmt**

The purpose of this seminar is to provide the fundamental knowledge and skills necessary to help individuals with tinnitus self-manage this symptom and to minimize the negative impact of tinnitus on everyday function and quality of life. This seminar will (1) review research on the current understanding of the mechanisms of tinnitus, (2) discuss various approaches toward counseling, assessment, and management and (3) examine the efficacy of current audiological, medical, and cognitive-based management options.

1.00 Classroom | Web Component

**CDS-659: Seminar in Ethics**

Students will learn to delineate ethical foundations and commitments in audiology and allied health to identify, analyze, and resolve ethics problems in these fields. Students will apply such tools as identification of their own values, professional codes of ethics, ethical theories and principles, a model for examining the ethics of specific cases, attention to the suffering of the clinician, and organizational ethics. Course will be taught through lecture, reading, discussion and web events. Prerequisite: permission of instructor.

2.00 Classroom

**CDS-660: Leadership Seminar**

Students will learn to understand and develop their own leadership skills. The course engages students in explorations of leadership. Students will analyze selected leadership literature and will examine the work of leaders in audiology, industry and other areas.

1.00 Classroom | Web Component

**CDS-661: Adv Topics in Amplification**

This seminar focuses on current, innovative, evidence-based fitting and rehabilitation issues related to personal amplification systems.

1.00 Classroom | Web Component

**CDS-662: Supervision & Mentorship AuD**

This course addresses key elements of supervision and mentorship, focusing on students. Components include processes that contribute to the goals and various forms of supervision and mentorship; knowledge and skills needed by supervisors and mentors; research and outcome issues in supervision; leadership and supervision; challenges to effective supervision; and other related topics.

2.00 Classroom | Web Component

**CDS-676: Vestibular Assessment & Rehab II**

Advanced concepts including unilateral peripheral vestibular differentialism, bedside tests of assessment of VOR and VSR, ENG and VNG, rotational test techniques, VEMP testing, computerized dynamic posturography, fall risk assessment and measurement of dizziness handicap are presented via lecture and hands-on practicum.

2.00 Classroom | Web Component

**CDS-680: Investigative Project Plan Sem**

This course prepares a student to conduct an investigative project during the third year in the program. In consultation with the course director and other departmental faculty, the student will generate potential research topics for his or her investigative project, evaluate their merits, review methods and regulatory requirements for conducting experimental evidence-based practice systematic review projects, perform initial literature review and determine the appropriate research design.

1.00 Classroom | Web Component

**CDS-681: Investigative Project**

In this directed course, the student selects and analyzes a specific clinical, research or professional problem. Completion of the project includes a professional paper and tutorial presentation. Repeatable course.

2.00 Independent Study | Web Component

**CDS-816: Internship I**

A five-quarter sequence of supervised audiologic patient care in a variety of sites on-and off-campus. Student clinicians will assume increasing responsibility for the full range of basic and intermediate level audiologic diagnostic procedures and interpretation and rehabilitative follow-up. Student clinicians assume caseload management under supervision. Students also experience administrative and practice management activities that are consistent with their clinical progress. The internship experience includes patients across the life span and from diverse cultural backgrounds.

4.00 Internship/Externship | Web Component

**CDS-817: Internship II**

A five-quarter sequence of supervised audiologic patient care in a variety of sites on-and off-campus. Student clinicians will assume increasing responsibility for the full range of basic and intermediate level audiologic diagnostic procedures and interpretation and rehabilitative follow-up. Student clinicians assume caseload management under supervision. Students also experience administrative and practice management activities that are consistent with their clinical progress. The internship experience includes patients across the life span and from diverse cultural backgrounds.

4.00 Internship/Externship | Web Component

**CDS-818: Internship III**

A five-quarter sequence of supervised audiologic patient care in a variety of sites on-and off-campus. Student clinicians will assume increasing responsibility for the full range of basic and intermediate level audiologic diagnostic procedures and interpretation and rehabilitative follow-up. Student clinicians assume caseload management under supervision. Students also experience administrative and practice management activities that are consistent with their clinical progress. The internship experience includes patients across the life span and from diverse cultural backgrounds.

4.00 Internship/Externship | Web Component

**CDS-819: Internship IV**

A five-quarter sequence of supervised audiologic patient care in a variety of sites on-and off-campus. Student clinicians will assume increasing responsibility for the full range of basic and intermediate level audiologic diagnostic procedures and interpretation and rehabilitative follow-up. Student clinicians assume caseload management under supervision. Students also experience administrative and practice management activities that are consistent with their clinical progress. The internship experience includes patients across the life span and from diverse cultural backgrounds.

5.00 Internship/Externship | Web Component



**CDS-820: Internship V**

A five-quarter sequence of supervised audiologic patient care in a variety of sites on-and off-campus. Student clinicians will assume increasing responsibility for the full range of basic and intermediate level audiologic diagnostic procedures and interpretation and rehabilitative follow-up. Student clinicians assume caseload management under supervision. Students also experience administrative and practice management activities that are consistent with their clinical progress. The internship experience includes patients across the life span and from diverse cultural backgrounds.

5.00 Internship/Externship | Web Component

**CDS-891: Externship I**

This externship sequence is a full-time advanced audiologic clinical placement under the direction of the audiology clinical education coordinator and preceptor. The externship is off-campus and emphasizes increasing independence with clinical practice, as well as participation in clinical operations and administrative and professional activities. Students demonstrate skill levels commensurate with externship competencies. Prerequisites: check with course director.

8.00 Internship/Externship | Web Component

**CDS-892: Externship II**

This externship sequence is a full-time advanced audiologic clinical placement under the direction of the audiology clinical education coordinator and preceptor. The externship is off-campus and emphasizes increasing independence with clinical practice as well as participation in clinical operations and administrative and professional activities. Students demonstrate skill levels commensurate with externship competencies. Prerequisites: check with course director.

8.00 Internship/Externship | Web Component

**CDS-893: Externship III**

This externship sequence is a full-time advanced audiologic clinical placement under the direction of the audiology clinical education coordinator and preceptor. The externship is off-campus and emphasizes increasing independence with clinical practice as well as participation in clinical operations and administrative and professional activities. Students demonstrate skill levels commensurate with externship competencies. Prerequisites: check with course director.

8.00 Internship/Externship | Web Component

**CDS-894: Externship IV**

This externship sequence is a full-time advanced audiologic clinical placement under the direction of the audiology clinical

education coordinator and preceptor. The externship is off-campus and emphasizes increasing independence with clinical practice as well as participation in clinical operations and administrative and professional activities. Students demonstrate skill levels commensurate with Externship competencies.

Prerequisites: check with course director.

8.00 Internship/Externship | Web Component

**CDS-900: Independent Study**

Independent study courses give students a unique opportunity to pursue a course of study not commonly included in the curriculum. If you are interested in pursuing an independent study, meet with the faculty member you want to work with to define the course work and expectations.

1.00-12.00 Independent Study

**CDS-999: Continuous Enrollment**

The requirement for continuous enrollment applies to all students admitted or re-admitted for fall 2015 or later. Doctoral students should follow program requirements for continuous enrollment and degree completion. Students who have not completed their degree requirements are required to maintain continuous enrollment through the college of their program until the degree is earned. Continuous enrollment courses are graduate level courses set up by departments at Rush University for students who need to remain actively enrolled in the University while they finish their graduate work.

1.00 Continuous Enrollment

**CHS-501: Intro to Biostatistics for the Health Scientist**

This course will focus on concepts and procedures for descriptive and inferential statistics for continuous and discrete data and data analysis using parametric and nonparametric statistical procedures. Computerized statistical programs, such as SPSS, will be used.

3.00 Classroom | Web Component

**CHS-502: Research Methods**

This course introduces students to methods of scientific research to include review of literature, research designs, sampling techniques, measurement, and related issues. Research articles and research thesis that exemplify various research designs, presentation of results, and conclusions will be reviewed and discussed.

1.00-5.00 Classroom | Web Component

**CHS-503: Research & Statistical Methods**

An introduction to the methods of scientific research, including research design and statistical analysis. Critical review of the components of research reports will be performed to include definition of a research problem, review of the literature,

research design, data analysis, and results reporting. This course will be taught as an online course.

5.00 Online Only

### **CHS-510: Health Care in America**

Health Care in America is designed for students entering the health professions. Faculty leaders from across the Medical Center present topics that address contemporary issues in America's health care system. Examples include the organization and delivery system, the economics and financing of health care, the nation's health care workforce, long-term care, technology and health care, biomedical ethics, health policy and the public's health, and future directions of America's health care system. Following presentations, the class breaks into interdisciplinary groups lead by faculty to explore those and other class-developed questions about health care in America.

2.00 Online Only

### **CHS-531: Intro to Human Disease**

This course provides a conceptual approach to alterations in normal anatomic structure and function. General and system specific concepts related to the causation and clinical presentations of pathology across the life span are discussed. Prototype diseases are used to illustrate pathologic concepts.

2.00 Online Only

### **CHS-999: Continuous Enrollment**

The requirement for continuous enrollment applies to all students admitted or re-admitted for fall 2015 or later. Doctoral students should follow program requirements for continuous enrollment and degree completion. Students who have not completed their degree requirements are required to maintain continuous enrollment through the college of their program until the degree is earned. Continuous enrollment courses are graduate level courses set up by departments at Rush University for students who need to remain actively enrolled in the University while they finish their graduate work.

1.00 Continuous Enrollment

### **CHS-TRN: External Course Credit-CHS**

This course is used if the content of such courses applies directly to the student's program of study in the college. Courses used can be from another accredited college or university, if approved by the college. A B letter grade or better must have been received.

1.00-15.00

### **CHS-TRNR: Internal Transfer Credit-CHS**

Rush University recognizes that courses delivered within the colleges in different programs may lead to essentially the same learning outcomes. With the department assigning an

equivalency status to courses, this course allows students to receive an internal transfer of credit for identical or equivalent courses when entering another program of study.

1.00-15.00

### **CLM-584: Health Care Finance**

This course provides a broad introduction to concepts in health care finance. These concepts include an introduction to basic accounting such as the accounting equation, generally accepted accounting principles, financial statements, and health care reimbursement. The course utilizes Web-based learning, PowerPoint presentations, Camtasia presentations and assigned book chapters. Student learning will be evaluated through online discussions, homework assignments and exams administered through the online learning management system.

4.00 Online Only

### **CLM-586: Compliance & Regulatory Issues**

The rapidly changing legal environment of health care affects clinical laboratories. Laboratory managers must have a working knowledge of the legal system, and statutes, regulation and case law that affects them. This course provides a Web-based approach to learning the essential legal issues affecting laboratory management using cases, statutes and regulations. Learning units are organized to cover an introduction to the American legal system, health care system organization, relationship between the patient and the lab, health care information and privacy, civil tort liability of the lab, criminal liability and penalties, and protection of intellectual property. Topics are subject to change as new legal issues arise. LT grade.

4.00 Online Only

### **CLM-587: Organizational Behavior**

Organizational behavior is a collection of concepts that focuses on employees' roles within organizations and how to make working relationships function best. This course will provide the learner with the tools to effectively, economically and strategically make changes to improve their services. It will explore the major trends and issues in organizational development as it applies to the laboratory. A Web-based learning approach will be used to present the concepts. Book chapters, case studies, relevant articles, and website resources will provide the learner with advanced and current information in each of the major topic areas. Topics in the course include leadership, understanding employee motivation, developing effective work teams, managing organizational change, intervention techniques, and conflict negotiation skills. Application of knowledge to real-life situations will be accomplished through case studies, discussion boards and current event topics.

4.00 Online Only

**CLM-588: Legal Issues in Health Care**

The rapidly changing legal environment of health care affects clinical laboratories. Laboratory managers must have a working knowledge of the legal system, and the statutes, regulations, and case law that affects them. This course provides a Web-based approach to learning the essential legal issues affecting laboratory management using cases, statutes and regulations. Learning units are organized to cover an introduction to the American legal system, health care system organization, relationship between the patient and the lab, health care information and privacy, civil tort liability of the lab, criminal liability of the lab, criminal liability and penalties, and protection of intellectual property. Topics are subject to change as new legal issues arise. LT grade.

4.00 Online Only

**CLM-589A: Management Experience I**

This course represents the first step in a three-part process to complete a management practicum for the successful completion of the Master of Science in clinical laboratory management. The Master's Management Practicum is divided into three courses: CLM-589A, 589B and 589C corresponding to Management Experience I, II and III. The practicum introduces students to laboratory administration policy, procedure and operations.

2.00 Independent Study

**CLM-589B: Management Experience II**

A continuation of CLM-589A in which the student completes additional management-related activities.

2.00 Online Only

**CLM-589C: Management Experience III**

A continuation of CLM-589B in which the student completes additional management-related activities.

2.00 Independent Study | Online (75% or Greater)

**CLM-590: Principles of Lab Management**

The rapidly changing laboratory environment is constantly responding to diverging trends in health care. This mandates the requirement for effective management. Laboratory managers will need to create new solutions to today's problems. This course provides a Web-based learning approach to teaching the principles of laboratory management. The focus is to present underlying managerial concepts and then assist the learner in the successful application of this information to real-life situations. Book chapters, Internet references and website resources permit the learner to acquire advanced and current information in each of the major topic areas. Learning units are organized to cover four major areas of management: basic principles and

organizational structure, human resources, finance, and operations. 4.00 Online Only

**CLM-591: Evidence-Based Research/Apply Statistics**

Introduction to research methods within the context of health care outcomes. Emphasis is on conceptual understanding of scientific reasoning, research design, data collection methods, analysis, interpretation, and ethical standards in research. Online lecture material, textbook chapters and internet references will allow the learner to reach a high level of understanding and be prepared to apply statistical knowledge in the laboratory with a focus on evidence-based research.

4.00 Online Only

**CLM-592: Ethics**

This course examines the ethical issues in the contexts of medical laboratory science and the practice of management. Ethical decision-making and critical thinking is examined in the context of current health care issues. The course will introduce the students to the principles of health care ethics, codes of ethics, administrative practice including the decision-making process, allowing them to explore issues and raise questions. An in-depth series of ethical issues and behaviors is presented and analyzed. Case studies and online discussions will focus on the dynamics between professional ethics and organizational ethics within health care.

3.00 Online Only

**CLM-593: Scientific & Technical Writing**

This course is designed to develop your scientific and technical writing. It emphasizes a systematic approach to enable you to produce a variety of scientific and technical communications in a well-presented, clear and concise style. You will review the effective use of library scientific resources to help you comprehend the flow of scientific information. This course will prepare you to write and submit a paper to a journal of your choice. This writing course is directed toward those in technical and scientific fields whose increasing specialization requires them to communicate through scientific papers, case studies, technical reports, procedural manuals, strategic planning documents, scientific abstracts, and project reports. An introduction to grant writing will also be included to prepare the student for a successful career in laboratory science.

4.00 Online Only

**CLM-594: Advanced Health Care Finance**

This course provides students with advanced knowledge in financial management. Successful managers must be able to analyze financial information such as budgets, income statements, and cash flows. Students will be introduced to topics including financial accounting, budgets, capital equipment acquisition, billing and collection, reimbursement issues, contract negotiations and

materials management. The content of this course builds on the information delivered in CLM-584. This course employs a Web-based learning approach for students to gather information through book chapters, PowerPoint presentations, and additional readings and internet resources. Knowledge will be demonstrated through online discussions, homework assignments and online examinations.

4.00 Online Only

#### **CLM-595: Method Comparison/Process Val**

This course prepares laboratory professionals to understand the principles and procedures used to verify manufacturer's claims of analytical performance for in vitro diagnostic products. Emphasis is on determining if total allowable error is exceeded. Topics include compliance with proficiency testing requirements, validation of reference ranges, determination of decision cut-off points, and outcome assessment.

4.00 Online Only

#### **CLM-596: Quality Systems & Regulator Issues**

The complexity of operating a clinical laboratory requires an in-depth knowledge of quality systems as well as knowledge of the regulatory requirements at both national and local levels. Laboratory managers will need to understand the principles of the quality system essentials (QSE) and be able to implement a quality management system (QMS). This course provides a Web-based learning approach to teaching the principles of quality management and laboratory regulation. The focus is to present the 12 quality system essential concepts, which are the building blocks of the QMS, to introduce the path of workflow within the laboratory and how to establish a quality management system. The learner will be assisted in the successful application of this information to real-life situations. Book chapters, articles from professional journals, Internet references and website resources permit the learner to acquire advanced and current information in each of the major topic areas. Learning units are organized to cover the 12 quality system essentials and an overview of clinical laboratory regulation.

4.00 Online Only

#### **CLM-597: Issues & Practices in HR Management**

Medical laboratory scientists, and in particular specialists in blood banking, typically find themselves in either the hospital laboratory setting or in blood centers. A knowledge and understanding of the operational and strategic role that human resource management plays in the organization is essential to incorporating the concepts into their role in the organization. A Web-based learning approach will be used to present concepts of human resource management in health care organizations. Book chapters, case studies, Internet references and website

resources will permit the learner to acquire advanced and current information in each of the major topic areas. Learning units are organized to cover the main areas of human resource management for health care organizations: recruitment and hiring; training and development; compensation and benefits; labor relations, both union and non-union; and health and safety. From labor laws to succession planning, this course will cover the many aspects of human resource management. Application of knowledge to real-life situations will be accomplished through case studies and discussion boards.

4.00 Online Only

#### **CLM-598: Health Care Informatics**

Today's clinical laboratory relies heavily on information systems to manage patient care, generate billing, and to connect with care providers and patients. Laboratory managers will need to understand system architecture, design and maintenance. This course provides a Web-based learning approach to teaching the principles of laboratory information systems management, and reviews processes for selection, installation, building test dictionaries, validation, training and integration with electronic health records. The learner will be assisted in the successful application of this information to real-life situations. Book chapters, articles from professional journals, Internet references and website resources permit the learner to acquire advanced and current information in each of the major topic areas.

4.00 Online Only

#### **CLM-599A: Master's Project I (Mgmnt)**

This course represents the first step in a three-part process to complete a management project and practicum for the successful completion of the Master of Science in clinical laboratory management. The Master's Management Project/Practicum is divided into three courses: CLM-599A, 599B and 599C corresponding to Master's Project I, II and III (Management). Student projects are designed in various areas of the clinical laboratories and focus on clinical testing, management and supervision issues. The first course establishes the topic and a current literature search is performed and submitted to the course director for final approval from the department. The second course involves submitting a proposal, and the third course involves submitting the final paper, which should be of publishable quality for submission to a management journal of your choice. It is customary for the student to consult his or her immediate administrator or supervisor to see if there is a project that would benefit the institution. The practicum part of the course introduces students to laboratory administration policy, procedure and operations.

2.00 Online Only

### **CLM-599B: Master's Project II (Mgmt)**

This course represents the second step in a three-part process to complete a management project and practicum for the successful completion of the Master of Science in clinical laboratory management. The Master's Management Project/Practicum is divided into three courses: CLM-599A, 599B and 599C corresponding to Master's Project I, II and III (Management). Student projects are designed in various areas of the clinical laboratories and focus on clinical testing, management and supervision issues. The first course establishes the topic and a current literature search is performed and submitted to the course director for final approval from the department. The second course involves submitting a proposal, and the third course involves submitting the final paper, which should be of publishable quality for submission to a management journal of your choice. It is customary for the student to consult his or her immediate administrator or supervisor to see if there is a project that would benefit the institution. The practicum part of the course introduces students to laboratory administration policy, procedure and operations.

2.00 Online Only

### **CLM-599C: Master's Project III (Mgmt)**

This course represents the third step in a three-part process to complete a management project and practicum for the successful completion of the Master of Science in clinical laboratory management. The Master's Management Project/Practicum is divided into three courses: CLM-599A, 599B and 599C corresponding to Master's Project I, II and III (Management). Student projects are designed in various areas of the clinical laboratories and focus on clinical testing, management and supervision issues. The first course establishes the topic and a current literature search is performed and submitted to the course director for final approval from the department. The second course involves submitting a proposal, and the third course involves submitting the final paper, which should be of publishable quality for submission to a management journal of your choice. It is customary for the student to consult his or her immediate administrator or supervisor to see if there is a project that would benefit the institution. The practicum part of the course introduces students to laboratory administration policy, procedure and operations.

2.00 Online Only

### **CLM-900: Independent Study**

Independent study courses give students a unique opportunity to pursue a course of study not commonly included in the curriculum. If you are interested in pursuing an independent study, meet with the faculty member you want to work with to define the course work and expectations.

1.00-12.00 Independent Study | Web Component

### **CLM-999: Continuous Enrollment**

The requirement for continuous enrollment applies to all students admitted or re-admitted for fall 2015 or later. Doctoral students should follow program requirements for continuous enrollment and degree completion. Students who have not completed their degree requirements are required to maintain continuous enrollment through the college of their program until the degree is earned. Continuous enrollment courses are graduate level courses set up by departments at Rush University for students who need to remain actively enrolled in the University while they finish their graduate work.

1.00 Continuous Enrollment

### **CON-TRNR: Internal Transfer Credit-CON**

Rush University recognizes that courses delivered within the colleges in different programs may lead to essentially the same learning outcomes. With the department assigning an equivalency status to courses, this course allows students to receive an internal transfer of credit for identical or equivalent courses when entering another program of study.

1.00-15.00 Classroom

### **CRE-523: Readings in Clinical Research**

This course consists of seminars evaluating clinical research studies in the literature. Each seminar will evaluate a clinical study, its attributes, as well as the methodological problems. Many of the studies discussed will have been undertaken by clinical investigators at Rush, and one of the investigators will lead the discussion.

1.00 Classroom | Web Component

### **CRE-557: Clinical Trials I**

Presents an overview of all types of trial designs including large simple trials, randomized double blinded trials, crossover studies and others. The course applies concepts obtained in basic and observational epidemiology courses to address how studies are set up to answer specific research questions. The course reviews experimental designs in the context of specific hypotheses, bias and confounding. Publications from existing peer-reviewed journals will be used to illustrate various trial designs.

2.00 Classroom

### **CRE-558: Clinical Trials II**

This course focuses on practical application of the concepts learned in Clinical Trials I. Trainees will be expected to design various types of clinical trials, e.g., multicenter, double blind, placebo controlled studies, as well as large simple trials and describe rationale for blinding, methods of randomization and planned analysis. Issues of data interpretation will be covered. Prerequisite: CRE-557.

2.00 Classroom

**CRE-559: Readings in Special Populations**

This course consists of seminars evaluating clinical research studies in the literature. Each seminar will evaluate a clinical study, its attributes and the methodological problems. Many of the studies discussed will have been undertaken by clinical investigators at Rush, and one of the investigators will lead the discussion.

1.00 Classroom | Web Component

**CRE-597: Thesis Research**

For a student in the Master of Science in clinical research program to undertake thesis research. Participation requires a research mentor.

1.00-9.00 Laboratory

**CRE-900: Independent Study**

Independent study courses give students a unique opportunity to pursue a course of study not commonly included in the curriculum. If you are interested in pursuing an independent study, meet with the faculty member you want to work with to define the course work and expectations.

1.00-9.00 Independent Study

**CRE-999: Continuous Enrollment**

The requirement for continuous enrollment applies to all students admitted or re-admitted for fall 2015 or later. Doctoral students should follow program requirements for continuous enrollment and degree completion. Students who have not completed their degree requirements are required to maintain continuous enrollment through the college of their program until the degree is earned. Continuous enrollment courses are graduate level courses set up by departments at Rush University for students who need to remain actively enrolled in the University while they finish their graduate work.

1.00 Continuous Enrollment

**DRM-716: Dermatology**

Dermatologic problems are studied under the direct supervision of the departmental faculty; diseases are considered from the standpoint of etiology, pathogenesis, diagnosis, course and treatment. Clinical and histopathologic correlations are emphasized. Skin therapeutics is taught stressing biochemical and physiological considerations. There is a written final examination based on assigned reading. Prerequisite: fourth year status. Third year students may take this elective only in May or June of their M3 year.

4.00 Clinical | Web Component

**DRM-716X: Dermatology-Away**

Dermatological problems are studied under the direct supervision of the departmental staff; diseases are considered from the standpoint of etiology, pathogenesis, diagnosis and histopathology.

Skin therapeutics are taught, stressing biochemical and physiological considerations. Prerequisite: fourth year status.

4.00 Clinical

**DRM-781: Research in Dermatology**

Students may arrange research rotations individually with faculty at Rush. To receive credit for such a rotation, the person to whom the student will be responsible must write a letter describing the student's activities, responsibilities, amount of supervision, and the specific dates of the rotation. Students must submit a proposal to the Office of Clinical Curriculum for approval at least eight weeks before the rotation and must have written approval from the Director of Clinical Curriculum before beginning the rotation. Research rotations are scheduled for a minimum of four weeks of credit with the expectation that the full project will extend beyond the formal course duration. Depending on the proposal, the weeks of credit may or may not apply to the rule of eight-weeks' maximum credit for course work in a single specialty. This decision is at the discretion of the Office of Medical Student Programs. Fourth year medical students only.

4.00 Clinical

**DRM-7EI: Dermatology Individualized Elective**

Students may receive credit for individually arranged activities with Rush faculty members, outside faculty personnel, private physicians or researchers, or persons in medically related field such as medical historians, ethicists, attorneys and medical journalists. To receive credit for such a rotation, the person to whom the student will be responsible must write a letter stating the student's activities, responsibilities, amount of supervision, specific dates of the rotation, and that the student will not receive any monetary compensation. A student must submit a proposal to the Office of Clinical Curriculum for approval at least eight weeks before the rotation and must have written approval from the Director of Clinical Curriculum before beginning the rotation. A student may receive four weeks of credit for an individually arranged elective. Credit for only one individually arranged elective will count toward graduation requirements.

4.00 Classroom

**EMD-703: Core Clerkship: Emergency Medicine**

Students will be primarily responsible for the clinical management and documentation of patients. This will include performing an initial and any subsequent assessments, ordering and interpreting any diagnostic workups, and discussing the case with any consultants or admitting teams. Emphasis is placed on the student learning how to perform a focused evaluation of an undifferentiated patient, particularly the formation of a differential diagnosis and strengthening clinical decision-making skills.

4.00 Clinical

**EMD-715: Emergency Medicine**

Students will see patients in all areas of the Emergency Room under the supervision of an attending physician. They will be expected to take a complaint-oriented history, with attention to pertinent past medical history, and perform a pertinent physical exam. They will record their findings and discuss the patient with the attending. Together they will formulate a diagnostic plan, bearing in mind time and cost factors and priorities inherent in various diagnostic possibilities.

4.00 Clinical

**EMD-716: Emergency Medicine**

Students will evaluate adult and pediatric patients in the Emergency Room under the supervision of an attending physician. Fourteen eight-hour shifts are required over the four-week block. There will be at least two weekend shifts, two night shifts, and two evening shifts (actual scheduling will take place at orientation). Grading is based on clinical performance, participation in didactic sessions, a presentation at the end of the rotation, and an oral exam. NOTE: M3s who have completed all core clerkships may be able to enroll in this clerkship. Please contact the Office of Medical Student Programs for information.

4.00 Classroom

**EMD-717: Disaster Medicine**

All activities will be conducted online through the use of Web-based study modules, discussion forums and Internet chats. Through the use of online modules, the students will be exposed to the concepts of managing a disaster scene (triage, incident command structure and performing a hazard vulnerability analysis). Together, students will complete a hazard vulnerability analysis project (through a discussion forum). Fundamental disaster medicine concepts regarding chemical, biological, radiological, nuclear, explosive (CBRNE) injuries, in addition to natural disasters and psycho-behavioral implications of such events, will also be completed online. Each module will be followed by a short quiz to test comprehension. A final exam including a specific disaster scenario (presented online) will also be administered. Upon completion of this rotation, the student will be able to do the following: (1) describe the fundamental concepts of the Hospital Incident Command System (HICS); (2) differentiate the various categories underlying triage in disaster situations; (3) apply the concepts of Hazard Vulnerability Analysis; (4) describe the essential elements behind CBRNE and natural disasters; and (5) explain the essential psychobehavioral implications of disasters

2.00 Classroom

**EMD-722: Pediatric Emergency Medicine**

Four 10-hour shifts per week are spent evaluating patients in the Emergency Room under the supervision of an attending physician. Evening and weekend shifts are included. The student is required to attend teaching conferences in the Emergency Department and to present an informal lecture on a pediatric emergency medicine topic.

4.00 Clinical

**EMD-781: Research in Emergency Medicine**

Students may arrange research rotations individually with faculty at Rush. To receive credit for such a rotation, the person to whom the student will be responsible must write a letter describing the student's activities, responsibilities, amount of supervision, and the specific dates of the rotation. Credit toward graduation is granted assuming that the research project is ongoing throughout the academic year. Students must submit a proposal to the Office of Clinical Curriculum for approval at least eight weeks before the rotation and must have written approval from the Director of Clinical Curriculum before beginning the rotation. Research rotations are scheduled for a minimum of four weeks of credit with the expectation that the full project will extend beyond the formal course duration. Depending on the proposal, the weeks of credit may or may not apply to the rule of 8-weeks' maximum credit for course work in a single subspecialty. This decision is at the discretion of the Office of Medical Student Programs.

4.00 Clinical

**EMD-815: Emergency Medicine**

Students will see patients in all areas of the Emergency Room under the supervision of an attending physician. They will be expected to take a complaint-oriented history, with attention to pertinent past medical history, and perform a pertinent physical exam. They will record their findings and discuss the patient with the attending. Together they will formulate a diagnostic plan, bearing in mind time and cost factors and priorities inherent in various diagnostic possibilities.

4.00 Clinical

**EMD-822: Pediatric Emergency Medicine**

Five eight-hour shifts per week are spent evaluating patients in the Emergency Room under the supervision of an attending physician. Evening and weekend shifts may be included. Students are required to attend the pediatric department noon case conference.

4.00 Clinical

**EMD-830: Medical Toxicology/Poison Control**

This toxicology elective will introduce the student to the nature and scope of poisoning. The Illinois Poison Center covers the entire state of Illinois and handles 90,000 to 100,000 calls per year from individuals and health care facilities. The goal for the medical student in the toxicology elective is to develop a basic understanding on acute poisonings. In addition, the student will be knowledgeable about the public health role of the poison control center and medical toxicologists in managing poisons throughout the state, and it's interface with the public and health care facilities.

2.00-4.00 Classroom

**EMD-831: Emergency Ultrasound**

This elective will provide M4 students with an introduction to emergency ultrasound, as well as an inside look into emergency medicine. Students will be evaluated across core competencies based on interactions with patients, total number of scans, accuracy and will participate in didactics, journal clubs, image review sessions and research meetings. Students will determine when an emergency ultrasound exam is indicated, discuss the examination with the patients and obtain informed consent, obtain US images, interpret US images and work with primary clinical staff to integrate US findings into patient management.

2.00 Classroom

**EMD-EXM: Emergency Med-Exam Remed**

Remediation of core emergency medicine exam only.

4.00 RMC Exam Makeup

**FAM-701: Core Clerkship in Family Medicine**

The family medicine core clerkship is an intense ambulatory experience. Students are allowed to see patients initially and formulate their assessments and plans under supervision of senior residents and attendings. Participation in comprehensive, longitudinal care is stressed. The common problems and responsibilities of a primary care physician are observed and taught. A lecture series and text supplement the clinical experience.

4.00 Clinical | Web Component

**FAM-705: Elective-Fam Med Leader Trk**

The Family Medicine Leadership Track (FMLT) is a four-year, longitudinal curriculum to help meet the health needs of the population by training a select group of primary care focused medical students to become family medicine providers, mentors and leaders. The curriculum emphasizes patient-centered, community-based, interdisciplinary and experiential learning, with leadership development throughout the full four years of undergraduate medical education. Students are assigned to outpatient practices that will serve as their longitudinal "home base" for their

entire medical school experience. They are supervised by family medicine faculty mentors and become an integral part of the community-based care team, gaining an appreciation for continuity of care by following their own panel of patients over time and observing the course of illness and recovery. The students also participate in extracurricular activities and learning activities that emphasize the patient-centered medical home, promote community service and scholarly pursuits, requiring independent study and self-directed learning, allowing for significant personal and professional growth.

1.00 Clinical | Web Component

**FAM-710: Family Medicine Subinternship**

An intensive inpatient primary care experience at Rush Copley. The subintern will function in a capacity similar to an intern, with supervision by a senior family medicine resident and faculty physician.

4.00 Clinical

**FAM-725: Alcohol/Chemical Dependency Unit**

During this two- to four-week clerkship, students develop skills in interviewing and managing alcoholic and other chemically dependent patients. A longitudinal interdisciplinary experience is stressed, emphasizing detoxification, rehabilitation and outpatient treatment.

2.00-4.00 Clinical

**FAM-735: Primary Care Sports Medicine**

The focus of this elective will be on outpatient management of acute and chronic sports and exercise-related injuries and medical issues pertinent to athletes in a multidisciplinary setting. Emphasis will be placed on the diagnosis and treatment of musculoskeletal problems common to athletes. In the context of sports medicine, the student will get exposure and improve proficiency in musculoskeletal physical examination; imaging (such as plain films, MRIs and bone scans); biomechanics; physical therapy, physiology and metabolism; nutrition; and sports psychology. In addition to the clinical issues, the philosophy of primary care sports medicine will be explored, and the aspects of prevention in sports medicine will be highlighted. Students must make arrangements for this clerkship with Cynthia Waickus, MD. Credit for this course will apply toward the eight weeks' maximum credit in the orthopedics subspecialty.

4.00 Clinical

**FAM-741: Urban Primary Care**

An advanced preceptorship with three family physicians in an urban practice. Students are expected to initiate and complete a research or quality improvement project focusing on preventive health services or the enhancement of access to medical care for



minority communities. Prerequisites: FAM-701, MED-701, PED-701 and OBG-703. FA WI SP SU [4 weeks]  
4.00 Clinical

#### **FAM-741X: Urban Primary Care-Away**

An advanced preceptorship with three family physicians in an urban practice. Students are expected to initiate and complete a research or quality improvement project focusing on preventive health services or the enhancement of access to medical care for minority communities. This rotation must be pre-arranged at least four weeks in advance with the course director.  
Prerequisites: FAM-701, MED-701, PED-701 and OBG-701.  
4.00 Clinical

#### **FAM-745: Private Practice Preceptorship**

A preceptorship with an experienced family physician, both at the office and in the hospital. The student will work in all areas of a busy physician's practice. Multiple sites in Chicago and suburbs are available.  
4.00 Clinical

#### **FAM-761: Principle and Practice of Wound Care**

The wound care elective introduces the student to the multidisciplinary approach used in the management of chronic wounds, including the evaluation and treatment of these wounds in the context of underlying complex medical conditions (such as diabetes mellitus, renal failure, osteomyelitis, arterial insufficiency, spinal cord injuries, peripheral vascular insufficiency, and resistant infections). Students will be introduced to new developments in the field of wound care (platelet derived GF, skin grafting, vacuum assisted closure, compression pumps/wraps, etc.). Since the patients return to the clinic on a weekly basis for ongoing treatment, students will have the opportunity to participate in continuity of care and observe the wound healing.  
2.00 Clinical

#### **FAM-781: Research in Family Medicine**

Students may arrange research rotations individually with faculty at Rush. To receive credit for such a rotation, the person to whom the student will be responsible must write a letter describing the student's activities, responsibilities, amount of supervision, and the specific dates of the rotation. Students must submit a proposal to the Office of Clinical Curriculum for approval at least eight weeks before the rotation and must have written approval from the Office of Clinical Curriculum before beginning the rotation. Research rotations are scheduled for a minimum of four weeks of credit with the expectation that the full project will extend beyond the formal course duration. Depending on the proposal, the weeks of credit may or may not apply to the rule of eight-weeks' maximum credit for course

work in a single subspecialty. This decision is at the discretion of the Office of Medical Student Programs.  
4.00 Clinical

#### **FAM-7EI: Family Medicine Elective**

A student may receive credit for an individually arranged elective with a Rush faculty member. To receive credit for such a rotation, the person to whom the student will be responsible must write a letter stating the student's activities, responsibilities, amount of supervision, and specific dates of the rotation. The sponsoring faculty member must complete an evaluation of the student's performance at the conclusion of the elective. The student must submit a proposal to the Office of Clinical Curriculum for approval at least eight weeks before the rotation and must have written approval from the Assistant Dean of Clinical Curriculum before beginning the rotation. A student may receive four weeks of credit for an individually arranged elective. Credit for only one individually arranged elective will count toward graduation requirements. Elective.  
4.00 Clinical

#### **FAM-EXM: Family Medicine Exam Remediation**

Core family medicine examination remediation only.  
4.00 Clinical

#### **FAM-REM: Family Medicine Clinical Remed**

Clinical remediation of core family medicine — repeat of exam is not required. Clinical site determined by the course director.  
4.00 Clinical

#### **GC-TRN: External Transfer Credit-GC**

This course is used if the content of such courses applies directly to the student's program of study in the Graduate College. Courses used can be from another accredited college or university, if approved by the College. A B letter grade or better must have been received.  
1.00-15.00 Classroom

#### **GC-TRNR: Internal Transfer Credit-GC**

Rush University recognizes that courses delivered within the colleges in different programs may lead to essentially the same learning outcomes. With the department assigning an equivalency status to courses, this course allows students to receive an internal transfer of credit for identical or equivalent courses when entering another program of study.  
1.00-15.00 Classroom

#### **GCC-500: Topics in Cellular Biochem: Metabolism**

Additional topics in cellular biochemistry. Expanded lectures on concepts of cellular biochemistry, which underlie the structure,

organization and communication of cells, will be presented. Protein, carbohydrate and lipid structure and function in cellular organization will be covered. Special emphasis will be placed on the roles of enzymes, signaling systems, receptors and membrane transport systems in cell function. This section will also overview neurons, synapses and neurotransmitters.

1.00 Classroom | Web Component

#### **GCC-501: Molecular Bio: Genome/Proteome**

DNA structure, replication, recombination, cloning, sequencing and related topics will be covered. This course will continue with organization of the human genome, the cell cycle, genetic mapping and relationships between genes and diseases.

Transcriptional and translational regulations will be included.

2.00 Classroom | Web Component

#### **GCC-502: Cell Biochem: Pro, Trans, Signl**

Concepts of cellular biochemistry that underlie the structure, organization and communication of cells will be presented. Protein, carbohydrate and lipid structure and function in cellular organization will be covered. Special emphasis will be placed on the roles of enzymes, signaling systems, receptors and membrane transport systems in cell function. This section will also overview neurons, synapses and neurotransmitters.

2.00 Classroom | Web Component

#### **GCC-503: Functional Cell Biology**

The major concepts of cell structure and function will be covered. Topics include tissue origin and organization, extracellular matrix, cytoskeleton, cell-cell adhesion, organelles and compartments, endocytosis, exocytosis, metabolic requirements for signal transduction, cell motility, and regulation of cell proliferation.

1.00 Classroom | Web Component

#### **GCC-504: Functional Tissue Biology**

The biochemical and cellular basis for tissue structure and function will be covered. Topics include systems histology and anatomy, immunity, tissue injury and repair/regeneration, regulation of cell-cell adhesion, apoptosis, endocrinology, pharmacology and toxicology.

2.00 Classroom | Web Component

#### **GCC-505: Techniques in Biomedical Sciences**

The first portion of this course will introduce students to the laboratories and share a deeper look into the research opportunities available at Rush. The laboratory portion of the course will provide a didactic overview and demonstration of certain laboratory techniques. Topics include electrophoresis, genomics, PCR, tissue culture, cell-sorting techniques, ELISA, chromatography/LC

mass spectrometry, imaging techniques, histochemistry and microscopy.

1.00 Classroom | Web Component | Laboratory

#### **GCC-506: Biomedical Ethics**

The major issues of honesty and fairness as practiced in the scholarly pursuit of new knowledge will be reviewed. Topics include equal opportunity and nondiscrimination, abusive relationships, student-faculty relationships, responsibilities of students, faculty, chairpersons and administrators, honesty in writing, authorship, and ownership of data.

1.00 Classroom | Web Component

#### **GCC-507: Biomedical Statistics**

This is an introduction to study design and hypothesis testing. Topics include data definition, study design, probability theory, confidence intervals, hypothesis testing, and the techniques used in modern biostatistics.

2.00 Classroom | Web Component

#### **GCC-508: Writing Practicum**

This is a hands-on writing course that focuses on the requirements for abstract, manuscript and grant application writing. Topics include abstract writing, manuscript writing and grant writing. Each topic is covered in several subcomponents.

2.00 Classroom | Web Component

#### **GCC-511: Readings in Molecular Biology**

Journal club course that covers topics related to GCC-501.

1.00 Classroom | Web Component

#### **GCC-512: Readings in Cellular Biochem**

Journal club course that covers topics related to GCC-502.

1.00 Classroom | Web Component

#### **GCC-513: Readings in Functional Cell Biology**

Journal club course that covers topics related to GCC-503.

1.00 Classroom | Web Component

#### **GCC-514: Readings Funct Tissue Biology**

Journal club course that covers topics related to GCC-504.

1.00 Classroom | Web Component

#### **GCC-520: Intro to Pharm & Physio I**

The GCC-520 and 521 course series integrates physiology and pharmacology to establish an understanding of drug actions as they relate to human organ system function. Topics include cellular function, immunity and infection, synapse, nerve, muscle, heart and circulation, kidney, respiration, gastrointestinal and urinary function, autonomic nervous system, central nervous

system, hormones and homeostasis, and coagulation. The course sequence runs fall through spring.

3.00 Classroom | Web Component

### **GCC-521: Intro to Pharm & Physio II**

The GCC-520 and 521 course series integrates physiology and pharmacology to establish an understanding of drug actions as they relate to human organ system function. Topics include cellular function, immunity and infection, synapse, nerve, muscle, heart and circulation, kidney, respiration, gastrointestinal and urinary function, autonomic nervous system, central nervous system, hormones and homeostasis, and coagulation. The course sequence runs fall through spring.

3.00 Classroom | Web Component

### **GCC-522: Intro to Pharmacology and Physiology III**

The third course in a series that integrates physiology and pharmacology to establish an understanding of drug actions as they relate to the human organ system function.

3.00 Classroom | Web Component

### **GCC-529: Introduction to the Laboratory**

This course will introduce students to the laboratories and share a deeper look into the research opportunities available at Rush.

1.00-9.00 Laboratory | Web Component

### **GCC-530: Laboratory Rotations I**

Hands-on experience in a laboratory to provide the student with an understanding of laboratory interests and learn research protocols. Repeatable for exposure in different labs.

1.00-9.00 Laboratory | Web Component

### **GCC-531: Topics in Biomedical Integration I**

Seminar and hands-on course to demonstrate the skills needed to approach diseases from the molecular, cellular and organ system levels. 1.00 Classroom | Web Component

### **GCC-532: Topics in Biomedical Integration II**

Comprehensive exam project. The student demonstrates proficiency in approaching a disease from the molecular, cellular and organ system levels utilizing all course work from the first year.

1.00-4.00 Classroom | Web Component

### **GCC-533: Laboratory Rotations II**

Hands-on experience in a laboratory to provide the student with an understanding of laboratory interests and learn research protocols. Repeatable for exposure in different labs.

1.00-9.00 Laboratory

### **GCC-534: Laboratory Rotations III**

Hands-on experience in a laboratory to provide the student with an understanding of laboratory interests and learn research protocols. Repeatable for exposure in different labs.

1.00-9.00 Laboratory

### **GCC-546: Principles of Biostatistics I**

Covers statistical issues in clinical trial design. This includes blinding, randomization, bias and intent to treat. Use of descriptive statistics and graphical techniques to explore patterns in data. A review of the basic properties of probability and the characteristics of the normal and binomial distributions. One and two sample inference and hypothesis testing for proportions, means and medians, one way analysis of variance and simple linear regression including diagnostics based on residuals and confidence intervals for regression coefficients are covered. Hypotheses testing for cross-classified data are also discussed.

2.00 Classroom | Web Component

### **GCC-547: Principles of Biostatistics II**

Covers multifactor analysis of variance, multiple regression, logistic regression including Hosmer-Lemeshow goodness-of-fit and receiver-operating curves. Survival analysis including log rank tests, Kaplan-Meier curves and Cox regression are covered. Additionally, statistical software packages, such as SAS or SPSS, are discussed.

2.00 Classroom | Web Component

### **GCC-548: Bioinformatics**

This course provides a practical, broad-based foundation in biomedical informatics. Topics in acquisition, analysis and storage of information in health care, biomedical research and public health will be presented. The course will primarily use a problem-oriented interactive format to illustrate meaningful applications of information technology. Publicly available large data sets and tools will be used to teach basic techniques in data collection and queries, visual presentation of data, comparative effectiveness analysis, decision support, natural language processing, and genomics. No computer programming skills are required.

1.00 Classroom

### **GCC-549: Bioinformatics II**

This course presents introductory material on methods and procedures with medical bioinformatics and how such data can be used for process research relative to quality, safety and health outcomes research. Topics will include use of EHR data for research and the role of "big data," such as with EHRs or other large medical data resources, in conducting pragmatic clinical trials.

1.00 Classroom | Web Component

### **GCC-551: Ethics and IRB**

This course provides the framework around which clinical research projects are based in terms of the Institutional Review Board. The course includes didactic lectures on the legal requirements of informed consent, regulatory processes, intellectual property, the role of the office of research integrity, as well as required participation on IRB review panels inside the University.

2.00 Classroom | Web Component

### **GCC-552: Intro to Regulatory Process**

Lectures cover the process of drug and device discovery, the IND or IDE process, preclinical research, clinical research process for drug and device studies, new drug application, international drug development guidelines, IRB in drug research, device development, reporting adverse drug reactions, the use of biologic markers in trials, drug metabolism, genetics in drug development and orphan drug development, as well as PK/PD modeling in drug development.

2.00 Classroom | Web Component

### **GCC-593: Introduction to Grantsmanship**

The course builds on Tools for Research. The aim of this course is to teach the trainee how to organize and highlight the most important parts of a grant proposal. The course emphasizes writing style, consistency and integration of thought. All aspects of an NIH proposal are emphasized, including the genesis of the budget and budget justification. P/N grading for clinical research students; Letter grade available for other majors.

1.00 Classroom | Web Component

### **GCC-598: Pre-Proposal Research for Integrated Biomedical Sciences**

Laboratory research in an area that will form the basis of a dissertation proposal or master's thesis.

1.00-9.00 Classroom | Web Component

### **GCC-599: Thesis Research for Integrated Biomedical Sciences**

This course provides credit for the research that forms the basis for scientific presentation, possible publications and ultimately the master's thesis. The student performs the research in the mentor or advisor's laboratory and is involved with proposing, planning and executing the master's research. The mentor and the thesis committee assess the research and evaluate student progress in research, research collaboration and the scientific communication of research. Registration requires approval of a mentor by the Director of the Integrated Biomedical Sciences Program.

1.00-9.00 Laboratory | Web Component

### **GCC-611: Cancer Biology I**

In this pro-seminar series, students will learn the underlying molecular and cellular biology involved in carcinogenesis, tumor growth and metastasis, with an emphasis on modern techniques and strategies used to dissect these mechanisms and 'target' tumor cells. This course will provide the student with a solid background in general cancer biology with knowledge of the latest concepts in signal transduction, metabolic reprogramming of tumor cells, cell cycle control, and cancer therapeutics, as well as a general appreciation of the rapid advances made recently in the area of cancer research. Students will learn the following: 1) how cellular processes are altered during cancer, 2) how different cancer types are being modeled and studied in the laboratory, and 3) how novel therapeutic strategies are being developed to target an individual tumor based upon its genetic mutational status.

3.00 Classroom | Web Component

### **GCC-620: Introduction to Teaching**

This course builds crucial educational skills that PhD graduates will need to function as teachers in academia. Designed as a mentored experience for PhD candidates, the course will offer theoretical and practical experience in graduate teaching. An individually designed series of practicum units will be arranged for each student, which will best support student interests and learning needs to build a teaching portfolio. Over the span of multiple terms, students will enroll in one to two credit hours based on prior teaching experiences and recommendations from the course director and from their advisor.

1.00-2.00 Classroom | Web Component

### **GCC-694: Advanced Topics for Translation Cancer Research**

This course is an advanced topics seminar course for PhD students focused on translational cancer research. Some seminar dates will be combined with others in the GCC-694 to 698 series when the seminar integrates biomedical science research topics.

1.00 Classroom | Web Component

### **GCC-695: Advanced Topics Seminar for Cardiovascular & Respiratory Biology**

This course is an advanced topics seminar course for PhD students focused on translational cancer research. Some seminar dates will be combined with others in the GCC-694 to 698 series when the seminar integrates biomedical science research topics.

1.00 Classroom | Web Component

**GCC-696: Advanced Topics Seminar in Immunity, Infection & Inflammations**

This course is an advanced topics seminar course for PhD students focused on immunity, infection and inflammation research. Some seminar dates will be combined with others in the GCC-694 to 698 series when the seminar integrates biomedical science research topics.

1.00 Classroom | Web Component

**GCC-697: Advanced Topics Seminar for Musculoskeletal Track**

This course is an advanced topics seminar course for PhD students focused on function and disorders of the musculoskeletal system. Some seminar dates will be combined with others in the GCC-694 to 698 series when the seminar integrates biomedical science research topics.

1.00 Classroom | Web Component

**GCC-698: Advanced Topics Seminar for Neuro Research**

This course is an advanced topics seminar course for PhD students focused on function and disorders of the nervous system. Some seminar dates will be combined with others in the GCC-694 to -698 series when the seminar integrates biomedical science research topics.

1.00 Classroom | Web Component

**GCC-699: Dissertation Research**

This course provides credit for the research that forms the basis for scientific presentation, publications and ultimately the doctoral dissertation. The student performs the research in the mentor or advisor's laboratory and is involved with proposing, planning, and executing the dissertation research. The mentor and the dissertation committee assess the research and evaluate student progress in research, research collaboration and the scientific communication of research. The course spans several terms until the committee approves the dissertation. Registration requires completion of the first year courses and approval of a mentor by the Director of the Integrated Biomedical Sciences Program.

1.00-9.00 Laboratory | Web Component

**GCC-711: Advanced Readings in Molecular Biology**

Readings course that covers literature central to the topics of GCC-501 and the application to the disease processes.

1.00 Classroom | Web Component

**GCC-712: Advanced Readings in Cellular Biochem**

Readings course that covers literature central to the topics of GCC-502 and the application to the disease processes.

1.00 Classroom | Web Component

**GCC-713: Adv Readings in Functional Cell Biology**

Readings course that covers literature central to the topics of GCC-503 and the application to the disease processes.

1.00 Classroom | Web Component

**GCC-714: Adv Readings in Functional Tissue Bio**

Readings course that covers literature central to topics of GCC-504 and the application to the disease process.

1.00 Classroom | Web Component

**HHV-501: Intro to Health Care Ethics**

This interdisciplinary course considers basic theories of ethics and principles of health care ethics, gives students experience applying two methods of ethical analysis of cases, and examines issues such as paternalism versus enhancement of patients' autonomy, justice, beneficence, and nonmaleficence. Web-based only.

3.00 Online Only

**HHV-502: Major Issues-Hlth Care Ethics**

Focus of the course is on "End of Life" with topics such as advance directives, DNR's, withholding and withdrawing treatment, treatment decisions and ethics, PVS, brain death, euthanasia, and allocation. Both ethical and legal perspectives are considered. Prerequisite: HHV-501. Web-based only.

3.00 Online Only

**HHV-503: Seminar in Health Care Ethics**

Each student presents a major seminar paper on an approved topic in clinical health care ethics and leads discussion around the issue. Prerequisite: HHV-502. Web-based only.

3.00 Online Only

**HHV-504: Ethics/Hlthcare Indisc Perspec**

This interdisciplinary course will introduce students to foundational theories of health care ethics, ethical decision-making frameworks, legal and professional standards in health care ethics, institutional and interprofessional ethical constraints, and major ethical issues facing health care professionals. Students will have the opportunity for case analysis and discussion with students from other professions with which they will someday be practicing. Course content will include lecture, online content, case analysis, and discussion.

2.00 Classroom | Web Component

**HHV-504M: Ethics/Hlthcare Indisc Perspec**

This interdisciplinary course will introduce students to foundational theories of health care ethics, ethical decision-making frameworks, legal and professional standards in health care ethics, institutional and interprofessional ethical constraints, and

major ethical issues facing health care professionals. Students will have the opportunity for case analysis and discussion with students from other professions with which they will some day be practicing. Course content will include lecture, online content, case analysis, and discussion.

2.00 Classroom | Web Component

#### **HHV-510: Seminar in Health Human Values**

Interdisciplinary seminar integrating the written, visual and performing arts with philosophical and clinical issues and approaches to health care. Includes Campbell Lectures each quarter taken.

1.00-3.00 Classroom | Web Component

#### **HHV-512: The Clinic and Ethics Classics**

This course closely reads Aristotle, Kant and Mill, asking two questions: What do the classical authors in ethics have to say to contemporary clinicians? What do contemporary clinicians have to say to those authors? One hour of this course may be offered online.

1.00-4.00 Classroom | Web Component

#### **HHV-520: Ethics–Health Care Professional**

This four-week intensive course will examine a variety of ethical issues in health care encountered throughout the life span. A methodology for case analysis will be used drawing on examples from the participants' own clinical experiences. An ethics of care perspective will augment the traditional analytic approach by examining the characteristics of relationships in the health care context including the roles of power, empathy, suffering and other moral experiences and emotions.

2.00 Classroom | Web Component

#### **HHV-525: Narrative and Medicine**

A characteristic of the human species is that we think in metaphors and learn through stories. In the midst of crises, persons construct stories that give meaning to events. This course focuses on understanding how persons create meaning out of the experiences of disease and suffering. Through improvisational exercises, students discover how to be in tune with stories and their tellers.

1.00-3.00 Classroom | Web Component

#### **HHV-532: Intro Holistic Spiritual Assessment**

In the context of a review of holistic approaches to patient assessment, this course provides an introduction to spiritual assessment. Several significant models for spiritual assessment are presented and evaluated. The models are applied with case studies or patient interviews.

3.00 Classroom | Web Component

#### **HHV-533: Theology of Pastoral Care**

A seminar in which students study various theological approaches to pastoral care and formulate their own theology of the discipline.

2.00 Classroom | Web Component

#### **HHV-534: Suffering**

Health care practitioners inevitably engage the issue of human suffering. This course examines the nature of suffering, the suffering of the healthier and approaches to living with suffering.

1.00 Classroom | Web Component

#### **HHV-535: Spirit/Mind/Body**

The course examines research of faith and health outcomes, psychoneuro-immunology, mind-body concepts, complementary therapies, and an introduction to the practice of proven techniques for enhancing health through spirit/mind/body integration.

3.00 Classroom | Web Component

#### **HHV-541: Seminar Theological Reflection I**

Using a "story theology" model, students bring narratives from their own experience, as well as from the experience of patients or clients, to discern major theological themes.

1.00 Classroom | Web Component

#### **HHV-542: Seminar Theological Reflection II**

Using a "story theology" model, students bring narratives from their own experience, as well as from the experience of patients or clients, to discern major theological themes.

1.00 Classroom | Web Component

#### **HHV-543: Seminar Theological Reflection III**

Using a "story theology" model, students bring narratives from their own experience, as well as from the experience of patients or clients, to discern major theological themes.

1.00 Classroom | Web Component

#### **HHV-551P: Clinical Practicum I**

Supervised clinical experience in ethics in a setting appropriate to learning goals. Settings include the Medical Intensive Care Unit, Neurosurgical Intensive Care Unit and the Brain Injury Group, and Special Care Nursery. Each practicum addresses a basic theme of biomedical ethics: autonomy (Practicum I).

2.00 Practicum

#### **HHV-552P: Clinical Practicum II**

Supervised clinical experience in ethics in a setting appropriate to learning goals. Settings include the Medical Intensive Care Unit, Neurosurgical Intensive Care Unit and the Brain Injury

Group, and Special Care Nursery. Each practicum addresses a basic theme of biomedical ethics: beneficence and nonmaleficence (Practicum II).

2.00 Practicum

### **HHV-553P: Clinical Practicum III**

Supervised clinical experience in ethics in a setting appropriate to learning goals. Settings include the Medical Intensive Care Unit, Neurosurgical Intensive Care Unit and the Brain Injury Group, and Special Care Nursery. Each practicum addresses a basic theme of biomedical ethics: justice (Practicum III).

2.00 Practicum

### **HHV-554P: Cln Pract Iv: Ethics Consultation**

Students are paired with a working ethics consultant for rounds and general ethics coverage. Students begin writing ethics consultations, review cases, and examine readings pertaining to ethics consultation.

2.00 Practicum

### **HHV-586: Reading/Research Religion/Health**

Individual projects under the supervision of faculty member.

1.00-3.00 Classroom | Web Component

### **HHV-598: Thesis in Health Care Ethics**

1.00-6.00 Classroom | Web Component

### **HHV-711: Medical Ethics**

Collaborating with at least one seasoned ethicist, M4 students study questions and topics that have captured their attention during previous clinical study. In this process, they can explore their own moral reasoning and enhance their ability to conduct moral analysis of clinical medicine. Students may attend clinical events that pertain to their question, read contemporary or classical ethics literature, review medical research for ethics embedded in evidence-based practice, consult with members of the faculty of medicine, or be involved in other activities that advance their inquiry.

2.00 Clinical

### **HHV-900: Independent Study**

Independent study courses give students a unique opportunity to pursue a course of study not commonly included in the curriculum. If you are interested in pursuing an independent study, meet with the faculty member you want to work with to define the course work and expectations.

1.00-4.00 Independent Study

### **HHV-999: Continuous Enrollment**

The requirement for continuous enrollment applies to all students admitted or re-admitted for fall 2015 or later. Doctoral students should follow program requirements for continuous enrollment and degree completion. Students who have not completed their degree requirements are required to maintain continuous enrollment through the college of their program until the degree is earned. Continuous enrollment courses are graduate level courses set up by departments at Rush University for students who need to remain actively enrolled in the University while they finish their graduate work.

1.00 Continuous Enrollment

### **HSC-301: Intro to the Hlth Professions**

This course will introduce the student to the broad array of health occupations and professions that are essential to the provision of health care. Nursing, medicine and allied health will be reviewed, and the role, function, education, licensure and scope of practice of the various health professions will be discussed. Core interprofessional health care competencies will be reviewed.

4.00 Classroom | Web Component

### **HSC-302: Anatomy w/Laboratory**

This human anatomy course will provide students with a thorough understanding of functional and applied human anatomy. Lectures, anatomic models and cadaver dissection will be utilized in teaching this course. The structure and function of the human body are examined topographically through laboratory dissection, lectures and preceptorials.

5.00 Classroom | Laboratory | Web Component

### **HSC-303: Professional Writing**

This course is designed to develop scientific and technical writing by providing students with the foundations of grammatical scrutiny necessary to provide quality communication practices and the tools to become proficient at writing professional goals and objectives, as well as clinical and scientific reports. It will also familiarize students with the investigative processes involved in syntax analyses and proofreading clinical and scientific reports. It emphasizes a systematic approach that enables students to produce a variety of scientific and technical communications in a well-presented, clear and concise style.

3.00 Classroom | Web Component

### **HSC-304: Laboratory Fundamentals**

Comprehensive instruction in laboratory mathematics, laboratory techniques, quality control, regulatory issues and safety. Medical terminology is included as an online component.

4.00 Classroom | Web Component

**HSC-305: Principles of Biochemistry**

This course will analyze the structure, properties, functions and metabolism of carbohydrates, lipids and proteins. The laboratory teaches basic biochemical techniques such as centrifugation, electrophoresis, biomolecular modeling and bioinformatics.

Students will also learn to extract, isolate and characterize a single protein. This course is designed for students in the medical technology, food science, chemistry and preprofessional health majors. Writing assignments, as appropriate to the discipline, are part of the course.

4.00 Classroom | Web Component

**HSC-311: Medical Physiology**

This course provides students with a comprehensive understanding of human physiologic function, regulation and integration as a basis for understanding the complex interaction of specific body systems and their relationship to disease.

5.00 Classroom | Web Component

**HSC-312: Clinical Immunology**

An introduction to the basic concepts and terminology of immunity including development, structure and function of the lymphoid systems; the basis of antigenicity; antibody structure; methods of detection and measurement; mechanism of cellular immunity; white cell function; hypersensitivity reactions; the complement system; and mechanisms of immune suppression and tolerance. Topics include the immune response and laboratory testing related to measuring the immune response; and the pathogenesis and laboratory diagnosis of immunological disorders such as hypersensitivities, immune deficiencies, and autoimmunity.

4.00 Classroom | Web Component

**HSC-313: Health Care Ethics**

This course focuses on the basic foundational theories of ethics and practical application of principles of medical and research ethics. Health Care Ethics explores moral values and judgments as they apply to medicine and ethical principles associate with research. It also elaborates on the ethical decision-making framework, and ethical principles that govern the practice of medicine.

3.00 Classroom | Web Component

**HSC-314: Health Care in America**

Health Care in America informs students of the present structure and design of the health care system. This course discusses the organization and delivery of health services, the economics and financing of health care, the nation's health care workforce, access to and quality of health services. The course explores

topics that address current issues in America's health care system. The student will understand what is prompting reform and the significant changes in health care reform legislation.

3.00 Classroom | Web Component

**HSC-321: Hematology**

This course introduces basic hematologic concepts and concepts in coagulation and hemostasis, as well as urinalysis and analysis of various body fluids. Topics include venipuncture, complete blood counts (CBCs), hemopoietic theory, erythrocyte metabolism, hemoglobin synthesis, erythrocyte dyscrasias, FAB classifications of leukemias and leukocyte dyscrasias of various etiologies. Included is the analysis of various body fluids with emphasis on the theory and practice of clinical procedures.

Component topics will include the analyses of urine, cerebral spinal fluid, synovial fluid, pleural fluid, peritoneal fluid, pericardial fluid, feces, semen, and the differentiation of transudates and exudates.

4.00 Classroom | Web Component

**HSC-322: Clinical Chemistry**

Biochemistry, analysis and application of clinically significant chemical substances. Covers non-protein nitrogens, lipids, cardiac markers, liver enzymes, renal function hemoglobin degradation products, electrolytes, pH and blood gasses, pharmacokinetics, therapeutic drug monitoring, vitamins, endocrinology, toxicology, and fetal/maternal testing. Included is the correlation of data for selected disease states.

4.00 Classroom | Web Component

**HSC-323: Health Care Disparities**

Students will examine aspects of the health care system related to health risk, access, outcomes and cost, and associated health care disparities. Causes of poor health access and adverse health outcomes will be discussed, as well as issues related to cultural competency. This course explores the complexities and dimensions of health and illness through diverse cultural perspectives. Social and historical factors that may be involved will be reviewed, as well as possible solutions to ensure access to cost-effective, quality health care.

4.00 Classroom | Web Component

**HSC-324: Biostatistics**

This course will focus on concepts and procedures for descriptive and inferential statistics for continuous and discrete data and data analysis using parametric and nonparametric statistical procedures. Computerized statistical programs, such as SPSS, will be used. 3.00 Classroom | Web Component



**HSC-331: Microbiology**

This course will provide a review of the general biology of infectious agents and the basic concepts and principles of immunology, including medically important microorganisms and their relationship to disease. Identification of selected groups of pathogens, epidemiology, mechanisms causing disease and the biological basis for resistance will be covered. Identification, classification, cellular structure, pathogenic mechanisms, genetics, epidemiology, serology, and prevention and treatment of disease will be described. Specimen collection and the isolation and identification of medically important bacteria will be described and mechanisms of antimicrobial activity and antibiotic susceptibility testing are discussed. Colony morphology of clinically important bacteria and procedures used in the identification of bacteria isolates, including the gram stain and various biochemical assays, will be discussed. These activities are then applied to the identification of unknown bacterial isolates found in patient specimens.

5.00 Classroom | Web Component

**HSC-332: Introduction to Research**

This course introduces students to methods of scientific research to include review of literature, research designs, sampling techniques, measurement, and related issues. Research articles that exemplify various research designs, presentation of results, and conclusions will be reviewed and discussed to enable the student to grade the quality and level of evidence associate with published research.

5.00 Classroom | Web Component

**HSC-333: Epidemiology**

This course introduces students to the principles and practices of epidemiology and provides them with a population-based perspective on health and disease. Students learn basic measurements of frequency and association, and methods employed in describing, monitoring and studying health and disease in populations. Students will gain a working knowledge of key concepts in epidemiology and biostatistics, and an understanding of key aspects associated with introducing strategic initiatives.

4.00 Classroom | Web Component

**HSC-401: Mycology, Parasit & Virology**

This course provides clinical background in mycology, parasitology and virology. Emphasis is on the disease involved and on diagnostic procedures used in the laboratory. Identification, specimen collection and processing of medically important viruses, fungi and parasites will be discussed.

4.00 Classroom | Web Component

**HSC-402: Genetics**

The principles of genetics and genetic testing will be discussed related to health and disease.

4.00 Classroom | Web Component

**HSC-403: Health Care Informatics**

This course will introduce students to health informatics. It examines trends and emerging technologies involved in health care delivery and information systems/technology management within diverse health care settings. Content includes the provider order entry (CPOE), the electronic medical record, pharmacy systems, billing systems, business intelligence/data warehousing systems and biosurveillance methods. In addition, students will discuss ethical and legal considerations, and aspects related to the use of computerized technology and information systems in the delivery of health care.

4.00 Classroom | Web Component

**HSC-404: Nutrition**

Principles of human nutrition and metabolism as well as nutritional planning for the maintenance of health and wellness across the life span (infant, childhood, adolescent, adulthood and later) are explored. The course will elaborate on the role of nutrients in the body and how they affect function in the normal human, as well as those with a chronic disease process. The methods and equipment used to provide nutritional analysis will be discussed and demonstrated.

3.00 Classroom | Web Component

**HSC-411: Molecular Diagnostics**

This molecular biology course consists of an introduction to principles, methodologies and applications of molecular biological procedures used in clinical laboratories. Emphasis is placed on the molecular biological procedures used in the identification of infectious agents that cause human disease and in the detection of mutations resulting in neoplasm or congenital disorders. Prerequisite: departmental permission.

4.00 Classroom | Web Component

**HSC-412: Patient Assessment**

General and system specific concepts related to the causation and clinical presentations of pathology across the life span are discussed. Prototype diseases are used to illustrate pathologic concepts. Use of medical interviews, physical examinations, and interpretation of examination findings will be introduced. Instruction on the components of the health history (chief complaint, present illness, past history, family history, personal and social history, review of symptoms) is provided. Physical examination including the general survey of the patient, vital signs, skin, head and neck exam, thorax and lungs, cardiovascular

and peripheral vascular systems, breasts and axillae, abdomen, genitalia and rectal exams, musculoskeletal system, and the mental status and nervous system exams will be introduced.

Prerequisite: departmental permission.

4.00 Classroom | Web Component

### **HSC-413: Pharmacology**

Provides a conceptual approach to understanding pharmacokinetics, pharmacodynamics and pharmacotherapeutics. Stresses scientific principles underlying pharmacological treatments. The autonomic nervous system and related drug actions, anti-inflammatory drugs, autacoids, neuropharmacology, psychopharmacology, and anesthetic/analgesic pharmacology will be reviewed. Cardiovascular, diuretic and respiratory agents, hypoglycemic agents, drugs acting on the blood and blood-forming organs, toxicology, antibiotics and cancer chemotherapeutic agents will be discussed. Pharmacotherapeutics for common acute and chronic health conditions are described. Medications used for the diagnosis and treatment of a variety of physical and psychiatric disorders will be reviewed. Prerequisite: HSC-304 or 305 and departmental permission.

4.00 Classroom

### **HSC-421: Practicum**

The practicum builds upon the theoretical knowledge and techniques introduced during didactic courses in the first year. Students will complete experiences of their choices (as available) in the health profession for which they plan to enter graduate school to complete. Offerings may include nursing, medicine and various allied health fields. Students will shadow the health care provider as they conduct their day-to-day work. Student rotations will generally be two days per week. Prerequisite: departmental permission.

5.00 Classroom

### **HSC-422: Capstone Project**

A meaningful project related to the health science will be designed, implemented and completed by the student under the direction of a faculty member. Prerequisite: departmental permission.

5.00 Classroom

### **HSC-450: Management Principles**

The students will learn principles of management to include planning, organizing, directing and controlling. They will also learn management and evaluation of personnel and programs, motivational theory, decision-making, conflict management, principles of delegation, and financial management.

4.00 Classroom | Web Component

### **HSC-601: Education Theories and Methods**

This course will review models of learning theory as they relate to higher education, professional education and adult and career continuing education contexts, as well as application of learning theory to teaching methods and evaluation. Various learning theories will be introduced, to include behavioral, cognitive and constructive theory, motivation and newer theories of learning based on cognitive science.

3.00 Online Only

### **HSC-602: Curriculum and Instruction**

This course provides hands-on experience with developing competency-based curricula for health science education programs. Program development, needs assessment, goals, course construction and sequencing, course descriptions, objectives, outlines, syllabi, content and outcomes assessment and evaluation for specific learning audiences will be described.

3.00 Online Only

### **HSC-603: Methods and Evaluation**

A comprehensive review of various teaching methods and learning outcome evaluation techniques. Topics include developing and implementing course goals, objectives, learning activities, lesson plans, synchronous and asynchronous learning platforms, evaluation methods, test construction, and course and program evaluation. Psychometric measures and interpretation, including item analysis and descriptive statistics are included.

3.00 Online Only

### **HSC-604: Teaching Practicum**

Graduate students will engage in one or more of a variety of interrelated teaching activities — lecturing, class discussion, one-on-one tutoring, office hours, and grading in the various specialty and core curriculum under the direct supervision of a faculty member. Students will also be required to complete didactic assignments related to curriculum design, presentation and evaluation.

3.00 Online Only

### **HSC-609: Professional Writing Skills**

This course is designed to develop scientific and technical writing skills. A systematic approach presenting a variety of scientific and technical communication skills will be used. A review of the effective use of library scientific resources will be presented to facilitate the comprehension of the flow of scientific information. This course will focus on the requirements for abstract, manuscript and grant application writing. Topics include abstract writing, manuscript writing and grant writing.

4.00 Online Only

**HSC-610: Research Design I**

This course introduces students to methods of scientific research to include review of literature, research designs, sampling techniques, measurement, and related issues. Research articles and research thesis that exemplify various research designs, presentation of results, and conclusions will be reviewed and discussed. Students will further develop their information literacy skills to search, interpret and evaluate the medical literature to maintain critical, current and operational knowledge of new medical findings including its application to individualized patient care.

4.00 Online Only

**HSC-611: Research Design II**

This course introduces the student to methods of research using qualitative design and appropriate statistical analysis techniques used in qualitative data analysis. Questionnaire and survey construction, validation and statistical analysis techniques will be discussed. Advantages and disadvantages of interview data collection techniques, as well as techniques such as Delphi are included.

4.00 Online Only

**HSC-612: Statistics I**

This course will focus on concepts and procedures for descriptive and inferential statistics for continuous and discrete data and data analysis using parametric and nonparametric statistical procedures. Computerized statistical programs, such as SPSS, will be used. Instruction on information literacy to equip students with the necessary skills to search, interpret and evaluate the medical literature to maintain critical, current and operational knowledge of new medical findings, including its application to individualized patient care, will be included.

4.00 Online Only

**HSC-613: Statistics II**

This course is a continuation of HSC-612. Hypothesis testing techniques, which involve observation and analysis or more than one statistical variable at a time, will be discussed. Examples include ANOVA, ANCOVA, MANOVA, MANCOVA, T-tests and regression models.

4.00 Online Only

**HSC-614: Introduction to Grantsmanship**

This course provides the practical aspects of proposal submission. In addition to covering basic writing skills, it addresses specific elements that should be included in each of the various sections of federal grants, foundation applications and biotech contracts. In addition, it talks about ways of identifying sources

for funding, a survey of the NIH landscape and how to prepare budgets. The online submission process is also reviewed.

3.00 Online Only

**HSC-615: Research Seminar I**

This is the first part in planning and conducting the required dissertation research project. Students are expected to begin to formulate their research question(s) to include background and significance, problem and purpose statement, need for the study, assumptions, limitations and delimitations and definitions. Students will also complete their review of the literature in preparation for their preliminary research proposal defense.

1.00 Online Only

**HSC-616: Research Seminar II**

Continuation of Research Seminar I. Students will continue planning and conducting the required dissertation research project. Students are expected to begin to formulate their research methods and procedures and complete preparation for their research proposal defense.

1.00 Online Only

**HSC-617: Dissertation Research**

Students complete research in preparation of a dissertation in partial fulfillment of the requirements of the degree program. Includes supervision while student is writing the doctoral dissertation following all required course work. LT grade. Repeated until dissertation has been successfully defended.

1.00-12.00 Classroom

**HSC-620: Leadership Theory**

Provides an overview of evidence-based methods for evaluating and developing leaders and leadership. Topics include the history of leadership assessment and leadership theory; use of validated assessment methods in measuring leadership (e.g., interviews, assessment centers and cognitive and objective assessments); applications of adult development and career development theory; and organizational approaches to leadership development (e.g., talent reviews, developmental assignments, 360-degree feedback, and succession or acceleration programs).

3.00 Online Only

**HSC-621: Issues & Trends in Health Care**

Current issues and trends in health care are discussed. An overview of the United States health care system, its history, structure, major components and overall performance is provided, followed by a review of the interrelationships among various trends and forces that are likely to shape the roles and responsibilities of health care institutions in the future. Students become

well versed in the major issues facing the health care industry and the public, private and individual roles needed to address these issues. Concepts in organizational behavior, health economics, health care finance, health care planning and marketing, and health insurance and managed care are discussed.

3.00 Online Only

### **HSC-622: Ethics in Clin & Rsch Setting**

This Web-based course provides the student with an interactive format to discuss the researcher's responsibilities for conducting ethically sound scientific research as well as select ethical issues in research. Each student will have the opportunity to analyze an ethical issue as it relates to the student's research project or topic.

1.00-4.00 Classroom | Web Component

### **HSC-623: Management & Supervision Higher Ed**

Principles of management and supervision as they relate to the organization and administration of higher education and the academic department will be discussed. Governance of higher education to include organization, control, funding and evaluation will be described, and the principles of management and supervision as they relate to the administration of the academic department will be discussed. Basic principles of management to include planning, organizing, directing and controlling, management and evaluation of personnel and programs, motivational theory, conflict management and principles of delegation will be covered.

3.00 Online Only

### **HSC-900: Independent Study**

Independent study courses give students a unique opportunity to pursue a course of study not commonly included in the curriculum. If you are interested in pursuing an independent study, meet with the faculty member you want to work with to define the course work and expectations.

1.00-12.00 Independent Study | Web Component

### **HSC-999: Continuous Enrollment**

The requirement for continuous enrollment applies to all students admitted or re-admitted for fall 2015 or later. Doctoral students should follow program requirements for continuous enrollment and degree completion. Students who have not completed their degree requirements are required to maintain continuous enrollment through the college of their program until the degree is earned. Continuous enrollment courses are graduate level courses set up by departments at Rush University for students who need to remain actively enrolled in the University while they finish their graduate work.

1.00 Continuous Enrollment

### **HSM-502: Health Care Organization**

This course provides an overview of the United States health care delivery system. Students will understand and analyze the historical evolution, structure, financing mechanisms, major provider components, overall performance, and future directions of the system. Students have the opportunity to interview health care consumers to understand their interface with the system and related medical, social and economic issues. Through class discussions, debates and guest lecturers, students gain an understanding of the major issues facing the system and consider alternative approaches to improve the system. The course provides students with a framework to organize knowledge of the health care system to support further study in health services administration.

2.00 Classroom | Web Component

### **HSM-504A: Professional Seminar I**

The purpose of this course is to review basic professional principles. In this course, professionalism in terms of time management and written and verbal communication including email and executive memo etiquette is re-enforced with helpful tips and in-class exercises. Topics related to interprofessionalism will be introduced. This course should adequately prepare students for future internship and job responsibilities.

2.00 Classroom | Web Component

### **HSM-504B: Professional Seminar II**

This course builds upon skills introduced in Professional Seminar I and prepares students for employment interviews and for careers in health management. Exercises include recorded telephone, video and dining simulations where students are evaluated and coached by faculty. The emphasis of the course is placed on oral and written communication skills relevant to consulting and hospital, physician group, and association management. Students will gain confidence and competence in networking and job search strategies.

2.00 Classroom | Web Component

### **HSM-506: Patient Experience**

The course will provide the background and experience in developing an understanding of patients' perceptions of their care and how this is increasingly used to improve quality, safety, efficiency, staff engagement, and financial performance, as well as to minimize litigation risks. The course will introduce patient experience measurement and monitoring tools, as well as evidence based strategies, to improve overall patient experiences. The course will be taught using relevant case studies, guest speakers, patient interviews, and real-world projects to understand and improve patient experiences.

2.00 Classroom | Web Component

**HSM-514: Statistics for Health Care Management**

This course emphasizes intermediate statistical principles that health care managers use for enhancing health care management, promoting population health, and conducting health services research. Topics include descriptive statistics, normality, parametric and non-parametric hypothesis testing, and regression models. Statistical software package (SPSS) is reviewed and utilized. Prerequisite: undergraduate statistics.

3.00 Classroom | Web Component

**HSM-515: Human Resources Management**

This course provides an understanding of the human relations skills required of the health systems manager in an environment filled with both federal and state legal constraints. Skills acquired include motivating and coaching employees, appraising and improving performance, dealing with disciplinary problems, and employee counseling.

4.00 Classroom | Web Component

**HSM-523: Managerial Epidemiology**

This course focuses on managerial epidemiologic principles that health care managers use to inform strategic initiatives and to achieve optimal organizational performance. Topics include market segmentation, needs analysis, research design, program planning and program evaluation. Prerequisite: HSM-514 or NUR-510 or concurrently.

3.00 Classroom | Web Component

**HSM-531: Health Care Financial Accounting**

This course provides students with a solid understanding of financial accounting concepts and principles as they relate to the health care industry. The course is taken during the fall quarter of the first year and prepares students to analyze and utilize accounting information to make management decisions. Many of the concepts learned will be applied during other courses in the HSM curriculum. Prerequisite: undergraduate accounting.

4.00 Classroom | Web Component

**HSM-532: Health Care Managerial Finance**

This course moves beyond basic financial accounting and corporate finance and explores how financial information is used to manage and make decisions. Students are expected to demonstrate an understanding of the way health care providers are paid for services based on the source of payment (Medicare, Medicaid, managed care) and the payment methodology. Cost allocation methodologies as well as types of costs, e.g., fixed, variable, semi-variable, will be taught. Students will gain a basic understanding of concepts critical to developing a long-term financial plan and operational and capital budgets. The course will employ didactic as well as experiential learning techniques. Case studies, in-class

exams, and team presentations will be used to evaluate students' competencies to assemble revenue and cost information to make strategic and operational decisions and construct budgets and business strategies. The examples used will focus on existing and emerging trends that are impacting health care organizations.

4.00 Classroom | Web Component

**HSM-533: Health Care Economics**

Students will learn the principles and tools of microeconomics and apply these principles and tools to the health care market. This course emphasizes applications of health economics that are directly relevant in today's political and economic climates, including the demand and supply of health care, physician productivity and incentives, health care labor markets, health insurance and medical malpractice. Applications will also explore specific sectors of the health care market, such as the hospital, physician and pharmaceutical industries. By the end of the quarter, students will be able to evaluate, both at a conceptual and at an analytical level, arguments about how the markets for health care and health insurance work. Prerequisite: HSM-514 or concurrent.

4.00 Classroom | Web Component

**HSM-536: Corporate Finance**

Enables students to understand the concepts and apply the tools of corporate finance and financial management. The overall objectives of the course are to understand the roles, functions and responsibilities of financial officers in managing a health care institution, be able to identify and analyze corporate finance problems and issues in the management of health care institutions, and be able to evaluate the financial performance of institutions in asset and debt management. Cash flow, financial management of assets, timing and uncertainty and access to the capital markets are covered in order to understand the importance of finance to health care operations and strategic planning. Prerequisites: HSM-531, HSM-533 or concurrent.

4.00 Classroom | Web Component

**HSM-543: Health Law**

This course is an introduction to law for emerging health care administrators. The topics survey a variety of legal issues that are relevant to the practice of health care administration, including regulatory law, fraud and abuse, employment, tort and business law. Key learning goals include developing an understanding of legal theory and the court system, demonstrating proficiency with analysis of central concepts of law applicable to health care administration, and fluency in applying legal standards to case studies.

3.00 Classroom | Web Component

### **HSM-545: Organizational Analysis and Change**

This course helps students develop a solid conceptual understanding of organizational processes from a sociotechnical perspective and gain experience in using this understanding in planning successful organizational change efforts. Content includes organizational culture, organizational ethics, motivation and performance, groups and teams, decision-making and problem solving, diversity, communication, and leading and managing change. The course draws heavily on organizational and behavioral theory, but emphasizes application through team-based learning, experiential exercises and reflection on the exercises. Prerequisites: HSM-502 and HSM-515.

4.00 Classroom | Web Component

### **HSM-549A: HSM Part-Time (PT) Internship**

The standard HSM internship requires real-world work experience in a health care organization. HSM part-time students are almost always full-time working professionals in a health care organization. For PT students with full-time work experience in a health care organization, the internship experience should require the student to perform duties or tasks in a more highly distinguishable capacity than their current full-time role at their employer organization. There are a number of options for PT students, who work full time, to complete the HSM internship degree requirement. The student's academic advisor, who is also this course's director, works with PT students early in their studies to plan an approach that meets the characteristics of an "ideal" Rush internship and emphasizes the 10 distinguishing competencies plus the professionalism competency. Demonstration of the Rush ICARE values is also expected. During first quarter, data management sessions will building upon basic and intermediate excel and access knowledge, data management skills are further strengthened to handle real world data challenges (i.e., domain and data understanding, data cleaning, data transformation, output generation, and creating reports and dashboards) to facilitate decision-making.

1.00-3.00 Classroom | Web Component

### **HSM-549B: HSM Part-Time (PT) Internship**

The standard HSM internship requires real-world work experience in a health care organization. HSM part-time students are almost always full-time working professionals in a health care organization. For PT students with full-time work experience in a health care organization, the internship experience should require the student to perform duties or tasks in a more highly distinguishable capacity than their current full time role at their employer organization. There are a number of options for PT students, who work full time, to complete the HSM internship

degree requirement. The student's academic advisor, who is also this course's director, works with PT students early in their studies to plan an approach that meets the characteristics of an "ideal" Rush internship and emphasizes the 10 distinguishing competencies plus the professionalism competency. Demonstration of the Rush ICARE values is also expected.

1.00 Internship/Externship

### **HSM-549C: HSM Part-time (PT) Internship**

The standard HSM internship requires real-world work experience in a health care organization. HSM part-time students are almost always full-time working professionals in a health care organization. For PT students with full-time work experience in a health care organization, the internship experience should require the student to perform duties or tasks in a more highly distinguishable capacity than their current full time role at their employer organization. There are a number of options for PT students, who work full time, to complete the HSM internship degree requirement. The student's academic advisor, who is also this course's director, works with part-time students early in their studies to plan an approach that meets the characteristics of an "ideal" Rush internship and emphasizes the 10 distinguishing competencies plus the professionalism competency. Demonstration of the Rush ICARE values is also expected.

1.00 Internship/Externship

### **HSM-550A: HSM Internship**

The HSM internship requires a minimum of 440 hours of real-world work experience in a health care organization. Full-time students will almost always fulfill this requirement through part-time jobs within Rush University Medical Center or its affiliates during their first year in the program; however, full-time students do have the option of fulfilling the requirement through a more traditional summer internship that they identify and secure. There are a number of options for part-time students, who work full time, to complete this degree requirement; the student's academic advisor and the program director work with part-time students early in their studies to plan an approach that meets the requirement and accommodates the student's full-time job commitment. The internship emphasizes the 10 distinguishing competencies contained within the full set of 26 competencies for the National Center for Healthcare Leadership. These include accountability, achievement orientation, leadership, collaboration, communication skills, professionalism, project management and self-confidence. Demonstration of behavior consistent with the Rush ICARE values is also expected.

1.00 Internship/Externship

**HSM-550B: HSM Internship**

The HSM internship requires a minimum of 440 hours of real world work experience in a health care organization. Full-time students will almost always fulfill this requirement through part-time jobs within Rush University Medical Center or its affiliates during their first year in the program; however, full-time students do have the option of fulfilling the requirement through a more traditional summer internship that they identify and secure.

There are a number of options for part-time students, who work full time, to complete this degree requirement. The student's academic advisor and the program director work with part-time students early in their studies to plan an approach that meets the requirement and accommodates the student's full-time job commitment. The internship emphasizes the 10 distinguishing competencies contained within the full set of 26 competencies for the National Center for Healthcare Leadership; these include accountability, achievement orientation, leadership, collaboration, communication skills, professionalism, project management, and self-confidence. Demonstration of behavior consistent with the Rush ICARE values is also expected.

1.00 Internship/Externship | Web Component

**HSM-550C: HSM Internship**

The HSM internship requires a minimum of 440 hours of real-world work experience in a health care organization. Full-time students will almost always fulfill this requirement through part-time jobs within Rush University Medical Center or its affiliates during their first year in the program; however, full-time students do have the option of fulfilling the requirement through a more traditional summer internship that they identify and secure.

There are a number of options for part-time students, who work full time, to complete this degree requirement. The student's academic advisor and the program director work with part-time students early in their studies to plan an approach that meets the requirement and accommodates the student's full-time job commitment. The internship emphasizes the 10 distinguishing competencies contained within the full set of 26 competencies for the National Center for Healthcare Leadership. These include accountability, achievement orientation, leadership, collaboration, communication skills, professionalism, project management, and self-confidence. Demonstration of behavior consistent with the Rush ICARE values is also expected.

1.00 Internship/Externship | Web Component

**HSM-551: Health Informatics**

This class provides students with an introduction to health informatics, a field concerned with the use of information technology in health care. The course provides students with an understanding of health information systems, including the electronic

medical record, pharmacy systems, billing systems, and business intelligence/data warehousing systems. Students will understand how to use data from these informatics systems to measure the quality and costs of care. Additionally, students will gain expertise in national policy initiatives in health informatics. The course utilizes data assignments, hands-on technology experiences, and a team debate as teaching methods.

2.00 Classroom | Web Component

**HSM-552: Hlth Care Information Systems**

This course provides students with knowledge, skills and abilities related to how information technology is used to improve decision-making and problem-solving across the health care enterprise. Students will appreciate the role that information technology and systems play in finance, strategic planning, operations, quality, and human resources management. Students will be able to evaluate the acquisition, implementation and ongoing management of information resources in health care. The course will also cover concepts of technology planning, the challenges of successfully introducing new technology and systems into the organization, the management and protection of the information asset, and governance of the IT function.

2.00 Classroom | Web Component

**HSM-557: Quality in Health Care**

This course provides students with fundamentals of quality improvement in health care. Specifically, students will examine the history of quality improvement in hospitals and how that has translated into the current structures, processes and outcomes of the hospital improvement efforts of today. Emphasis is placed on philosophy, framework and methodology of quality improvement, with a specific focus on the measurement and analysis of data. Students will learn to use frameworks and tools to apply quality improvement strategies and sharpen their skills in turning data into information and in change management. Quality as it appears in current health policy will also be discussed

3.00 Classroom | Web Component

**HSM-559: Health Care Planning and Marketing**

This course develops students' understanding and appreciation of the health care planning and marketing processes. Through cases, business plan development, guest lecturers, and in-class discussions, topics are covered around all aspects of planning and marketing. These includes frameworks for strategic thinking and planning, consumer research, market segmentation, price, distribution and product strategies, advertising and promotion, mass communications and public relations, social media, and evaluation of planning and marketing efforts. The development of persuasive marketing communication is studied from

theoretical and practical perspectives. As a result of this course, students are able to discuss, assess and critically evaluate a health care organization's strategic planning and marketing initiatives. Prerequisites: HSM-502 and HSM-523.

4.00 Classroom | Web Component

### **HSM-560: Health Policy**

This course provides an overview of the health care policy making process in the United States; more specifically, how key governmental institutions and political actors have influenced the development, dimensions, and financing of health care policy throughout American history and within the contemporary political environment. This course prepares students to analyze health policy through empirical examination of policy formation, implementation and evaluation; with an emphasis placed on how policies affect cost, access, and quality; and analysis that can assist health care organizations to best respond to potential policy opportunities and threats. Prerequisite: HSM-502.

3.00 Classroom | Web Component

### **HSM-567: Hlth Insurance & Managed Care**

This course provides an overview of the integration of health care delivery and financing in the United States with an emphasis on public policy, contract negotiation, underwriting and pricing, and product and patient management. By the end of the quarter, students will be able to identify those elements important in insurance contracts, distinguish between public and private insurance plans, understand the underwriting behind an insurance plan and how the product gets priced, identify health reform initiatives and its impact on patients, providers and insurers, and formulate cost reduction strategies. Prerequisites: HSM-502, HSM-523 and HSM-531.

3.00 Classroom | Web Component

### **HSM-572: Health Care Operations Mgmt**

This course provides students with the knowledge, skills and abilities needed to apply systems thinking, quantitative methods and other tools to better inform decisions and improve problem-solving in health care organizations. Students will appreciate the utility of these approaches for analyzing systems and improving processes. Emphasis is placed on students' abilities to work with managers and clinicians to analyze problems, identify possible solutions, implement process improvements, and communicate with stakeholders in nontechnical terms. The course uses a combination of learning methods, including group discussion, multimedia, site visits and operational projects. Site visits and challenging assignments in real health care settings — such as emergency department throughput, operating room logistics, and support services roles — give students the opportunity

to apply what they are learning. Prerequisites: HSM-514 and HSM-551 or concurrent.

4.00 Classroom | Web Component

### **HSM-576: Ethics for Health Care Managers**

This course helps students to better understand the ethical dimensions of health administration decision-making, and to use this understanding to effectively analyze decisions to support ethically sound judgments. Students will be able to identify the ethical content under fundamental conflicts and decisions faced by health care managers and analyze ethical problems of business, including identifying stakeholders, defining ethical conflicts, and proposing multiple courses of action, as well as the possible costs and benefits of each. This course also includes coverage of the most current and salient health care ethics issues. Prerequisite: HSM-502.

2.00 Classroom | Web Component

### **HSM-590: Topics in Health Systems Management**

These elective courses provide students with the opportunity to develop knowledge, skills and abilities for specialized areas of health care management or in specific sectors of the health care industry. Past electives have focused on topics such as international health, facilities planning, technology assessment, health care and the elderly, physician practice management, and health care consulting. Two elective credits per topic.

2.00 Classroom | Web Component

### **HSM-591: Care Coordination and Population Health**

This course aims to introduce students to various aspects of population health — more specifically patient-centered care, care coordination, new models of care, community partnerships, community health needs-assessment and payment reform. Students will develop a strong background knowledge and understanding of the ever-changing health care landscape and why new models of care are being developed with a particular focus on population health, care coordination and the overall well-being of a patient. Students will hear from various population health experts from Rush as well as the Chicago community. Students will be able to apply what they're learning in the classroom to making recommendations to Rush's population health department, as it is currently developing.

2.00 Classroom

### **HSM-592: Topics in Hlth System Mngmt II**

These elective courses provide students with the opportunity to develop knowledge, skills and abilities for specialized areas of health care management or in specific sectors of the health care industry. Past electives have focused on topics such as international health, facilities planning, technology assessment, health



care and the elderly, physician practice management, and health care consulting. Two elective credits per topic.

2.00 Classroom

### **HSM-593: Governance, Interprof/Ldrshp Hlth Care**

This course is designed to increase students' knowledge and competencies in leadership and governance, with a special emphasis on the changing health ecosystem. For leadership, students will enhance their self-awareness concerning strengths and development needs, as they relate to their career aspirations, through activities such as multi-source feedback and reflective learning exercises. Students will also develop their understanding and appreciation of the role of boards in organizational governance generally, with a focus on applications specific to the health care industry.

2.00 Classroom | Web Component

### **HSM-594: Topics in Hlth System Mgmt III**

These elective courses provide students with the opportunity to develop knowledge, skills and abilities for specialized areas of health care management or in specific sectors of the health care industry. Past electives have focused on topics such as international health, facilities planning, technology assessment, health care and the elderly, physician practice management, and health care consulting. Two elective credits per topic.

2.00 Classroom

### **HSM-596: HSM Capstone: Strat Mgt Health Care Organizations**

This course provides students with opportunities to apply the fundamentals of strategic planning and marketing, economics, finance, information systems, and operations acquired in previous courses in the HSM curriculum to practical problems and decisions faced by real health care organizations. Students apply techniques of situational assessment, data analysis, strategy development and problem solving. As the capstone course for the HSM program, students are encouraged to integrate and refine their knowledge from all sources of learning in the HSM program to apply to business case studies. They conduct strategic analyses and develop and present strategic recommendations consistent with the mission, vision and values of an organization under the guidance of a teaching team of senior health care managers. The result is an improved ability to think critically, identify strategic challenges, complete strategic analyses for different business problems, and communicate clearly. Prerequisites: HSM-533, 545, 552, 557, 559, 567 and 572.

4.00 Classroom | Web Component

### **HSM-597A: Masters Project I**

The overall goal of the sequence of these courses is to integrate quantitative methods and health care management knowledge to address a problem that is important to health care delivery, management or policy. In this course, students will design and conduct an applied quantitative research project that results in a high quality, compelling management report and two professional oral presentations to key stakeholders. The key components of this course include integrating and synthesizing information from multiple sources; developing an appropriate research question; developing an appropriate research design and analysis plan; integrating rigorous analytic methods with data management skills to analyze data; and interpreting quantitative or qualitative results in light of the existing literature and best practices to provide new insight for health care management or policy. Prerequisites: HSM-502, 504A and B, 514, 523, 533, 551, 552, 557 and 572.

4.00 Classroom | Web Component

### **HSM-597B: Masters Project II**

The overall goal of the sequence of these courses is to integrate quantitative methods and health care management knowledge to address a problem that is important to health care delivery, management or policy. In this course, students will design and conduct an applied quantitative research project that results in a high quality, compelling management report and two professional oral presentations to key stakeholders. The key components of this course include integrating and synthesizing information from multiple sources; developing an appropriate research question; developing an appropriate research design and analysis plan; integrating rigorous analytic methods with data management skills to analyze data; and interpreting quantitative or qualitative results in light of the existing literature and best practices to provide new insight for health care management or policy. Prerequisites: HSM-502, 504A and B, 514, 523, 533, 551, 552, 557 and 572.

4.00 Classroom | Web Component

### **HSM-597C: Master's Project: Writing for Publication**

This elective course is intended for the graduate student who has successfully completed a master's project and is ready to prepare a manuscript for publication based on his or her original research. The course will allow the student to learn general guidelines about writing for publication and making decisions about selecting appropriate publication vehicles. The design of this course provides a roadmap for preparing and submitting a manuscript for scholarly publication. Prerequisites: HSM-597A and HSM-597B.

1.00-2.00 Classroom

**HSM-598: Integrated Capstone Project**

Provides HSM students with the opportunity to work with each other and other Rush graduate students in interdisciplinary teams on complex, multi-dimensional problems in the delivery of patient care and the management of operations at Rush University Medical Center. The students identify alternative approaches to the problem, develop recommendations for organizational change, and prepare an implementation plan. The Rush I-CARE (Innovation, Collaboration, Accountability, Respect and Excellence) values form the basis for student performance assessment at the individual and team levels. The assessment takes into account how the teams accomplish their work as well as the quality of the final product.

2.00 Classroom | Web Component

**HSM-601: Cost-Benefit/Cost-Effectiveness Eval**

The course focuses on cost-benefit and cost-effectiveness analysis, measures of health-related quality of life, technology assessment, resources allocation, and medical decision-making. This course is appropriate for those interested in evaluating the cost effectiveness of health care technologies and medical interventions, and those involved in making clinical policy and resource allocation decisions. 4.00 Classroom

**HSM-602: Planning & Improving Operational Eff.**

This course provides advanced skills in applying operations management techniques to planning and improving operational efficiency. Course applications of simulation, but also includes exposure to other operations management topics such as data mining; TSPI lean six sigma, queuing theory; and linear programming.

3.00 Classroom

**HSM-603: Disparities in Health Care**

This course focuses on how to understand, define and measure health disparities, with an emphasis on ethnic and gender disparities in the United States. Course includes an overview of key measures of health disparity and shows how to calculate them, with a special emphasis on access, as well as health insurance concepts such as take-up rates.

3.00 Classroom

**HSM-604: Research Methods I: Conducting Systematic Reviews**

This course provides an overview of methods for conducting systematic research reviews in health care management, including quantitative approaches (e.g., study coding and meta-analysis) and qualitative approaches (e.g., Pawson's 'realist' approach).

3.00 Web Component

**HSM-605 Research methods II: Conducting healthcare industry studies**

This course overviews methods for studying organizational and interorganizational phenomena and trends. Topics include sample framing (sample stratification and power analysis); data collection techniques (survey design and management; structured interviews; case studies); data management; data analysis; and dissemination.

3.00 Classroom

**HSM-900: Independent Study**

Specialized course work designed around the needs of an individual student.

1.00-12.00 Classroom | Web Component

**HSM-999: Continuous Enrollment**

The requirement for continuous enrollment applies to all students admitted or re-admitted for fall 2015 or later. Doctoral students should follow program requirements for continuous enrollment and degree completion. Students who have not completed their degree requirements are required to maintain continuous enrollment through the college of their program until the degree is earned. Continuous enrollment courses are graduate level courses set up by departments at Rush University for students who need to remain actively enrolled in the University while they finish their graduate work.

1.00 Continuous Enrollment

**IMM-505: Basic Immunology**

Introduction to immunology with emphasis on basic concepts and principles, interwoven with a study of their clinical applications. Medical students only.

1.00 Classroom | Web Component

**IMM-505E: Basic Immunology-Exam Makeup**

Basic immunology exam makeup only.

1.00 RMC Exam Makeup

**IMM-507: Basic Immunology I**

Introduction to immunology, with emphasis placed on the components, nature and organization of the immune system.

1.00 Classroom

**IMM-508: Basic Immunology II**

A continuation of Basic Immunology I. This course focuses on activation and regulation of the immune response.

1.00 Classroom

**IMM-509: Basic Immunology III**

A continuation of Basic Immunology I and II. This course focuses on clinical aspects of the immune response, such as the role in infectious disease and disease mechanisms arising from deficient and exaggerated immune responses.

1.00 Classroom

**IMM-510: Advanced Immunology I**

Introduction to immunology, with emphasis placed on the components, nature and organization of the immune system.

4.00 Classroom

**IMM-515: Research Seminar**

Seminar on contemporary topics in immunology and virology.

1.00 Classroom

**IMM-520: Advanced Readings in Immunology, Microbiology and Virology**

In this course, students will choose, under the direction of the faculty coordinator, one or more papers from the recent scientific literature and present them orally to the class. Presentations will provide adequate background to the topic, explanation and assessment of the relevant methodology employed, interpretation of results, discussion of the significance, and validity of the conclusions. Each student will make at least one presentation per quarter. P/N grading only.

1.00 Classroom

**IMM-525: Master's Immunology Research**

This course is intended for students enrolled in the two-year immunology or microbiology master's program. It involves laboratory research activities leading to the completion of a research-based manuscript in partial fulfillment of the Master of Science degree.

1.00-9.00 Laboratory

**IMM-600: Laboratory Rotations**

Individual program, acquaints the student with research protocols and interests within the department.

1.00-9.00 Laboratory

**IMM-610: Special Topics**

Detailed study of contemporary topics in immunology are presented in a five-week block. Topics such as inflammation, host defense, membrane structure and antigen presentation are included.

1.00-12.00 Classroom

**IMM-615: Pre-Dissertation Research**

Research credits prior to acceptance to doctoral candidacy. P/N only.

1.00-9.00 Laboratory

**IMM-620: Doctoral Research**

Research credits after admission to candidacy. P/N only.

1.00-9.00 Laboratory | Web Component

**IMM-900: Independent Study**

Specialized course work designed around the needs of an individual student.

1.00-4.00 Classroom | Web Component

**IMM-999: Continuous Enrollment**

The requirement for continuous enrollment applies to all students admitted or re-admitted for fall 2015 or later. Doctoral students should follow program requirements for continuous enrollment and degree completion. Students who have not completed their degree requirements are required to maintain continuous enrollment through the college of their program until the degree is earned. Continuous enrollment courses are graduate level courses set up by departments at Rush University for students who need to remain actively enrolled in the University while they finish their graduate work.

1.00 Continuous Enrollment

**IPE-502: Interprofessional Patient Centered Teams**

This program will introduce students to the four interprofessional educational and collaborative practice (IPEC) domains: values/ethics, roles/responsibilities, teams/team work, and communication. Students will use experiential team based learning to apply knowledge, skills and values of the IPEC competencies. Classroom | Web Component

**IS-300: Intro to Imaging Sciences**

This course focuses on specialized imaging sciences modalities. It includes concepts and theories of equipment operations and their integration for medical diagnosis. The student will be introduced to the basics of the available advanced imaging modalities used in the assessment of anatomy and diagnosis of disease processes. This course will provide entry-level students with an overview of diagnostic imaging, technological education and clinical practice.

5.00 Classroom | Web Component

**IS-301: Intro to Patient Care I**

Part one of two. An overview of the historical development of radiography and basic radiation protection. An introduction to the many facets of allied health professions, including types of

health care professionals, medical ethics, medical terminology, patient assessment, infection control procedures, emergency and safety procedures, communication and patient interaction skills, promoting a safe clinical environment, and basic pharmacology. Topics also include a patient's right to privacy, confidentiality, documentation, team building, cultural issues, age-related concerns, and death and dying. The course textbooks meet the standards set by the American Society of Radiologic Technologists (ASRT) Curriculum Guide and the American Registry of Radiologic Technologists (ARRT) Task List for certification examinations.  
5.00 Classroom | Web Component

### **IS-302: Intro to Patient Care II**

Part two of two. An overview of the historical development of radiography and basic radiation protection. An introduction to the many facets of allied health professions, including types of health care professionals, medical ethics, medical terminology, patient assessment, infection control procedures, emergency and safety procedures, communication and patient interaction skills, promoting a safe clinical environment, and basic pharmacology. Topics also include a patient's right to privacy, confidentiality, documentation, team building, cultural issues, age-related concerns, and death and dying. The course textbooks meet the standards set by the American Society of Radiologic Technologists (ASRT) Curriculum Guide and the American Registry of Radiologic Technologists (ARRT) Task List for certification examinations.  
5.00 Classroom | Web Component

### **IS-311: Patient Assessment**

Fundamentals of assessment will be covered to include the assessment of health status emphasizing cultural, ethnic and age differences. The course focuses on taking patient histories, physical examinations, inspection, palpation, percussion and auscultation. Body systems and functional health patterns are used to organize data and to develop clinical pathways in medical imaging.  
5.00 Online Only

### **IS-312: Pathophysiology I**

Provides in-depth application of the concepts of pathophysiology for the assessment and management of medical imaging patients. Emphasizes the characteristic manifestations, pattern recognition, and image assessment of pathologies observed in medical images. Prerequisite: admission to the Department.  
5.00 Online Only

### **IS-313: Cross Sectional Anatomy I**

A study of sectional anatomy of the transverse, longitudinal and coronal planes are included for the head, neck and thorax. Correlation with various imaging methods will be emphasized.  
4.00 Univ Nebraska Med Ctr Course

### **IS-322: Pathophysiology II**

A continuation of IS-312. Provides in-depth application of the concepts of pathophysiology for the assessment and management of medical imaging patients. Emphasizes the characteristic manifestations, pattern recognition and image assessment of pathologies observed in medical images.  
5.00 Online Only

### **IS-324: Pharmacology**

A study of pharmacodynamics, pharmacokinetics, medication administration, drug categories, and implications in patient care. Emphasizes pharmaceuticals frequently used in medical imaging. This course is intended to provide imaging sciences professionals with knowledge in all aspects of basic pharmacology. The purpose is to educate radiologic personnel in basic pharmacology principles, therefore ensuring quality patient care. Prerequisite: admission to the Department.  
4.00 Online Only

### **IS-326: Vascular Interventional Tech I**

This didactic course includes instruction on the history of angiography, medical and legal implications of angiographic procedures, pharmaceuticals and contrast agents used in interventional radiology, patient care procedures, quality control, angiographic equipment, and image enhancement techniques. The course encourages students to combine theoretical knowledge with the practical experience they acquire while working in these clinical areas. Learning activities for this course review and build upon pre-existing knowledge, such as human anatomy, physiology, pathology, patient care in radiography, and radiation protection.  
5.00 Univ Nebraska Med Ctr Course

### **IS-327: Vascular Interventional Technology II**

Continuation of IS-326. This didactic course includes instruction on the history of angiography, medical and legal implications of angiographic procedures, pharmaceuticals and contrast agents used in interventional radiology, patient care procedures, quality control, angiographic equipment, image enhancement techniques. This didactic course includes instruction on procedural angiography including; imaging of the heart, pulmonary vascular system, thoracic aorta, central venous access procedures, cardiac-interventional, vascular-interventional, and nonvascular interventional procedures. The course encourages students to combine theoretical knowledge with the practical experience they acquire while working in these clinical areas. Learning activities for this course review and build upon pre-existing knowledge, such as human anatomy, physiology, pathology, patient care in radiography, and radiation protection. Prerequisite: admission to the department.  
5.00 Classroom

**IS-331: Education**

An introduction to basic principles and techniques used in imaging sciences education. Topics include patient education, in-service education, course design, objectives, lesson plan development, learning activities, use of media, development of presentations, testing and evaluation.

5.00 Univ Nebraska Med Ctr Course

**IS-332: Management**

Management principles and problems as they relate to imaging sciences and the management of the department, hospital, service organization and health care programs will be discussed.

3.00 Online Only

**IS-334: Computed Tomography Positioning and Protocols**

This course will include both lectures and lab demonstrations of CT patient screening, preparation and positioning. This course will include a review of X-ray physics, instrumentation and safety, along with new information related to CT instrumentation, relevant anatomy, and pathology. Students enrolled in this course will present case studies related to specific anatomy or CT protocols; discuss a variety of CT parameters including FOV, Pitch, kVp, mAs, etc.; describe and demonstrate patient care concepts; describe and demonstrate taking an accurate patient history; utilize appropriate medical terminology; demonstrate an understanding of human anatomy, physiology and pathology; discuss and describe patient safety as it relates to CT procedures and X-ray radiation; describe iodinated contrast agents and discuss related safety issues; describe liability and legal issues related to CT technologists; describe and discuss CT protocols and protocol development.

3.00 Online Only

**IS-335: Advanced Radiation Biology**

This course utilizes a qualitative and quantitative approach to study the effects of ionizing and non-ionizing radiation on life systems with special emphasis on the human population.

3.00 Univ Nebraska Med Ctr Course

**IS-336: Introduction to MRI**

This introductory course provides students with an introduction to the basic underpinnings of MRI. Students enrolled in this course will describe the history of MRI including fundamental scientific discoveries; learn about the individuals who have made significant contributions to MRI; define and discuss nuclear magnetic resonance; define the term free induction decay; explain how Fourier transformation is used in MRI; define and discuss k-space; describe basic pulse sequences and their applications; diagram a T2 curve and a T1 curve; list the three

primary types of MRI systems currently in use; define, describe and discuss safety as related to MRI (patient safety and facility safety); and critique MR images and evaluate for artifact, technique, and diagnostic quality.

3.00 Online Only

**IS-441: Computed Tomography Physics**

This course will provide a comprehensive overview of the physics and basic theory of operation of computerized tomography.

Topics covered include historical perspectives, computing and digital image processing concepts, principles, data acquisition, and spiral-helical scanning, image reconstruction, image quality, radiation dose, quality control, artifacts, and specialty exams.

Prerequisite: RSTE advisor approval.

2.00 Univ Nebraska Med Ctr Course

**IS-442: Radiologic Contrast Agents**

This course presents the physical principles of contrast media related to imaging, the physical and chemical properties of contrast media solutions, the pharmacokinetics of contrast media, physiologic actions of contrast media, contrast-related nephrotoxicity, mechanisms of contrast media reactions, and the economic and legal issues involving contrast media.

2.00 Univ Nebraska Med Ctr Course

**IS-443: MRI Positioning & Protocols I**

This course will include both lectures and lab demonstrations of MRI patient screening, preparation, positioning, MRI instrumentation, and technical knowledge. Students enrolled in this course will gain an understanding of MRI protocols. Lectures will include information related to the use, advantages, disadvantages and compatibility issues related to user selectable parameters and scan options. The course will also include lectures related to anatomy of the brain, spine, chest, abdomen and pelvis. Students enrolled in this course will present case studies related to specific anatomy or MRI protocols; discuss a variety of MRI parameters including TE, TR, IR, NSA and Matrix; describe and demonstrate patient care concepts; describe and demonstrate taking an accurate patient history; utilize appropriate medical terminology; demonstrate and understanding of human anatomy, physiology and pathology; discuss and describe patient safety related to MRI procedures; discuss MRI contrast agents and safety issues; describe liability and legal issues pertaining to MRI technologists.

3.00 Online Only

**IS-445P: Clinical Practicum I**

Supervised clinical experience in the imaging track selected.

5.00 Practicum

**IS-446: Clinical Seminar I**

Case presentations are required to integrate clinical practice and theory. Review of medical imaging with an emphasis on problem solving and critical thinking in the imaging track selected. Each student will develop a research proposal in the imaging sciences.

3.00 Online Only

**IS-450: MRI Physics**

This course is intended to provide a comprehensive overview of the physics and theory of operation of magnetic resonance imaging systems. This course is offered to students enrolled in the radiation science technology program as well as radiologic technologists and medical students, and as a refresher course for radiology residents. Students enrolled in this course will define, describe, and discuss the safety issues related to MRI; describe the physical components that comprise an MRI scanner; review basic physics and mathematics related to MRI; discuss the EM spectrum and its importance to MRI procedures; define and describe vectors and diagram the net magnetic vector; define precession; state and discuss the Larmor equation; describe natural frequency and the principles of resonance; state the work problems using the scan time formula; describe, define and discuss MRI pulse sequences and their clinical applications; evaluate timing diagrams for MRI pulse sequences; discuss MRI instrumentation; describe and define MRI artifacts and their avoidance; and list and apply MRI scan parameters.

3.00 Online Only

**IS-451: Sectional Anatomy & Pathology I**

Sectional anatomy, pathology and physiology as it relates to CT/MRI images will be covered. Basic terminology, instrumentation, and safety of CT and MRI will be included. This is the first semester of a two-semester course. Prerequisite: advisor approval.

6.00 Online Only

**IS-452: Health Care Ethics Critical Thinking**

This upper level course introduces ethical issues that allied health professionals can expect to encounter during their education and career. It covers such areas of concern as confidentiality, informed consent, responsible practice, professionalism, cultural differences, handling mistakes, difficult cases, and key legal aspects of these issues. To assist students in resolving issues, the course identifies and applies key principles of critical thinking. The course trains students in the use of these principles in ethics and professionalism. The course is designed to improve the ability of students to reason soundly in professional ethics,

to be familiar with the health professional ethics literature, and to communicate clearly about ethical values, integrity and judgment.

5.00 Online Only

**S-455P: Clinical Practicum II**

Supervised clinical experience at the intermediate level in the imaging track selected.

5.00 Practicum

**IS-456: Clinical Seminar II**

Case presentations are required to integrate clinical practice and theory. Review of medical imaging with an emphasis on problem solving and critical thinking in the imaging track selected. Each student will gather data for his or her research project in the imaging sciences.

3.00 Online Only

**IS-461: Sectional Anatomy/Pathology II**

This is a continuation of Sectional Anatomy & Pathology I as it relates to CT/MRI imaging.

6.00 Classroom | Web Component

**IS-465P: Clinical Practicum III**

Supervised clinical experience at the advanced level in the imaging track selected.

5.00 Practicum

**IS-466: Clinical Seminar III**

Case presentations are required to integrate clinical practice and theory. Review of medical imaging with an emphasis on problem solving and critical thinking in the imaging track selected. Each student will write the rough draft of his or her research report in the imaging sciences.

3.00 Online Only

**IS-471P: Clinical Practicum IV**

Supervised clinical experience at the leadership level in the imaging track selected.

5.00 Practicum | Web Component

**IS-473: MRI Positioning/Protocols II**

This course is a continuation of IS-443, MRI Positioning and Protocols I. It includes advanced MRI techniques. This course will cover the following topics: functional MRI, fetal MRI, breast MRI, special abdominal MRI, cardiac MRI, MRI spectroscopy, and MR angiography. Prerequisite: IS-443.

2.00 Online Only

**IS-481P: Clinical Specialty Practicum**

Supervised clinical experience in the imaging track selected. This course is designed so that the student gains the clinical experience needed to function in an active imaging sciences department and to document the needed clinical procedures. The clinical specialty practicum will consist of 200 hours in an assigned facility for supervised practice of acquired knowledge and skills.

5.00 Practicum

**IS-490: Cultural Competency & Communication**

This is an upper-level course for allied health professions students to facilitate understanding of the role of cultural competence in the health care arena and to explore the ethical and legal implications of this topic. The course will begin by helping students understand the value of diversity in our society. Secondly, the course will allow students to self-examine their own beliefs, values and biases. This will be followed by understanding the dynamics involved when two cultures interact. Students will examine specific cultural characteristics as they apply to health care and propose ways of adapting diversity to the delivery of health care. The course will include an in-depth assessment of the CLAS standards and cultural competency information available to health care organizations.

3.00 Online Only

**IS-999: Continuous Enrollment**

The requirement for continuous enrollment applies to all students admitted or re-admitted for fall 2015 or later. Doctoral students should follow program requirements for continuous enrollment and degree completion. Students who have not completed their degree requirements are required to maintain continuous enrollment through the college of their program until the degree is earned. Continuous enrollment courses are graduate level courses set up by departments at Rush University for students who need to remain actively enrolled in the University while they finish their graduate work.

1.00 Continuous Enrollment

**MED-501: Clin Pathophysiology I**

Serving as a bridge between the basic sciences and clinical medicine, this course helps to make the student conversant with the limits of biochemical and physiologic responses under a variety of stresses and disease states. Emphasis is in three basic areas: abnormal, general cellular biology; homeostasis; and organ system pathophysiology. The course closely coordinates with topics in the pathology, pharmacology and psychopathology courses, and also with didactic material to be presented during the third-year clinical program.

1.00 Classroom | Web Component

**MED-502: Clinical Pathophysiology II**

Serving as a bridge between the basic sciences and clinical medicine the course helps to make the student conversant with the limits of biochemical and physiologic responses under a variety of stresses and disease states. Emphasis is in three basic areas: abnormal, general cellular biology; homeostasis; and organ system pathophysiology. The course closely coordinates with topics in the pathology, pharmacology and psychopathology courses, and also with didactic material to be presented during the third-year clinical program.

1.00 Classroom | Web Component

**MED-503: Clin Pathophysiology III**

Serving as a bridge between the basic sciences and clinical medicine the course helps to make the student conversant with the limits of biochemical and physiologic responses under a variety of stresses and disease states. Emphasis is in three basic areas: abnormal, general cellular biology; homeostasis; and organ system pathophysiology. The course closely coordinates with topics in the pathology, pharmacology and psychopathology courses, and also with didactic material to be presented during the third-year clinical program.

1.00 Classroom | Web Component

**MED-503E: Clin Pathphys III-Exam Makeup**

Clin Pathphys III exam makeup only.

1.00 RMC Exam Makeup

**MED-701: Core Clerkship: Internal Medicine**

The clerkship in internal medicine introduces students to the study and skills of clinical medicine. Through the case study approach, students have the opportunity to evaluate and manage a variety of patients and their problems. In this manner, students can develop their skills in history taking and physical examination and will review pathophysiological principles in caring for patients. Students will develop an understanding of relationships between disease states and patient hosts from the medical, social and emotional points of view. The ward team approach allows students the opportunity to actively work toward the goals of good patient care and the acquisition of a solid foundation of medicine. Students are expected to supplement their learning through a self-study program of learning objectives. This will provide the students with exposure to basic technical skills, as well as a core set of topics in internal medicine.

12.00 Clinical | Web Component

**MED-701M: Core: Medicine Mini-Board**

Students function at an advanced level, doing histories and physical examinations, diagnostic evaluations, and initiation of appropriate therapy. There is close supervision by the staff of the Department of Internal Medicine. The course is primarily intended for students desiring additional clinical experience in internal medicine. Prerequisites: MED-701.

4.00-12.00 Clinical

**MED-701W: Core Medicine Clinical Remediation**

Students function at an advanced level, doing histories and physical examinations, diagnostic evaluations, and initiation of appropriate therapy. There is close supervision by the staff of the Department of Internal Medicine. The course is primarily intended for students desiring additional clinical experience in internal medicine. Prerequisites: MED 701.

12.00 Clinical

**MED-703: Core Clerkship: Internal Medicine**

The clerkship in internal medicine introduces students to the study and skills of clinical medicine. Through the case study approach, students have the opportunity to evaluate and manage a variety of patients and their problems. In this manner, students can develop their skills in history taking and physical examination and will review pathophysiological principles in caring for patients. Students will develop an understanding of relationships between disease states and patient hosts from the medical, social and emotional points of view. The ward team approach allows students the opportunity to actively work toward the goals of good patient care and the acquisition of a solid foundations of medicine. Students are expected to supplement their learning through a self-study program of learning objectives. This will provide the students with exposure to basic technical skills, as well as a core set of topics in internal medicine.

8.00 Clinical | Web Component

**MED-710: Internal Medicine Subinternship**

Students function at an advanced level, doing histories and physical examinations, diagnostic evaluations, and initiation of appropriate therapy. There is close supervision by the staff of the Department of Internal Medicine. The course is primarily intended for students desiring additional clinical experience in internal medicine. The four week subinternship rotation is taken during the fourth year. This clerkship will be scheduled during the elective lottery, which takes place in the spring of the M3 year.

4.00 Clinical | Web Component

**MED-711: Cardiovascular Medicine**

Includes the study of the diagnostic spectrum of cardiac evaluation, including bedside assessment, critical care cardiology, electrocardiography, electrophysiology, echocardiography, cardiac catheterization, coronary angiography, coronary care, interventional cardiology, preventive cardiology and exercise testing. Patient study is carried out under the direction of the clinical staff.

4.00 Clinical

**MED-711X: Cardiovascular Medicine**

Includes study of the diagnostic spectrum of cardiac evaluation, including bedside assessment, critical care cardiology, electrocardiography, electrophysiology, echocardiography, cardiac catheterization, coronary angiography, coronary care, interventional cardiology, preventive cardiology and exercise testing. Patient study is carried out under direction of the clinical staff. This rotation is not offered in July. Prerequisite: MED-701.

4.00 Clinical

**MED-712: Medical Intensive Care (MICU)**

This course provides experience in the recognition and management of medical critical care issues, particularly the use of bedside hemodynamic monitoring, use of mechanical ventilators, and management of cardiovascular, pulmonary, renal and endocrine emergencies. Patient care is carried out under the direction of the clinical staff.

4.00 Clinical

**MED-713: Cardiovascular Research**

The student's program is individually planned with emphasis on understanding basic research techniques and completion of a project with the goal of submitting an abstract or manuscript. The student will be assigned to a specific faculty member based on his or her individual interest. The research program of the Section of Cardiology encompasses treatment and prevention of chronic heart failure, arrhythmias and coronary artery disease; echocardiography; myocardial cell contraction; molecular biology of heart cell differentiation; and vascular biology. Students must submit a proposal to the Office of Clinical Curriculum for approval at least eight weeks before the rotation and must have written approval from the Office of Clinical Curriculum before beginning the rotation. Depending on the proposal, the weeks of credit may or may not apply to the rule of eight-weeks' maximum credit for course work in a single subspecialty. This decision is at the discretion of the Office of Medical Student Programs.

4.00 Clinical



**MED-716: Poison Control**

The Illinois Poison Center is a 24-hour emergency service fielding approximately 90,000 calls a year from parents, schools, work sites, emergency rooms, occupational medicine clinics, etc., regarding a variety of toxicological emergencies. The student will learn the basics in management of a poisoned or overdosed patient, including decontamination of toxins via all routes (i.e., ingestion, ocular/dermal and inhalation). The student will gain a working knowledge of signs and symptoms, antidotal therapy, toxicologic laboratory, nomogram interpretation monitoring parameter and management appropriate to a variety of poisons including prescription and OTC medicines, household products, and plants. Students will attend morning rounds and case conferences at the Toxikon Group at John H. Stroger, Jr. Hospital of Cook County or the UIC College of Medicine at 9 a.m. Students will then commute to the IPC and work on the emergency telephone lines under supervision of IPC staff until 4 p.m.

2.00-4.00 Clinical

**MED-721: Endocrinology/Metabolism**

Endocrine and metabolic disorders are studied under the direction of the clinical faculty. Regular didactic sessions, departmental conferences and seminars supplement clinical work, which involves both outpatients and inpatients.

4.00 Clinical

**MED-721X: Endocrinology/Metabolism-Away**

Endocrine and metabolic disorders are studied under the direction of the clinical faculty. Regular didactic sessions, departmental conferences and seminars supplement clinical work, which involve both outpatients at John H. Stroger, Jr. Hospital of Cook County and Rush, and inpatients at Rush. Prerequisite: MED-701.

4.00 Clinical

**MED-724: Coronary Care Unit**

This clerkship is designed for senior medical students desiring advanced exposure to patients with acute cardiovascular illness. During this rotation, the student will function at the subintern level and will be expected to admit anywhere from one to three patients per day. Although night call is not required, it is expected that the student remain until his or work work is fully completed and sign-out given to the intern on call. The student then will give formal presentations of patient histories and physicals at morning rounds, which occur in the CCU conference room between 8 a.m. and noon. It will be expected that the student be available for admitting and rounding six days out of seven. The student will also be exposed to the full spectrum of bedside procedures performed in the coronary care unit

including pulmonary artery catheterization, indwelling arterial line, and venous central catheter. Exposure to placement of transvenous pacemakers and intra-aortic balloon pumps will also be part of the CCU experience. It is anticipated that the experience in the CCU be rigorous. At the conclusion of the rotation, the student should be able to understand the diagnosis and treatment of the full spectrum of cardiovascular illnesses including ischemic heart disease, advanced heart failure, shock, hypertensive heart disease, valvular heart disease, congenital heart disease and pericardial disease. The student will also gain valuable experience in the diagnosis and treatment of rhythm disturbances and in 12-lead electrocardiogram interpretation. The student will be responsible for all aspects of patient care under the supervision of the physician team, which includes a full-time cardiovascular attending physician, a cardiovascular fellow, as well as internal medicine residents and interns. It is also expected that the student participate in didactic conferences and attend all cardiology conferences throughout their rotation. This clerkship is recommended for students intending to enter a career in internal medicine, the internal medicine subspecialties or critical care medicine.

2.00-4.00 Clinical

**MED-726: Nephrology**

The clinical diagnosis and management of patients with acute and chronic renal disease, as well as various fluid, acid-base, and electrolyte abnormalities, are studied. In addition, the course is directed toward the proper interpretation of pathophysiologic findings and the practical clinical management of patients with nephrotic syndrome, diabetic nephropathy, glomerulonephritis, chronic renal failure and end-stage renal disease.

4.00 Clinical

**MED-732: Digestive Diseases**

The four-week rotation in digestive diseases is divided into two two-week sessions: gastroenterology and hepatology. Students rotate on the Rush gastroenterology and hepatology inpatient services, including liver transplant. Students actively participate in consults, didactic lectures and bedside rounds. Students attend all conferences including Gastroenterology Grand Rounds, medical-surgical conference, liver transplant conference and journal club. An outpatient experience in both gastroenterology and hepatology is available once per week, if desired. There is an optional opportunity for those students wishing to participate in clinical research in the area of digestive diseases to incept projects during this rotation.

4.00 Clinical

**MED-732X: Digestive Diseases-Away**

The rotation is divided into two-week sessions: gastroenterology and hepatology. Students rotate on the Rush gastroenterology and hepatology inpatient services, including liver transplant. Students actively participate in consults, didactic lectures and bedside rounds. Students attend all conferences including Gastroenterology Grand Rounds, medical-surgical conference, liver transplant conference and journal club. An outpatient experience in both gastroenterology and hepatology is available once per week, if desired. There is an optional opportunity for those students wishing to participate in clinical research in the area of digestive diseases to incept projects during this rotation. Prerequisite: MED-701.

4.00 Clinical

**MED-736: Hematology**

This course provides an intensive exposure to clinical hematology. Students meet with residents, fellows and a teaching-attending hematologist daily for presentation and discussion of hospitalized hematology patients. Students work up patients, present them to the attending and participate in patient care with medical residents. Blood and bone marrow slides on the service patients are reviewed daily with attending hematologists using a teaching (multi-headed) microscope. Bedside rounds follow the daily presentation of cases. On Mondays, a multidisciplinary lymphoma conference presents diagnostic and therapeutic aspects of the malignant lymphomas. On Thursdays, a clinical conference is held in which a patient is presented and discussed in depth by students, residents and faculty. A recent addition to this elective is a daily self-learning session with a faculty member on a core topic of hematology. Twenty of these topics cover the spectrum of hematologic diseases. All conferences held by the Section of Hematology and Stem Cell Transplantation is available to the students on an optional basis.

4.00 Clinical

**MED-746: Infectious Disease**

Students are exposed to a wide variety of acute and chronic infectious disease problems with emphasis on diagnostic and therapeutic approaches. Teaching is conducted in a case-study format in which students see new patients and present them to the attending on consultation rounds. Rush and Stroger Hospitals have a joint fellowship training program in infectious disease. Rush students will spend two weeks at Rush and two weeks at John H. Stroger, Jr. Hospital of Cook County on the respective Infectious Disease Consultative Services; visiting students will spend all four weeks at Rush. In addition, students will attend a weekly two-hour infectious disease conference at Rush and a one-hour infectious disease conference at Stroger

where they may present cases. Sixteen lectures on basic infectious disease topics are presented over the four weeks. Students will not be allowed to drop the clerkship less than eight weeks prior to the start.

4.00 Clinical

**MED-747: Global and Community Health**

For this elective, students spend between two and four weeks in a specific community defined by the student. The purpose of this elective is to provide students the opportunity to read and discuss in the area of primary health care, as defined by the World Health Organization (1978). Students will obtain a framework for addressing common diseases in an underserved community setting from a clinical, epidemiologic and public health perspective. In addition to the didactic portion of the course, the student will spend two to four weeks in an underserved community developing country setting under the supervision of Rush faculty. The course will focus on the social determinants of population health, including the impact of environment, poverty, social structure and culture on health status and health care. The course will include the epidemiology, diagnosis, treatment, control and prevention of selected diseases of importance in underserved settings. Students will use this knowledge to develop a plan for working in disadvantaged communities providing primary health care, either locally or internationally. Students must have a faculty sponsor at Rush, as well as a physician at the site responsible for supervision of the student's work. Students must complete the online curriculum and reading self study prerequisites prior to departure for their work in the community and must submit a completed project within one week of the completion of the elective.

2.00-4.00 Classroom

**MED-751: Rheumatology**

Students participate in all activities of the Section of Rheumatology, including patient care in clinics, inpatient consultations, conferences and didactic sessions. A wide variety of musculoskeletal conditions and connective tissue diseases are seen. Objectives include performance of a musculoskeletal exam, synovial fluid analysis, arthrocentesis, therapeutic injection of joints and other structures, ability to formulate differential diagnosis of rheumatic conditions, and ability to formulate long-term management programs. An interdisciplinary approach relies on contributions of immunology, orthopedics, diagnostic radiology, physiotherapy and occupational therapy. The combined faculty and facilities of Rush University Medical Center and John H. Stroger, Jr. Hospital of Cook County are utilized.

4.00 Clinical

**MED-751X: Rheumatology-Away**

Students participate in all activities of the Section of Rheumatology, including patient care in clinics, inpatient consultations, conferences and didactic sessions. A wide variety of musculoskeletal conditions and connective tissue diseases are seen. Objectives include performance of a musculoskeletal exam, synovial fluid analysis, arthrocentesis, therapeutic injection of joints and other structures, ability to formulate differential diagnosis of rheumatic conditions, and ability to formulate long-term management programs. An interdisciplinary approach relies on contributions of immunology, orthopedics, diagnostic radiology, physiotherapy and occupational therapy. The combined faculty and facilities of Rush University Medical Center and John H. Stroger, Jr. Hospital of Cook County are utilized. Prerequisite: MED-701.  
4.00 Clinical

**MED-755: Quality & Safety in the Hosp**

Students will be assigned to the RUMC attending directed service and assume primary responsibility for patient care under close supervision, provided by an assigned attending hospitalist. Students will be afforded the unique opportunity to work one-on-one with an attending hospitalist, and will interface with case management, physical therapy, pharmacy, nursing, primary care physicians outside of the hospital, emergency medicine and critical care physicians and medical/surgical consultants to provide high-quality and safe inpatient care. Students will participate in a series of workshops and didactic sessions addressing important topics in quality improvement and patient safety.  
4.00 Clinical

**MED-761: Medical Oncology**

Patients seen by the Section of Medical Oncology provide an ample and varied spectrum of oncologic problems. Students study selected patients under the direction of members of the section. Various therapeutic approaches and complications occurring in the course of the disease are discussed. The program stresses the importance of the combined interdisciplinary approach using the resources of the departments of surgery and therapeutic radiology, as well as those of pathology and nuclear medicine. Students will have the opportunity to participate in the teaching programs of the Medical Oncology Ward on 11 Kellogg.  
4.00 Clinical

**MED-771: Pulmonary Medicine**

This elective will give the student exposure to the diagnosis and management of patients with a wide variety of pulmonary disorders. The rotation concentrates primarily on inpatients at Rush University Medical Center, but there is an opportunity to

work with outpatients in the Rush Center for Lung Diseases. The essentials of pulmonary physiology, the use and interpretation of pulmonary function testing, and the provision of mechanical ventilatory support are emphasized during the rotation.  
2.00-4.00 Clinical

**MED-771: Pulmonary Medicine**

This elective will give the student exposure to the diagnosis and management of patients with a wide variety of pulmonary disorders. The rotation concentrates primarily on inpatients at Rush University Medical Center, but there is an opportunity to work with outpatients in the Rush Center for Lung Diseases. The essentials of pulmonary physiology, the use and interpretation of pulmonary function testing, and the provision of mechanical ventilatory support are emphasized during the rotation.  
4.00 Clinical

**MED-771X: Pulmonary Medicine-Away**

Students are exposed to the diagnosis and management of patients with a wide variety of pulmonary disorders. The essentials of pulmonary physiology, the use and interpretation of pulmonary function testing, and the provision of mechanical ventilatory support are emphasized. Prerequisites: MED-701 and SUR-701.  
4.00 Clinical

**MED-777: Allergy/Immunology**

This elective teaches the clinical approach to the problems of allergy, other immune-mediated diseases and immunodeficiency in children and adults. Diagnosis and treatment of commonly encountered IgE-mediated diseases (allergic rhinitis, asthma, eczema and urticaria), as well as connective tissue diseases and immunodeficiency syndromes are explained. Rotators are responsible for following medicine as well as pediatric inpatient consults at RUMC and Stroger Hospital and report to the attending physician-on-service for daily rounds. Allergy/Immunology outpatient care is demonstrated at Fantus Clinic (part of the Stroger Hospital Ambulatory Care Network) as well as the Allergy/Immunology Office at Rush University Medical Center. Rotators also learn about skin testing techniques, spirometry and immunological tests performed by the Rush Medical Laboratory. Teaching (basic science or clinical lecture, journal club, research and chart review) conferences are held at Rush on Friday mornings. The attending physician-on-service or fellow-on-service also teaches on daily rounds. A pretest and final quiz are given to measure achievement as a basis for evaluation.  
4.00 Clinical

**MED-781: Research in Medicine**

Students may arrange research rotations individually with faculty at Rush. To receive credit for such a rotation, the person to whom the student will be responsible must write a letter describing the student's activities, responsibilities, amount of supervision, and the specific dates of the rotation. Credit toward graduation is granted assuming that the research project is ongoing throughout the academic year. Students must submit a proposal to the Office of Clinical Curriculum for approval at least eight weeks before the rotation and must have written approval from the Office of Clinical Curriculum before beginning the rotation. Research rotations are scheduled for a minimum of four weeks of credit with the expectation that the full project will extend beyond the formal course duration. Depending on the proposal, the weeks of credit may or may not apply to the rule of eight-weeks' maximum credit for course work in a single subspecialty. This decision is at the discretion of the Office of Medical Student Programs.

4.00 Clinical

**MED-785: Community-Based Intensive Care Unit**

This community-based intensive care experience is offered at Rush-Copley Medical Center in Aurora. Students will learn to recognize critically ill patients' presentation and natural history, identify proper treatment of critical illness, and become familiar with typical critical care procedures. They will also learn the process of multidisciplinary rounds in a community ICU.

2.00-4.00 Clinical

**MED-795: Geriatric Medicine**

This elective in geriatric medicine and palliative care draws upon a number of resources within the Rush system, including Rush University Senior Care and its practice sites and the Johnston R. Bowman Health Center. Students will learn about models of care for older adults throughout the continuum of medical care. Under the supervision of the faculty of the Section of Geriatric Medicine and Palliative Care, students will participate as part of an interdisciplinary team in the evaluation and assessment of the medical, psychiatric and social needs of older adults. The curriculum includes exposure to topics in medical ethics, medical economics, and medical and legal aspects of end-of-life care. Weekly didactic sessions presented by section faculty complement clinical experiences. This elective requires the course director's approval.

2.00-4.00 Clinical

**MED-796: Mindfulness Practice in Clinical Care**

Mindfulness Based Stress Reduction is a curriculum taught for the last 33 years that teaches skills, drawn largely from

mindfulness (or insight) meditation traditions that promote the capacity for holding experience in nonjudgmental awareness; and that cultivates patience, compassion (to self and other), clarity during moments of emotional distress, quicker resolution of stress reactivity, and creative responses to stressors. This has been taught to and researched in (among other cohorts) persons with medical symptoms and chronic diseases, and medical students. MBSR, or a variation of MBSR, is a part of most university-based integrative health programs. In this course, we will teach the MBSR curriculum in the first trimester, and then apply what has been learned to attend to suffering in effective ways during clinical encounters.

2.00 Clinical

**MED-799: Combined Internal Medicine/Pediatrics**

This elective is based at Lifetime Medical Associates, the continuity practice of the Rush Combined Internal Medicine/Pediatrics Residency Program. This integrated resident-faculty outpatient practice focuses on family-oriented primary care. Students spend the day working with common outpatient problems in patients of all ages. In addition, students will gain experience in office management, insurance issues, quality improvement, urgent care, and other areas important to general practice. Because this elective is essentially an outpatient subinternship, we request that students advise us as soon as possible of a need to change dates or cancel this elective. Note: visiting students may only enroll in four-week rotations with the approval of the course director; they are not eligible for two-week rotations. Rush students who are interested in a two-week rotation should contact the Office of Medical Student Programs to enroll.

4.00 Clinical

**MED-7EI: Internal Medicine Elective**

A student may receive credit for an individually arranged elective with a Rush faculty member. To receive credit for such a rotation, the person to whom the student will be responsible must write a letter stating the student's activities, responsibilities, amount of supervision, and specific dates of the rotation. The sponsoring faculty member must complete an evaluation of the student's performance at the conclusion of the elective. The student must submit a proposal to the Office of Clinical Curriculum for approval at least eight weeks before the rotation and must have written approval from the Assistant Dean of Clinical Education before beginning the rotation. A student may receive four weeks of credit for an individually arranged elective. Credit for only one individually arranged elective will count toward graduation requirements.

4.00 Clinical

**MED-812: Medical Intensive Care (MICU)**

This course provides experience in the recognition and management of medical critical care issues, particularly the use of bedside hemodynamic monitoring, use of mechanical ventilators, and management of cardiovascular, pulmonary, renal and endocrine emergencies. Patient care is carried out under the direction of clinical staff.

4.00 Clinical

**MED-815: Clinical Palliative Care**

The student will see patients referred to the palliative care service in the inpatient, outpatient and home setting. The service sees 50 patients per month in the inpatient setting; 10 to 15 per week in the outpatient clinic; and two to three patients per week at home. The student will be involved in a selected number of these patients. Palliative medicine fellows provide teaching to the residents and medical students rotating on the service both formally during didactic sessions, as well as serving as role models during direct patient care interactions and family meetings.

2.00 Classroom

**MED-821: Endocrinology/Metabolism**

Endocrine and metabolic disorders are studied under the direction of the clinical faculty. Regular didactic sessions, departmental conferences, and seminars supplement clinical work, which involves both outpatients and inpatients.

4.00 Clinical

**MED-826: Nephrology**

The clinical diagnosis and management of patients with acute and chronic renal disease, as well as various fluid, acid-base and electrolyte abnormalities, are studied. In addition, the course is directed toward the proper interpretation of pathophysiologic findings and the practical clinical management of patients with nephrotic syndrome, diabetic nephropathy, glomerulonephritis, chronic renal failure and end-stage renal disease.

4.00 Clinical

**MED-828: Cardiology**

This rotation consists of two weeks of CCU and two weeks of inpatient cardiology consults, or four weeks of CCU. Students can choose which of the two formats they prefer. Students will see patients on their own and present/discuss them with the team. They will attend cardiology rounds and conferences. Students will improve their knowledge about the presentation and treatment of common cardiac diseases including chest pain, acute coronary syndrome and arrhythmias. Students will improve their skills in the cardiac examination and in the interpretation of EKGs. There is a daily half-hour teaching conference for the team. Students have the option of staying for an additional hour

long conference geared towards the fellows. Students are invited to attend any conferences for the department of medicine residents (noon conferences three days per week). Evaluation will be based on the student's performance on rounds. Expectations will be discussed on the first day of the clerkship, and feedback will be ongoing.

4.00 Clinical

**MED-832: Digestive Diseases**

The four-week rotation in digestive diseases is divided into two two-week sessions: gastroenterology and hepatology. Students rotate on the Rush gastroenterology and hepatology inpatient services, including liver transplant. Students actively participate in consults, didactic lectures and bedside rounds. Students attend all conferences including Gastroenterology Grand Rounds, medical-surgical conference, liver transplant conference and journal club. An outpatient experience in both gastroenterology and hepatology is available once per week, if desired. There is an optional opportunity for those students wishing to participate in clinical research in the area of digestive diseases to incept projects during this rotation.

4.00 Clinical

**MED-836: Hematology**

This course provides an intensive exposure to clinical hematology. Students meet with residents, fellows and a teaching-attending hematologist daily for presentation and discussion of hospitalized hematology patients. Students work-up patients, present them to the attending and participate in patient care with medical residents. Blood and bone marrow slides on the service patients are reviewed daily with attending hematologists using a teaching (multi-headed) microscope. Bedside rounds follow the daily presentation of cases. On Mondays, a multidisciplinary lymphoma conference presents diagnostic and therapeutic aspects of the malignant lymphomas. On Thursdays, a clinical conference is held in which a patient is presented and discussed in depth by students, residents and faculty. A recent addition to this elective is a daily self-learning session with a faculty member on a core topic of hematology. Twenty of these topics cover the spectrum of hematologic diseases. All conferences held by the Section of Hematology and Stem Cell Transplantation are available to the students on an optional basis.

4.00 Clinical

**MED-847: Infectious Disease Externship**

As externs on the infectious disease inpatient ward, students will act as daily care providers for newly admitted patients with HIV/AIDS, most of whom have opportunistic infectious or malignancies requiring in-hospital diagnostic evaluation and therapy. Students will participate in daily multidisciplinary team rounds

that include an infectious disease attending, medicine house staff, clinical pharmacist, and physician assistants. Students also may spend one half day per week in the outpatient HIV clinic under the supervision of an infectious disease physician. Didactic sessions include a weekly one-hour infectious disease conference conducted at the CORE Center, a two-hour clinical infectious disease conference held at Rush, and 12 lectures on HIV-related topics. Exposure to the microbiology lab takes place during which the following topics are reviewed: HIV testing, blood cultures, mycobacterial testing, and susceptibilities.

4.00 Clinical

#### **MED-848: HIV Primary Outpatient Care**

The CORE Center provides comprehensive outpatient infectious disease services. Founded by Rush and Cook County, the Center is operated by the Cook County Bureau of Health Services. Students will learn about HIV primary care including HIV counseling and testing; prevention, diagnosis, and treatment of opportunistic infections; and antiretroviral therapy. Experiences will include adult, adolescent and pediatric HIV clinics, and brief exposure to a walk-in sexually transmitted disease clinic, and specialists in HIV dental, renal, cancer, hematology, and neurology specialty care, as well as mental health, social work and chemical dependency support services. Didactic sessions include a one-hour weekly infectious diseases conference at the CORE Center and a two-hour clinical conference at Rush.

4.00 Clinical

#### **MED-850: Short Stay Telemetry Elective**

Students will get to see patients on their own and go over their presentations with senior residents and attending staff. CXRs and EKGs are also reviewed with the attending staff. Students will be exposed to the presentation and management of patients with chest pains, acute coronary syndromes as well as congestive heart failure and various arrhythmias. All patient orders will be supervised and co-signed by the house staff. Students will usually see two patients each day and follow their patients for the approximate 48-hour stay while they are on the observation unit. Students will be based on the telemetry units from Monday through Friday between 8 a.m. and 6 p.m.

4.00 Clinical

#### **MED-851: Rheumatology**

Students participate in all activities of the Section of Rheumatology including patient care in clinics, inpatient consultations, conferences and didactic sessions. A wide variety of musculoskeletal conditions and connective tissue diseases are seen. Objectives include performance of musculoskeletal exam, synovial fluid analysis, arthrocentesis, therapeutic injection of

joints and other structures, ability to formulate differential diagnosis of rheumatic conditions, and ability to formulate long-term management programs. An interdisciplinary approach relies on contributions of immunology, orthopedics, diagnostic radiology, physiotherapy and occupational therapy. The combined faculty and facilities of Rush University Medical Center and John H. Stroger, Jr. Hospital of Cook County are utilized.

4.00 Clinical

#### **MED-861: Medical Oncology**

Patients seen by the Section of Medical Oncology provide an ample and varied spectrum of oncologic problems. Students study selected patients under the direction of members of the section. Various therapeutic approaches and complications occurring in the course of the disease are discussed. The program stresses the importance of the combined interdisciplinary approach using the resources of the departments of surgery and therapeutic radiology, as well as those of pathology and nuclear medicine.

4.00 Clinical

#### **MED-872: Pulmonary Consultation Services**

This rotation consists of inpatient pulmonary consults and outpatient pulmonary clinics. Students will see patients on their own and present/discuss them with the team. They see a variety of new and follow-up patients. Stroger Hospital is renowned for the ethnic and clinical diversity of its patient population. Students also attend pulmonary rounds and conferences. The rotation consists of inpatient pulmonary consults and outpatient pulmonary clinics. Typical hours are 7:30 a.m. to 5 p.m. Students will have weekends off. : At the end of the rotation, students will do the following: (1) display an approach to history taking, physical examination and interpretation of radiographic and physiologic studies to allow accurate description of acute and chronic respiratory syndromes; (2) be able to classify respiratory illnesses based on tempo and findings as acute, sub-acute or chronic and categorize the illness as congenital or acquired, infectious, inflammatory, neoplastic or traumatic in nature; (3) demonstrate an organized approach to interpretation of chest imaging; (4) demonstrate an organized approach to interpretation of cardiorespiratory physiology; and (5) demonstrate proficiency in physical examination of the patient with lung disease. The student functions at the same level as an intern. He or she will see new patients, make assessments and plans in conjunction with the attending physicians and continue to follow to discharge those patients worked up. This clerkship is recommended for students planning a career in primary care, emergency medicine or any branch of internal medicine.

4.00 Clinical

**MED-EXM: Medicine Exam Remediation**

Remediation of the core medicine exam only.

4.00 Clinical

**MED-REM: Medicine Clinical Remediation**

Remediation of core medicine clinical weeks only — not required to repeat the exam.

4.00 Clinical

**MIC-501: Microbiology Concepts I**

An introduction to the morphological and physiological characteristics of infectious agents of importance in human disease.

2.00 Classroom

**MIC-502: Microbiology Concepts II**

Continuation of MIC-501.

1.00 Classroom | Web Component

**MLS-300: Laboratory Fundamentals**

Comprehensive instruction in laboratory mathematics, laboratory techniques and safety. Medical terminology included as an online component. Prerequisite: departmental permission.

2.00 Classroom | Web Component

**MLS-301: Clinical Chemistry I**

Biochemistry, analysis and application of clinically significant chemical substances. Theory, maintenance and operation of basic equipment, such as pipeting devices, balances, centrifuges, spectrophotometers and electrophoretic cells. Introduction to quality control and correlation of data for selected disease states. Covers proteins, carbohydrates and enzymes. Course includes a laboratory component. Prerequisite: departmental permission.

4.00 Classroom | Laboratory | Web Component

**MLS-302: Clinical Chemistry II**

Biochemistry, analysis and application of clinically significant chemical substances. Second in a series of three courses. Theory of ion selective electrodes, osmometry, co-oximetry and automated immunoassay analysis. Covers lipids, cardiac markers, hemoglobin degradation products, electrolytes, pH and blood gases. Includes correlation of data for selected disease states.

3.00 Classroom | Web Component

**MLS-303: Clinical Chemistry III**

Biochemistry, analysis and application of clinically significant chemical substances. Third in a series of three courses. Theory of chromatography, trace/heavy metal analysis and identification of toxins. Covers pharmacokinetics, therapeutic drug monitoring, endocrinology, toxicology, fetal/maternal testing and current

trends. Includes correlation of data for selected disease states.

3.00 Classroom | Web Component

**MLS-310: Hematology I**

This course introduces basic hematologic concepts and clinical applications. These concepts and applications will be applied to the discussion of erythrocytes and leukocytes. Erythrocyte topics include venipuncture, complete blood counts (CBCs), hemopoietic theory, erythrocyte metabolism and hemoglobin synthesis, introduction to erythrocyte dyscrasias including anemias of various disease etiologies, hemoglobinopathies and thalassemias. Leukocyte topics include leukopoiesis, FAB classifications of leukemias, leukocyte dyscrasias of various etiologies, and lymphomas of various origins. Laboratory sessions included.

5.00 Classroom | Laboratory | Web Component

**MLS-311: Hematology II**

This course introduces basic concepts in coagulation and hemostasis. Topics include megakaryopoiesis, hemostasis and coagulation, description and definitions of various coagulopathies of known and unknown etiologies.

3.00 Classroom | Web Component

**MLS-312: Body Fluid Analysis**

Analysis of various body fluids with emphasis on the theory and practice of clinical procedures. Component topics will include the analyses of urine, cerebral spinal fluid, synovial fluid, pleural fluid, peritoneal fluid, pericardial fluid, feces, semen, and the differentiation of transudates and exudates. Laboratory component included.

5.00 Classroom | Laboratory | Web Component

**MLS-317: Advanced Hematology**

This course consists of a review of hematologic concepts followed by a comprehensive evaluation and additional advanced theory in clinical hematology including hematopoiesis, development, metabolism, kinetics, and function of red cells, white cells, and platelets and associated hematologic disorders. P/N grading.

2.00-3.00 Online Only

**MLS-320: Clinical Immunohematology**

Blood group antigens and antibodies from the discoveries of Landsteiner in 1900 to the present day are studied. Blood banking procedures involved in drawing, testing, storing and transfusing whole blood and its components are discussed. The laboratory section will deal with the basic blood bank procedures including ABO grouping, RH typing, compatibility testing and special antibody studies.

5.00 Classroom | Laboratory | Web Component

**MLS-321: Clinical Immunology**

An introduction to the basic concepts and terminology of immunity including development, structure and function of the lymphoid systems; the basis of antigenicity; antibody structure; methods of detection and measurement; mechanism of cellular immunity; white cell function; hypersensitivity reactions; the complement system; and mechanisms of immune suppression and tolerance. Prerequisite: departmental permission.

3.00 Classroom | Laboratory | Web Component

**MLS-330: Microbiology**

Course focuses on the diagnostic procedures employed in the clinical bacteriology laboratory, such as specimen collection and the isolation and identification of medically important bacteria. Mechanisms of antimicrobial activity and antibiotic susceptibility testing are discussed. Laboratory activities familiarize the student with the colony morphology of clinically important bacteria and consist of learning procedures used in the identification of bacteria isolates, including the gram stain and various biochemical assays. These activities are then applied to the identification of unknown bacterial isolates found in patient specimens.

5.00 Classroom | Laboratory | Web Component

**MLS-331: Parasitology Mycology & Virology**

This course provides clinical background in mycology, parasitology and virology. Emphasis is on the disease involved and on diagnostic procedures used in the laboratory. The laboratory portion consists of identification, specimen collection and processing of medically important viruses, fungi and parasites.

4.00 Classroom | Laboratory | Web Component

**MLS-344: Professional Development I**

Course introduces the student to the profession of clinical laboratory science. The various professional, accrediting and certifying organizations are discussed. Students learn about the profession from experienced clinical laboratory scientists. The past, present and future of the profession are discussed including present and future trends in education and employment.

4.00 Classroom | Web Component

**MLS-345: Professional Development II**

Course focus is on professional issues, professional conduct and ethics. Students discuss various trends and factors that affect the profession. An in-depth series of ethical issues and behavior is presented and analyzed. Scientific integrity and responsible conduct are discussed.

2.00 Classroom | Online (75% or Greater)

**MLS-413: Hematology Case Studies**

Review of erythrocyte, leukocyte and coagulation disorders through the use of case studies. Critical thinking is used to analyze patient histories, clinical symptoms and significant laboratory findings.

2.00 Online Only

**MLS-422: Clinical Immunology II**

A continuation of MLS-321. Topics include the immune response and the laboratory testing related to measuring the immune response. The pathogenesis and laboratory diagnosis of immunological disorders such as hypersensitivities, immune deficiencies and autoimmunity. Developing and solving case studies involving immune disorders will be an important aspect of learning about these diseases.

2.00 Classroom | Web Component

**MLS-432: Infectious Disease Case Studies**

This course will provide the student with the opportunity to analyze patient laboratory information to diagnose the infectious disease. The student will analyze prepared case studies and answer questions regarding the case and the causative agent in the form of homework assignments, class discussions and by composing his or her own case study with information from the literature, textbooks and the Internet.

2.00 Online Only

**MLS-433: Molecular Techniques**

This course consists of an introduction to the principles, methodologies and applications of molecular biological procedures used in clinical laboratories. Emphasis is placed on the molecular biological procedures used in the identification of infectious agents that cause human disease and in the detection of mutations resulting in neoplasm or congenital disorders. Laboratory component included. Prerequisite: departmental permission.

4.00 Classroom | Laboratory | Web Component

**MLS-440: Medical Laboratory Science Seminar**

This course is a research seminar during which students and faculty present clinical laboratory science research topics for discussion. Various research designs, sampling techniques and data analysis methods are discussed.

2.00 Classroom | Web Component

**MLS-450: Lab Info & Automation Systems**

Presents an overview of total laboratory automation systems (TLA) and clinical laboratory information systems (LIS) including system functionality, selection, installation, validation, maintenance, security and interfaces. Topics include the electronic health record (EHR) and clinical information systems that



interface with the LIS. The purpose of selected hardware, the operating system and specialized software will be reviewed.

Prerequisite: departmental permission.

2.00 Classroom | Web Component

### **MLS-451: Quality Issues in Clinical Laboratory Science**

This course presents methods and strategies to ensure quality testing in all types of laboratory settings including point of care testing (POCT) and physicians' office laboratories (POLs). Topics include quality assurance, proficiency testing, method evaluation, establishing reference values and predictive value statistics. Common POCT devices will be described and students will learn how laboratory professionals ensure the competency of individuals performing POCT. The regulatory bodies involved in these processes will be introduced.

3.00 Classroom | Web Component

### **MLS-452: Regulatory Issues**

Covers the history and impact of government and private controls on the quality and accessibility of laboratory services. Topics include OSHA, HIPAA, test reimbursement, direct access testing, professional certification, licensure, unionization, and educational program accreditation. Students will examine proposed state and federal legislation and learn ways to influence passage of good laboratory-related law. The professional and public image of the CLS profession will also be discussed.

2.00 Classroom | Web Component

### **MLS-453: Communications**

Interpersonal and organizational communication techniques for creating effective communication with subordinates, peers and managers. Consultation and project management techniques will be included.

2.00 Classroom | Web Component

### **MLS-456: Clinical Laboratory Management**

Management of the clinical laboratory will be covered in this course with topics to include operational aspects of the laboratory, human resource management, financial considerations of running a laboratory, error management, personality and leadership styles, and crisis and disaster management. Students will participate in interactive sessions to help them understand and develop important leadership and management concepts.

3.00 Classroom | Web Component

### **MLS-467: Comprehensive Review**

A comprehensive review of hematology, body fluids, clinical chemistry, laboratory mathematics, immunology, immunohematology, molecular diagnostics, and microbiology. This review course prepares students for the national certification

examinations. At the completion of the review, all students take a comprehensive examination. Successful passing of all sections of the comprehensive examination is required for completion of the course and for graduation. Prerequisite: departmental permission.

2.00 Classroom | Web Component

### **MLS-470P: Clinical Practicum-Chemistry**

This practicum builds upon the theoretical knowledge and techniques learned during year one in the MLS clinical chemistry laboratory and lecture courses. The rotation introduces students to the working environment of a clinical chemistry laboratory and provides opportunities for students to work with state-of-the-art chemistry instrumentation and techniques.

4.00 Classroom | Practicum | Web Component

### **MLS-471P: Clinical Practicum-Hematology**

Course includes application of basic skills learned in hematology course work. This is a clinical rotation through the hospital hematology laboratory. Basic skills learned in the student laboratory are practiced. Instrumentation and advanced methodologies, special hematologic testing techniques, bone marrow techniques, and coagulation are included.

4.00 Classroom | Practicum | Web Component

### **MLS-472P: Clin Practicum-Microbiology I**

Rotation through the clinical bacteriology laboratories. Applications of basic skills learned in the student laboratory are practiced. Instrumentation and advanced methodologies are emphasized.

4.00 Classroom | Practicum | Web Component

### **MLS-473P: Clin Practicum-Microbiology II**

Rotation through the specialty laboratories of clinical microbiology including parasitology, anaerobes, mycobacteriology, mycology and virology laboratories. Applications of basic skills learned in the student laboratory are practiced. Instrumentation and advanced methodologies are emphasized.

4.00 Practicum | Web Component

### **MLS-473P: Clin Practicum-Microbiology II**

Rotation through the specialty laboratories of clinical microbiology including parasitology, anaerobes, mycobacteriology, mycology and virology laboratories. Applications of basic skills learned in the student laboratory are practiced. Instrumentation and advanced methodologies are emphasized.

2.00 Classroom | Practicum | Web Component

**MLS-474P: Clin Pract-Immunoematology**

Rotation through the hospital blood bank laboratory. Applications of basic skills learned in student laboratory are practiced. Instrumentation and advanced methodologies are emphasized.

4.00 Classroom | Practicum | Web Component

**MLS-475P: Cln Prac Immuno/Molecular Diag**

Rotation through clinical immunology and molecular diagnostic laboratories. Applications of basic skills learned in the student laboratory are practiced. Areas included are serology, histocompatibility typing, flow cytometry, karyotyping, molecular oncology, nucleic acid amplification, DNA sequencing, FISH probe analysis and other diagnostic procedures.

2.00 Classroom | Practicum | Web Component

**MLS-476P: Clinical Practicum-Education**

Students will assist in the instruction of the student laboratory sessions. They will work with the course director in the preparation and execution of laboratory experiments by first-year students. Educational principles and curriculum planning skills will be learned through online discussions and exercises. P/N grading.

4.00 Classroom | Practicum | Web Component

**MLS-477P: Clinical Specialty Practicum**

This specialty practicum provides students with an opportunity to select a specific laboratory of interest to them. Students spend four weeks developing advanced techniques and exploring the latest technology available in the clinical laboratory. Areas may include bone marrow cell analysis, advanced genetics, advanced hematology, retrovirology and laboratory safety.

4.00 Classroom | Practicum | Web Component

**MLS-478P: Patient Care Techniques**

Techniques of specimen collection and phlebotomy are discussed and practiced. Students will perform a minimum of 50 venipuncture procedures on in-house patients throughout the various areas of the hospital and in the outpatient clinics. Pediatric and geriatric patients are included, as are general adult population patients. Procedures for specimen processing and ordering are learned. Procedures for specimen collection and handling with an emphasis on preanalytical situations, documentation, transportation requirements and infection control are covered in this course. Students will also learn about basic phlebotomy equipment and techniques involved in specimen collection, including venipuncture and capillary collection procedures on adult and children populations.

2.00 Practicum | Web Component

**MLS-500: Laboratory Fundamentals**

Comprehensive instruction in laboratory mathematics, laboratory techniques and safety. Medical terminology included as an online component. Prerequisite: departmental permission.

2.00 Classroom | Web Component

**MLS-501: Clinical Chemistry I**

Biochemistry, analysis and application of clinically significant chemical substances. Theory, maintenance and operation of basic equipment such as pipeting devices, balances, centrifuges, spectrophotometers and electrophoretic cells. Introduction to quality control and correlation of data for selected disease states. Covers proteins, carbohydrates and enzymes. Course includes a laboratory component. Prerequisite: departmental permission.

4.00 Classroom | Laboratory | Web Component

**MLS-502: Clinical Chemistry II**

Biochemistry, analysis and application of clinically significant chemical substances. Second in a series of three courses. Theory of ion selective electrodes, osmometry, co-oximetry and automated immunoassay analysis. Covers lipids, cardiac markers, hemoglobin degradation products, electrolytes, pH and blood gases. Includes correlation of data for selected disease states.

3.00 Classroom | Web Component

**MLS-503: Clinical Chemistry III**

Biochemistry, analysis and application of clinically significant chemical substances. Third in a series of three courses. Theory of chromatography, trace/heavy metal analysis and identification of toxins. Covers pharmacokinetics, therapeutic drug monitoring, endocrinology, toxicology, fetal/maternal testing and current trends. Includes correlation of data for selected disease states.

3.00 Classroom | Web Component

**MLS-510: Hematology I**

This course introduces basic hematologic concepts and clinical applications. These concepts and applications will be applied to the discussion of erythrocytes and leukocytes. Erythrocyte topics include venipuncture, complete blood counts (CBCs), hemopoietic theory, erythrocyte metabolism and hemoglobin synthesis, introduction to erythrocyte dyscrasias including anemias of various disease etiologies, hemoglobinopathies, and thalassemias. Leukocyte topics include leukopoiesis, FAB classifications of leukemias, leukocyte dyscrasias of various etiologies, and lymphomas of various origins. Laboratory sessions included.

5.00 Classroom | Laboratory | Web Component

**MLS-511: Hematology II**

This course introduces basic concepts in coagulation and hemostasis. Topics include megakaryopoiesis, hemostasis and coagulation, description and definitions of various coagulopathies of known and unknown etiologies.

3.00 Classroom | Web Component

**MLS-512: Body Fluid Analysis**

Analysis of various body fluids with emphasis on the theory and practice of clinical procedures. Component topics will include the analyses of urine, cerebral spinal fluid, synovial fluid, pleural fluid, peritoneal fluid, pericardial fluid, feces, semen, and the differentiation of transudates and exudates. Laboratory component included.

5.00 Classroom | Laboratory | Web Component

**MLS-513: Hematology Case Studies**

Review of erythrocyte, leukocyte and coagulation disorders through the use of case studies. Critical thinking is used to analyze patient histories, clinical symptoms, and significant laboratory findings.

2.00 Online Only

**MLS-517: Advanced Hematology**

This course consists of a review of hematologic concepts followed by a comprehensive evaluation and additional advanced theory in clinical hematology including hematopoiesis, development, metabolism, kinetics, and function of red cells, white cells, and platelets and associated hematologic disorders. P/N grading.

2.00-3.00 Online Only

**MLS-520: Clinical Immunohematology**

Blood group antigens and antibodies from the discoveries of Landsteiner in 1900 to the present day are studied. Blood banking procedures involved in drawing, testing, storing and transfusing whole blood and its components are discussed. The laboratory section will deal with the basic blood bank procedures including ABO grouping, RH typing, compatibility testing and special antibody studies.

5.00 Classroom | Laboratory | Web Component

**MLS-521: Clinical Immunology**

An introduction to the basic concepts and terminology of immunity including development, structure and function of the lymphoid systems; the basis of antigenicity; antibody structure; methods of detection and measurement; mechanism of cellular immunity; white cell function; hypersensitivity reactions; the complement system; and mechanisms of immune suppression

and tolerance. Prerequisite: departmental permission.

3.00 Classroom | Laboratory | Web Component

**MLS-522: Clinical Immunology II**

A continuation of MLS-321/521. Topics include the immune response and laboratory testing related to measuring the immune response. The pathogenesis and laboratory diagnosis of immunological disorders such as hypersensitivities, immune deficiencies and autoimmunity. Developing and solving case studies involving immune disorders will be an important aspect of learning about these diseases.

2.00 Classroom | Web Component

**MLS-530: Microbiology**

This course focuses on the diagnostic procedures employed in the clinical bacteriology laboratory, such as specimen collection and the isolation and identification of medically important bacteria. Mechanisms of antimicrobial activity and antibiotic susceptibility testing are discussed. Laboratory activities familiarize the student with the colony morphology of clinically important bacteria and consist of learning procedures used in the identification of bacteria isolates, including the gram stain and various biochemical assays. These activities are then applied to the identification of unknown bacterial isolates found in patient specimens.

5.00 Classroom | Laboratory | Web Component

**MLS-531: Parasitology, Mycology & Virology**

This course provides clinical background in mycology, parasitology and virology. Emphasis is on the disease involved and on diagnostic procedures used in the laboratory. The laboratory portion consists of identification, specimen collection and processing of medically important viruses, fungi and parasites.

4.00 Classroom | Laboratory | Web Component

**MLS-532: Infectious Disease Case Studies**

This course will provide the student with the opportunity to analyze patient laboratory information to diagnose the infectious disease. The student will analyze prepared case studies and answer questions regarding the case and the causative agent in the form of homework assignments, class discussions and by composing his or her own case study with information from the literature, textbooks and the Internet.

2.00 Online Only

**MLS-533: Molecular Techniques**

This course consists of an introduction to the principles, methodologies and applications of molecular biological procedures used in the clinical laboratories. Emphasis is placed on the molecular

biological procedures used in the identification of infectious agents that cause human disease and in the detection of mutations resulting in neoplasm or congenital disorders. Laboratory component included. Prerequisite: departmental permission.  
4.00 Classroom | Laboratory | Web Component

#### **MLS-540: Medical Laboratory Science Seminar**

This course a research seminar during which students and faculty present clinical laboratory science research topics for discussion. Various research designs, sampling techniques and data analysis methods are discussed.  
2.00 Classroom | Web Component

#### **MLS-544: Professional Development I**

This course introduces the student to the profession of clinical laboratory science. The various professional, accrediting and certifying organizations are discussed. Students learn about the profession from experienced clinical laboratory scientists. The past, present and future of the profession are discussed including present and future trends in education and employment.  
4.00 Classroom | Web Component

#### **MLS-545: Professional Development II**

This course focuses on professional issues, professional conduct and ethics. Students discuss various trends and factors that affect the profession. An in-depth series of ethical issues and behavior are presented and analyzed. Scientific integrity and responsible conduct are discussed.  
2.00 Classroom | Online (75% or Greater)

#### **MLS-550: Lab Info & Automation Systems**

Presents an overview of total laboratory automation systems (TLA) and clinical laboratory information systems (LIS) including system functionality, selection, installation, validation, maintenance, security and interfaces. Topics include the electronic health record (EHR) and clinical information systems that interface with the LIS. The purpose of selected hardware, the operating system and specialized software will be reviewed. Prerequisite: departmental permission.  
2.00 Classroom | Web Component

#### **MLS-551: Quality Issues in Clinical Laboratory Science**

This course presents methods and strategies to ensure quality testing in all types of laboratory settings, including point of care testing (POCT) and physicians' office laboratories (POLs). Topics include quality assurance, proficiency testing, method evaluation, establishing reference values and predictive value statistics. Common POCT devices will be described, and students will

learn how laboratory professionals ensure the competency of individuals performing POCT. The regulatory bodies involved in these processes will be introduced.  
3.00 Classroom | Web Component

#### **MLS-553: Communications**

Interpersonal and organizational communication techniques for creating effective communication with subordinates, peers and managers. Consultation and project management techniques will be included.  
2.00 Classroom | Web Component

#### **MLS-556: Clinical Laboratory Management**

Management of the clinical laboratory will be covered in this course with topics to include operational aspects of the laboratory, human resource management, financial considerations of running a laboratory, error management, personality and leadership styles, and crisis and disaster management. Students will participate in interactive sessions to help them understand and develop important leadership and management concepts.  
3.00 Classroom | Web Component

#### **MLS-562: Research Seminar**

1.00 Classroom

#### **MLS-563: Master's Project I**

First part in planning and conducting the required master's degree research project. Students are expected to begin formulation of their research questions and to complete their review of the literature. Student projects are designed in various areas of the clinical laboratories and focus on clinical testing, management and supervision issues. Students are required to formally present the results of their projects to the faculty and student body, and are encouraged to publish their results. P/N grading.  
2.00 Classroom

#### **MLS-564: Master's Project II**

Continuation of MLS-563. At the completion of this course, students should be ready to present their research proposal to their committee for the preliminary defense, and to begin and complete the data collection phase of their research. Student projects are designed in various areas of the clinical laboratories and focus on clinical testing, management and supervision issues. Students are required to formally present the results of their projects to the faculty and student body, and are encouraged to publish their results.. P/N grading.  
2.00 Classroom

### **MLS-565: Master's Project III**

Continuation of MLS-564. During this phase, the research report is completed and the final defense of the project takes place. Student projects are designed in various areas of the clinical laboratories and focus on clinical testing, management and supervision issues. Students are required to formally present the results of their projects to the faculty and student body, and are encouraged to publish their results. Prerequisite: departmental permission. P/N grading.

2.00 Classroom

### **MLS-567: Comprehensive Review**

A comprehensive review of hematology, body fluids, clinical chemistry, laboratory mathematics, immunology, immunohematology, molecular diagnostics, and microbiology. This review course prepares students for the national certification examinations. At the completion of the review, all students take a comprehensive examination. Successful passing of all sections of the comprehensive examination is required for completion of the course and for graduation. Prerequisite: departmental permission.

2.00 Classroom | Web Component

### **MLS-570P: Clinical Practicum-Chemistry**

This practicum builds upon the theoretical knowledge and techniques learned during year one in the MLS clinical chemistry laboratory and lecture courses. The rotation introduces students to the working environment of a clinical chemistry laboratory and provides opportunities for students to work with state-of-the-art chemistry instrumentation and techniques.

4.00 Classroom | Practicum | Web Component

### **MLS-571P: Clinical Practicum-Hematology**

This course includes application of basic skills learned in hematology course work. This is a clinical rotation through the hospital hematology laboratory. Basic skills learned in the student laboratory are practiced. Instrumentation and advanced methodologies, special hematologic testing techniques, bone marrow techniques, and coagulation are included.

4.00 Classroom | Practicum | Web Component

### **MLS-572P: Clin Practicum-Microbiology I**

Rotation through the clinical bacteriology laboratories. Applications of basic skills learned in the student laboratory are practiced. Instrumentation and advanced methodologies are emphasized.

4.00 Classroom | Practicum | Web Component

### **MLS-573P: Clin Practicum-Microbiology II**

Rotation through the specialty laboratories of clinical microbiology including parasitology, anaerobes, mycobacteriology,

mycology and virology laboratories. Applications of basic skills learned in the student laboratory are practiced. Instrumentation and advanced methodologies are emphasized.

2.00 Classroom | Practicum | Web Component

### **MLS-574P: Clin Pract-Immunohematology**

Rotation through the hospital blood bank laboratory.

Applications of basic skills learned in student laboratory are practiced. Instrumentation and advanced methodologies are emphasized.

4.00 Classroom | Practicum | Web Component

### **MLS-575P: Cln Prac Immuno/Molecular Diag**

Rotation through clinical immunology and molecular diagnostic laboratories. Applications of basic skills learned in the student laboratory are practiced. Areas included are serology, histocompatibility typing, flow cytometry, karyotyping, molecular oncology, nucleic acid amplification, DNA sequencing, FISH probe analysis and other diagnostic procedures.

2.00 Classroom | Practicum | Web Component

### **MLS-576P: Clinical Practicum-Education**

Students will assist in the instruction of the student laboratory sessions. They will work with the course director in the preparation and execution of laboratory experiments by first-year students. Educational principles and curriculum planning skills will be learned through online discussions and exercises. P/N grading.

4.00 Classroom | Practicum | Web Component

### **MLS-578P: Patient Care Techniques**

Techniques of specimen collection and phlebotomy are discussed and practiced. Students will perform a minimum of 50 venipuncture procedures on in-house patients throughout the various areas of the hospital and in the outpatient clinics. Pediatric and geriatric patients are included, as are general adult population patients. Procedures for specimen processing and ordering are learned. Procedures for specimen collection and handling with an emphasis on preanalytical situations, documentation, transportation requirements and infection control are covered in this course. Students will also learn about basic phlebotomy equipment and techniques involved in specimen collection, including venipuncture and capillary collection procedures on adult and children populations.

2.00 Practicum | Web Component

### **MLS-585: Selected Topics & Comprehensive Review**

Advanced study of current trends. Students are assigned topics in current literature to read, evaluate and discuss. Topics include basics of research and education; information systems in blood bank; parentage testing; medical, legal and ethical aspects

of blood banking; and laboratory math for the blood banker. A comprehensive review and exam is provided for students completing the SBB program and eligible to sit for the ASCP SBB certification examination. Taught only online. Extensive computer use required. Prerequisites: general knowledge of immunohematology and consent of the instructor.

3.00 Online Only

#### **MLS-587: SBB Project**

Independent investigation of a topic relevant to an area in immunohematology. The student submits a written research paper as well as prepares and delivers a presentation based on the topic selected. Students enrolled in the SBB traditional curriculum must participate in a research project and develop a presentation for a professional audience. Students must take a minimum of three quarter hours (QH) within four quarters. It is recommended that the student take no more than three QH within any given quarter. P/N grading.

1.00 Online Only

#### **MLS-597: Issues & Practices HR Mgmt**

This course will include an overview of the operational and strategic role that human resource management plays in health care institutions. Readings, case studies, Internet references, and website resources will permit the learner to acquire advanced and current information in human resource management, recruitment and hiring, training and development, compensation and benefits, labor relations (both union and non-union), and health and safety.

4.00 Online Only

#### **MLS-598: Health Care Informatics**

This course is an overview of health care informatics. It provides a Web-based learning approach to teaching the principles of laboratory information systems management, and the review processes for selection, installation, building test dictionaries, validation, training and integration with electronic health records. Readings, articles from professional journals, Internet references and website resources will permit the learner to acquire advanced and current information in each of the major topic area.

4.00 Online Only

#### **MLS-999: Continuous Enrollment**

The requirement for continuous enrollment applies to all students admitted or re-admitted for fall 2015 or later. Doctoral students should follow program requirements for continuous enrollment and degree completion. Students who have not completed their degree requirements are required to maintain continuous enrollment through the college of their program until

the degree is earned. Continuous enrollment courses are graduate level courses set up by departments at Rush University for students who need to remain actively enrolled in the University while they finish their graduate work.

1.00 Continuous Enrollment

#### **MPH-611: Radiation Safety of Radioactive Materials**

This course reviews basic nuclear and health physics principles/practices, regulations and instrumentation for the safe use of radioactive material.

3.00

#### **MPH-621: Therapeutic Radiological Physics**

An introductory course in clinical medical physics for therapeutic radiology trainees, including residents, students and fellows. Structure of matter, radioactive decay, production of radiation, treatment machines, and radiation interactions are studied.

3.00

#### **MPH-622: Dosimetry Applied to Therapeutic Radiology**

Intermediate course in clinical medical physics for therapeutic radiology trainees, including residents, fellows, students, dosimetrists and technologists. Measurement of exposure and dose, calibration of high energy photon and electron beams, and dose distributions for external-beam therapy are studied.

3.00

#### **MPH-623: Brachytherapy Physics, Radiation Protection, and Quality Assurance**

This course is designed for residents in therapeutic radiology, students and fellows. Topics include basic physics of radioactivity, use of radioactive isotopes in clinical radiotherapy, principles of radiation protection, quality assurance, and error reduction in radiation oncology.

3.00

#### **MPH-626: Fundamentals of Radiation Biology**

This course describes the effects of ionizing radiation on both individual cells and on the human being as a whole. Factors that modulate these effects, such as oxygen, dose rate and various chemicals, will be explored. This course is suitable for residents in radiation oncology, nuclear medicine and diagnostic radiology, as well as graduate students with an interest in radiation effects.

3.00

#### **MPH-627: Radiation Oncology**

This course covers basic concepts and principles of nonsurgical cancer management. The natural history of cancers in various organs will be reviewed and therapeutic strategies developed based on the pathophysiology of different cancer sites.

3.00

**NEU-502: Med Neurobiology-Grad Students**

An integrated approach to the central and peripheral nervous system is presented from an anatomic, physiologic and neurochemical standpoint. Based on neuroanatomy, major systems are developed and discussed in terms of anatomic arrangement, physiologic functioning and related synaptic pharmacology. In all systems, clinical lectures highlight the practical applications of basic science concepts in patient evaluation and management.  
6.00 Classroom | Laboratory | Web Component

**NEU-511: Techniques in Neuroscience**

Graduate students rotate through various faculty members' laboratories and master techniques commonly in use in neuroscience laboratories.  
2.00 Laboratory

**NEU-544: Statistics and Experimental Design for Neuroscience**

This course covers multi-way ANOVA, repeated measures ANOVA, mixed models, multiple regression, and special statistical topics selected as relevant to research in neuroscience. This one-quarter course is required of doctoral candidates in the Division of Neuroscience, and is open to a small number of other doctoral candidates in the Graduate College. Master's candidates in the Graduate College may be admitted with the permission of the course director if space is available.  
2.00 Classroom

**NEU-591: Advanced Neuroscience Proseminar**

Taught jointly by participating faculty. The seminar format is used to encourage extensive discussion and participation.  
6.00 Classroom

**NEU-598: Pre-Doctoral Research**

Research credits prior to acceptance to doctoral candidacy.  
1.00-9.00 Laboratory

**NEU-690: Selected Topics in Neuroscience**

Study of contemporary topics in neuroscience.  
3.00 Classroom

**NEU-699: Doctoral Research**

Research credits after admission to candidacy.  
1.00-9.00 Laboratory

**NEU-699: Dissertation Research**

Research credits after admission to candidacy.  
1.00-12.00 Laboratory

**NEU-701: Core Clerkship: Neurology**

The clerkship in neurology introduces students to the care of patients with neurological illness. Through an exposure to patients with a variety of illnesses, the students will develop their neurological examination and history-taking skills, as well as an understanding of the work-up, diagnosis, and management of patients with neurological symptoms and diseases. At both Rush and Stroger hospital, the student has extensive interaction with both attending staff and residents, and participates in daily attending rounds. Didactic teaching during the rotation includes a formal lecture series on topics in clinical neurology. In addition, there are weekly departmental conferences including Neurology Grand Rounds. Students participate in the diagnostic work-up of assigned patients. At Rush, the student is a member of the general neurology floor service and the stroke/critical care service for two weeks each. At Stroger Hospital, students are members of the neurology team that sees neurology inpatients and consultation patients, as well as attending two outpatient clinics per week. All students are expected to be in attendance and prepared for daily work rounds and daily attending rounds. They are responsible for performing a history and physical examination on their assigned patients and presenting their patients. Students are expected to be involved closely in the initial and daily follow-up care of their patients, including writing daily notes. In addition, students are expected to attend all assigned lectures and conferences. There is rotating call for medical students. Students are required to participate in clinical activities the Thursday morning before the mini-board examination.  
4.00 Clinical | Web Component

**NEU-781: Research in Neurology**

Students may arrange research rotations individually with faculty at Rush. To receive credit for such a rotation, the person to whom the student will be responsible must write a letter describing the student's activities, responsibilities, amount of supervision, and the specific dates of the rotation. Students must submit a proposal to the Office of Clinical Curriculum for approval at least eight weeks before the rotation and must have written approval from the Office of Clinical Curriculum before beginning the rotation. Research rotations are scheduled for a minimum of four weeks of credit with the expectation that the full project will extend beyond the formal course duration. Depending on the proposal, the weeks of credit may or may not apply to the rule of eight-weeks' maximum credit for course work in a single subspecialty. This decision is at the discretion of the Office of Medical Student Programs.  
4.00-8.00 Clinical

**NEU-792: Advanced Neurology**

Students are expected to be present Monday through Friday. Madhu Soni, MD, should be notified as soon as possible of any illnesses or medical emergencies that arise. These will be addressed on an individual basis.

2.00-4.00 Clinical

**NEU-792X: Advanced Neurology-Away**

This advanced clerkship provides students with the opportunity to further develop their clinical skills. Students will participate in the outpatient activities of the department and, in particular, will have opportunities to see patients in the movement disorder, epilepsy, muscular dystrophy and multiple sclerosis clinics. This is a flexible program that will be structured to fit the interests and needs of individual students. Prerequisite: NEU-701.

4.00 Clinical

**NEU-7EI: Neurology Elective**

A student may receive credit for an individually arranged elective with a Rush faculty member. To receive credit for such a rotation, the person to whom the student will be responsible must write a letter stating the student's activities, responsibilities, amount of supervision, and specific dates of the rotation. The sponsoring faculty member must complete an evaluation of the student's performance at the conclusion of the elective. The student must submit a proposal to the Office of Clinical Curriculum for approval at least eight weeks before the rotation and must have written approval from the Assistant Dean of Clinical Education before beginning the rotation. A student may receive four weeks of credit for an individually arranged elective. Credit for only one individually arranged elective will count toward graduation requirements.

4.00 Clinical

**NEU-900: Independent Study**

Specialized course work designed around the needs of an individual student.

1.00-12.00 Independent Study

**NEU-999: Continuous Enrollment**

The requirement for continuous enrollment applies to all students admitted or re-admitted for fall 2015 or later. Doctoral students should follow program requirements for continuous enrollment and degree completion. Students who have not completed their degree requirements are required to maintain continuous enrollment through the college of their program until the degree is earned. Continuous enrollment courses are graduate level courses set up by departments at Rush University for students who need to remain actively enrolled in the University while they finish their graduate work.

1.00 Continuous Enrollment

**NEU-EXM: Neurology Exam Remediation**

Remediation of core neurology exam only.

4.00 Clinical

**NEU-REM: Neurology Clinical Remediation**

Remediation of clinical weeks only — not required to repeat the exam.

4.00 Clinical

**NRS-541P: Master's Practica**

A minimum of 12 quarter hours of specialty practice are planned conjointly by the master's student and faculty member. Prerequisite or corequisite: core courses as determined by each program. Selected NRS-531-536, RN licensure. Clinical conference is included. Post-master's student requirements are individually determined. P/N grading.

1.00-12.00 Practicum | Web Component

**NRS-544: Role Nurse Educator Clin Environment**

This online course prepares nurses for clinical teaching. The course includes clinical educational theories, research, strategies and evaluation of students.

2.00 Online Only

**NRS-545: Role of Nurse Educator-Classroom**

Online course for classroom teaching with modules on learning style assessment, lecture development, student critical thinking, evaluation methodologies, conceptual frameworks and curriculum design.

2.00 Online Only

**NRS-548: MSN Capstone**

This course provides the graduating master's student with the opportunity to demonstrate knowledge of essential theory, incorporate research findings, demonstrate scholarly thought and application/focus to a population or problem, and contribute to the body of nursing knowledge. This project may be either an Evidence-Based Practice Protocol or a Case Study/Management Project. It must be presented in both written and oral form.

1.00 Classroom | Web Component

**NRS-600P: APN Residency**

This course provides advanced practice nursing with an opportunity to develop clinical competency in the advanced practice role. The experience is accomplished under the guidance of an approved preceptor after completion of all program of study courses. Students register for two credits each quarter until the residency is completed. The number of clock hours of residency is determined by each curriculum. The course is taken under the pass/no pass provision.

1.00-7.00 Practicum



**NRS-669: Evaluating Change**

Clinical seminar. Topics support student projects as they evaluate change project.

2.00 Online Only

**NSG-500: Socialization Into Nsg Semr**

Historical, theoretical and ethical underpinnings of the discipline, as well as professional standards that guide practice are used to assist the learner in understanding nursing as a scientific discipline and a social phenomenon, and in developing a personal philosophy to guide professional nursing practice.

2.00 Classroom | Web Component

**NSG-501: Role of Professional Nurse**

This course presents concepts essential to the practice of client/patient and family-centered nursing across the life span. Students will examine essential physiological and psychosocial concepts, the professional role, and introductory clinical reasoning, while respecting individual and cultural diversity.

3.00 Classroom | Web Component

**NSG-501P: Role Professional Nurse Practicum**

The learner will use clinical reasoning to holistically address client's/patient's health and wellness needs. Learner will apply psychosocial and physiological concepts, therapeutic communication, pathophysiology, biostatistics and epidemiology to diverse clients/patients and families in a variety of settings. Focus will be on the patient/client within the context of the client/patient system.

2.00 Classroom | Web Component

**NSG-502: Nsg Mgt:Common Hlth Alt/Life Span**

This course presents physiological, psychosocial, cultural, developmental and ethical concepts of common acute or exacerbated health alterations across the life span. Concepts of health promotion and disease prevention are introduced using evidence-based interventions. Interprofessional and intraprofessional collaboration for ensuring quality health outcomes is emphasized.

3.00 Classroom | Web Component

**NSG-502P: Nsg Mgt:Common Hlth Alt-Practicum**

This course provides an opportunity for the learner to apply concepts learned in the didactic portion of the course to the care of patients across the life span who are experiencing common acute or exacerbated health alterations.

3.00 Practicum | Web Component

**NSG-503: Psychiatric & Mental Health Nursing Prac**

This course examines the etiology, manifestations and clinical

management of selected mental illnesses across the lifespan and continuum of care. Students will analyze systems and the evidence base for psychiatric nursing and apply this knowledge in promoting mental health and the optimal functioning and rehabilitation of individuals, families and communities with mental health problems. Prerequisite: Nursing Management of Common Health Alterations Across the Life Span. Corequisite: Psychiatric and Mental Health Nursing Practicum.

3.00 Classroom | Web Component

**NSG-503P: Psych & Mental Health Nrs Practicum**

This clinical practicum provides the learner with the opportunity to develop clinical competence in psychiatric and mental health clinical settings. Emphasis is placed on the development and maintenance of the therapeutic relationship with clients/patients and families across the continuum of care. Prerequisite: Nursing Management of Common Health Alterations Across the Life Span Practicum. Corequisite: Psychiatric and Mental Health Nursing.

3.00 Classroom | Practicum | Web Component

**NSG-504: Women's Hlth Across the Life Span**

This course presents physiological, psychosocial, cultural, developmental and ethical issues of women's health across the life span, including pregnancy and birth. Concepts of health promotion and disease prevention are stressed using evidence-based interventions. Interprofessional and intraprofessional collaboration for ensuring quality health outcomes is emphasized.

3.00 Classroom | Web Component

**NSG-504P: Women's Health Nursing**

This course provides clinical practice opportunities for students to manage the care of women, newborns and the childbearing family. Students will integrate evidenced-based health promotion and health maintenance information when teaching and developing nursing plans of care for women, newborns and the childbearing family.

1.00 Practicum | Web Component

**NSG-505: Public Health Nursing**

This course uses an ecological model to assess the nursing care needs of individuals, families and groups in the community. Evidence based strategies to promote health and reduce risk for individuals, families and groups are analyzed within the context of the communities in which they live. The impact of public health laws and regulations on public safety and access to care are examined. Prerequisites: NSG-522 and NSG-524. Corequisites: NSG-504 and NSG-508P.

3.00 Classroom | Web Component

**NSG-505P: Public Health Nursing Practicum**

This course provides the opportunity for the learner to apply knowledge and skills in providing nursing care across the life span for individuals, families, and groups in community settings. The learner will apply the ecological model to integrate evidence-based health promotion, prevention and risk reduction strategies for individuals, families and groups within the context of the communities in which they live. The impact of public health laws and regulations on public safety and access to care are examined.

2.00 Clinical | Web Component

**NSG-506: Nsg Management of Complex Hlth**

This course presents physiological, psychosocial, cultural, development and ethical concepts in the case management of complex health alterations across the life span. Interprofessional and intraprofessional collaboration for ensuring quality health outcomes is emphasized. LT grade.

3.00 Classroom | Web Component

**NSG-506P: Nsg Management of Complex Prac**

This course provides an opportunity for the learner to apply concepts learned in the didactic portion of the course to the care of patients across the life span experiencing complex health alterations. P/F grade.

3.00 Practicum | Web Component

**NSG-507: Comprehensive Examination**

A comprehensive end-of-program examination.

1.00 Classroom | Web Component

**NSG-510: Pathophysiology: Advanced Generalist**

This course provides a conceptual, life span approach to alterations in normal anatomic structure and function. General and system specific concepts related to causation and clinical presentation of pathophysiology will be discussed. This course will provide the foundation for the application of pathophysiologic concepts to common clinical situations. Critical thinking is emphasized. Application of evidence-based pathophysiologic research will be discussed. Prerequisite: anatomy and physiology.

3.00 Classroom | Web Component

**NSG-511: Pharmacology: Adv Generalist**

This course provides a conceptual, life span approach to understanding the principles of pharmacokinetics and pharmacodynamics that provide the foundational knowledge critical to understanding pharmacotherapeutics. Critical thinking is emphasized. Application of research is discussed.

3.00 Classroom | Web Component

**NSG-512: Clinical Leadership & Proj Development**

Using a case-based approach, this course provides the learner with an opportunity to apply concepts and principles of clinical leadership and quality improvement to address issues related to care outcomes.

3.00 Classroom | Web Component

**NSG-513: Capstone: Clin Proj Development & Implem**

This course provides the student with the opportunity to integrate the knowledge, skills and cultural awareness acquired throughout the clinical leader program. The focus of the capstone project is the development of an evidence-based plan to improve health care outcomes for a patient or population cohort.

3.00 Clinical | Web Component

**NSG-514: Immersion: Advanced Generalist (Prelicensure)**

This clinical course expands the student's clinical competency and integrates the role of the Clinical Nurse Leader in a variety of clinical settings. The student will demonstrate progressive competence and independence in meeting the clinical objectives throughout the experience. Students will use this clinical experience to develop or implement the capstone project.

7.00 Classroom | Web Component

**NSG-515: Immersion: Clin Project Implementation**

This clinical course expands the student's clinical competency and integrates the role of the Clinical Nurse Leader in a variety of clinical settings. The student will demonstrate progressive competence and independence in meeting the clinical objectives throughout the experience. Students will use this clinical experience to develop or implement the capstone project.

7.00 Clinical | Web Component

**NSG-516: Nsg Care of the High Risk Newbron**

This course provides the student with an overview of high-risk neonatology and the nurse's role in providing care to this unique population. The focus of this course is the application of evidence-based interventions to improve outcomes of care for the neonate and the neonate's family.

3.00 Online Only

**NSG-517: CNL Role Seminar**

This seminar provides the postlicensure student with an opportunity to do clinical or practicum hours in the areas of case management (five weeks), education (five weeks), and CNL practice (five weeks) in a clinical site. This seminar will result in the opportunity to practice in the major foci of the CNL role.

3.00 Practicum | Online (75% or Greater)

**NSG-520: Applied Epidemiology**

Principles and methodologies of epidemiology are presented, including factors that influence the health status of individuals and populations. A framework is given for assessing measures of disease frequency and association, patterns of disease, and identification and analysis of health risks. Issues in determining inference from epidemiological studies are discussed. The application of epidemiology to clinical practice is presented.

2.00 Online Only

**NSG-521: Organizational & Systems Leader**

This course provides the student with an opportunity to explore organizational and leadership theories, and analyze the process of managing change. The effects of operational and managerial processes on practice environments that affect outcomes, quality, safety and cost effectiveness of patient care are discussed. Ethical leadership principles and role development underpin the course content. Clinical informatics as a component of health care is integrated throughout the course.

3.00 Online Only

**NSG-522: Applied Epidemiology Biostats Nursing**

This course develops students' ability to apply epidemiological and statistical concepts to guide evidence-based practice in a dynamic health care environment at the micro and mezzo level. Students use public data sources, data management software and the published literature to understand and address health concerns in populations, and in evaluating economic evidence of health interventions and programs.

3.00 Online Only

**NSG-523: Research for Evidence Based Practice**

Students will develop an understanding of the research process and how research evidence influences practice. Students will identify appropriate practice questions and use multiple methods and informatics to systematically obtain sound evidence about practice questions. Students will critically analyze and apply research evidence to improve practice outcomes in culturally diverse populations.

3.00 Online Only

**NSG-524: Hlth Promotion in Individuals & Clinical Populations**

Students will use theories and models to examine determinants of health and to guide health promotion and illness or injury prevention strategies and practice. Students will use informatics to gather and evaluate health data, locate and utilize evidence based practice strategies and evaluate quality of health information.

3.00 Online Only

**NSG-525: Health Assessment Across the Life Span**

This course teaches the didactic components of a comprehensive history and physical examination of individuals and families across the life span and the documentation of findings. The course provides a framework of critical thinking based on careful collection of history and physical findings and their systematic analysis. The course content is organized around assessment of specific body systems of individuals and families across the life span.

2.00 Classroom | Web Component

**NSG-525L: Hlth Asmt Lab: Adv Generalist**

This course teaches the didactic components of a comprehensive history and physical examination of individuals and families across the life span and the documentation of findings. The course provides a framework of critical thinking based on careful collection of history and physical findings and their systematic analysis. The course content is organized around assessment of specific body systems of individuals and families across the life span.

1.00 Classroom | Online (75% or Greater)

**NSG-531: Advanced Pharmacology**

This course covers the principles of pharmacokinetics and pharmacodynamics. The course provides the foundational knowledge requisite to understanding pharmacotherapeutics.

3.00 Classroom | Web Component

**NSG-532: Advanced Physiology**

This course covers selected aspects across the life span of advanced cell biology and systems physiology that are related to cellular homeostasis and viability in humans.

3.00 Classroom | Web Component

**NSG-533: Advanced Pathophysiology**

This course incorporates scientific concepts, principles and theories into discussion of advanced pathophysiologic processes across the life span. Pathophysiology is a combined science that encompasses definition/classification, epidemiology, risk factors, etiology, pathogenesis and clinical manifestations. The initial sections of the course cover basic mechanisms of disease, which are then integrated into subsequent discussions of selected system-related disorders. Learning activities and evaluation strategies are focused on the development and assessment of critical thinking and problem-solving in clinical scenarios to facilitate real-world practice applications and prepare students for certification exams.

3.00 Classroom

**NSG-534: Major Psychopathological Disorders**

This course will focus on the epidemiology, etiology, clinical manifestation and treatment of selected psychopathologic disorders across the life span. Emphasis will be placed on assessment and

interventions in a variety of settings. This emphasis will also include the impact of culture on diagnosis and treatment of selected disorders and a critical evaluation of relevant research findings.

3.00 Online Only

### **NSG-535: Diagnostics for the APRN**

This course prepares the advanced practice nursing student to use, interpret and implement laboratory and diagnostic testing in the clinical setting for the use, interpretation and application of laboratory and diagnostic techniques and procedures. With this information, the student will learn to use critical thinking and decision-making skills to interpret laboratory and diagnostic testing results across the life span.

3.00 Classroom | Web Component

### **NSG-536: Principles of Case Management**

This course provides an overview of the evolution and core principles of case management. Contemporary case management models across the health care continuum will be analyzed. Case management competencies will be addressed. A major focus is to identify strategies that promote appropriate clinical outcomes of care, coordination of care, and cost-efficient utilization of resources using a systems perspective.

3.00 Online Only

### **NSG-537: Transition to the APRN Role**

This course addresses issues relevant to APRN practice. It focuses on models of APRN practice, ethical principles, regulation, quality outcomes, reimbursement, and professional issues related to an APRN entering a first position in the current marketplace.

3.00 Online Only

### **NSG-541: Chemistry & Physics in Anesthesia**

Students will learn to apply the basic principles of chemistry and physics in nurse anesthesia practice, and will review medical math. The components of an anesthesia machine will be analyzed, and currently available monitoring devices will be reviewed and compared.

3.00 Classroom | Web Component

### **NSG-542: NRS Anesthesia Pharmacology**

This course provides a comprehensive study of the pharmacokinetics and pharmacodynamics of drugs used in nurse anesthesia practice. The interactions between anesthetic agents and other pharmacological substances will be discussed. Learners will review the effects of the aging process and its altered physiology on anesthesia pharmacology. Prerequisite: Advanced Pharmacology.

3.00 Classroom | Web Component

### **NSG-543A: Anesth Princip I: Basic Princip**

A solid foundation of basic knowledge is vital to nurse anesthesia practice. This course provides a comprehensive orientation to nurse anesthesia practice, facilitating incorporation of safe, basic principles into the delivery of competent, responsible patient care. In the corequisite practicum course, there will be experiences that allow the students to begin to develop the general clinical skills in the practice of anesthesia that will serve as the basis for subsequent progression to a more advanced nurse anesthesia practice. LT grade.

3.00 Classroom

### **NSG-543B: Anesth Princip II: Adv Princip**

This course is for the student who has a foundation in the basic principles and practice of nurse anesthesia. During this course, students learn anesthetic management principles for surgical specialty areas. Important concepts to master include the related anatomic, physiologic, pathophysiologic and pharmacologic principles for each of the surgical specialty areas. LT grade.

3.00 Classroom | Web Component

### **NSG-543C: Anesth Princip III Obstetric & Pediatr**

This course provides essential content for nurse anesthesia care in the specialty areas of obstetric and pediatric anesthesia. Learners will acquire knowledge related to the preoperative assessment of obstetric and pediatric patients, as well as the planning, implementation and evaluation of nurse anesthesia care provided to obstetric and pediatric patients undergoing diagnostic and surgical procedures. LT grade.

3.00 Classroom | Web Component

### **NSG-546: Devel Physiology Fetus/Neonates**

This course provides the student with greater depth of understanding of developmental physiology of the fetus and neonate. Principles of growth and development, genetics/teratogenesis, embryology and maturation of organ systems as related to critical periods of intrauterine development, transition to extrauterine life, and through early infancy will be covered. Adaptation to physiologic stress and alterations from normal will also be discussed.

3.00 Online Only

### **NSG-547: Neonatal Pathophysiology**

This course provides a graduate level conceptual approach to principles and content in neonatal pathophysiology, which form the scientific foundation for the development, implementation and evaluation of clinical therapeutics. It provides the advanced practice nursing student with an in-depth analysis of advanced neonatal pathophysiology. General and system specific concepts related to causation and clinical presentation of selected

pathophysiologic states will be discussed. Prototype diseases are used to illustrate pathophysiologic concepts and assist the student in applying these concepts systematically.

3.00 Online Only

#### **NSG-548: Advanced Neonatal Physical Assessment**

This course develops the student's knowledge of comprehensive physical assessment and the diagnosis of physical findings in the premature and term neonate. The central objective of the course is to emphasize the importance of critical reasoning and clinical decision-making based on a thorough collection of history and physical findings, accurate documentation and their systematic analysis. The course content is organized around assessment of specific body systems of the neonate. The neonate's presentation at birth is emphasized.

3.00 Online Only

#### **NSG-549: Neonatal Pharmacotherapeutics**

This course provides advanced practice nursing students with a working knowledge of the impact of neonatal physiology on drug pharmacology. Building on the student's knowledge of pharmacokinetics and pharmacodynamics, content includes the role and responsibilities of the APN in prescribing medications, considerations in medication selection for the treatment of a variety of neonatal conditions, diseases and disorders, as well as monitoring the physiological responses to such interventions. Also addressed are the effects of drugs during pregnancy and lactation on the fetus and neonate. Prerequisite: Advanced Pharmacology.

3.00 Online Only

#### **NSG-550A: Neonatal Management I**

This is the first of three sequential management courses that provide the theoretical and practical knowledge for the neonatal nurse practitioner to manage the health care needs of the neonate at the highest level of nursing practice. Course content focuses on the recognition and management of common conditions affecting the newborn. Demonstrating critical thinking and diagnostic reasoning skills in clinical decision-making, developing a plan of care based on scientific evidence and practice guidelines, and instituting evidence-based strategies to provide psychosocial support and education for the infant's family are emphasized. 3.00 Online Only

#### **NSG-550B: Neonatal Management II**

This is the second of three sequential management courses that provide the theoretical and practical knowledge for the neonatal nurse practitioner to manage the health care needs of the neonate at the highest level of nursing practice. Course content focuses on the recognition and management of acute conditions affecting the neonate or preterm infant. Demonstrating critical

thinking and diagnostic reasoning skills in clinical decision-making, developing a plan of care based on scientific evidence and practice guidelines, and instituting evidence-based strategies to provide psychosocial support and education for the infant's family are emphasized.

3.00 Online Only

#### **NSG-550C: Neonatal Management III**

This is the final of three sequential management courses that provide the theoretical and practical knowledge for the neonatal nurse practitioner to manage the health care needs of the neonate at the highest level of nursing practice. Course content focuses on the recognition and management of life-threatening conditions affecting the neonate or preterm infant. Demonstrating critical thinking and diagnostic reasoning skills in clinical decision-making, developing a plan of care based on scientific evidence and practice guidelines, and instituting evidence-based strategies to provide psychosocial support and education for the infant's family are emphasized.

3.00 Online Only

#### **NSG-551A: Advanced Primary Care of the Child I**

The course focus is on the development of pediatric clinical judgment. A chronological approach is used to address preventive health care services and identification and management of common health problems in infants, children and adolescents.

3.00 Online Only

#### **NSG-551B: Advanced Primary Care of the Child II**

The course content provides the theoretical basis for clinical judgment and decision-making skills for providing primary care to ill children and their families. A systems approach is used to focus on assessment and management of acute and common health problems. This is the second course in the three course series in the PNP management sequence.

3.00 Online Only

#### **NSG-551C: Advanced Primary Care of the Child III**

The course enhances clinical judgment and decision-making skills required in providing primary care to children with complex physical and psychosocial needs due to infectious diseases, genetics and environmental conditions. A systems approach is used to focus on assessment and management of complex health problems. This is the third class in a three part series.

3.00 Classroom | Online Only

#### **NSG-556: Appl Pharmacology: Pediatrics**

In this course, pediatric advanced practice students apply a systematic process for therapeutic prescription plans for selected common acute and chronic health conditions.

3.00 Online Only

**NSG-557A: Pediatric Acute Care I**

The course content provides the theoretical basis for clinical judgment, decision making, and procedural skills for delivering complex acute, critical and chronic health care to ill or injured children and their families. Recognition and management of emerging health crises and organ dysfunction by systems are emphasized. Part 1 of a 2 part series.

3.00 Classroom | Web Component

**NSG-557B: Pediatric Acute Care II**

The course content provides the theoretical basis for clinical judgment, decision-making, and procedural skills for delivering complex acute, critical and chronic health care to ill or injured children and their families. Recognition and management of the injured child and transitions in care are emphasized. This is part two of a 2two-part series.

3.00 Classroom | Web Component

**NSG-565: Public Hlth Systems & the APHN Role**

Students will examine ethical, economic, financial and role issues relevant to community and public health care. The focus will be on helping students gain knowledge, tools and experience to understand community-based and public health care organizations, their roles and functions within the U.S. health care system, and the advanced nursing role in these organizations. Prerequisite: Health Care Economics, Policy, Finance; Leadership in Evolving Health Care Environments; Applied Epidemiology and Biostatistics for Nursing Practice. Corequisite: one to three credit hours of NSG-606.

3.00 Online Only

**NSG-566: Population Assessment & Heath Promotion Frameworks**

This is the first of two sequential courses in population assessment and intervention planning. The course focuses on application of the concepts and methods for conducting an in-depth assessment of health status among populations, which serves as the foundation for the health planning process. Principles of epidemiology and assessment frameworks are applied in analyzing population and organizational-level data to provide understanding of population needs and resources. Students examine health promotion frameworks in relation to effective approaches to guiding population-level interventions. Prerequisite: Applied Epidemiology and Biostatistics, Research for Evidence Based Practice. Prerequisite or corequisite for APHN and Pop Health MSN-DNP students: Public Health Systems & APHN Role, Specialty Practicum 3 credit hours.

3.00 Online (75% or Greater)

**NSG-567: Population Intervention Planning, Implementation & Evaluation**

This is the second of two sequential courses in population\* health assessment and program/intervention planning. The course is organized around planning as a method of decision-making. Various theoretical frameworks are applied to the development of a plan to meet the health needs of selected at-risk populations, based on an in-depth population assessment. Formulation of implementation strategies and evaluation schemes for sustainable program/intervention development are discussed. Emphasis is on implementation and evaluation methods for innovative nursing practice with communities and populations. \*For the purposes of this course, the term population is defined to include the traditional public health population and clinical populations or aggregates.

3.00 Classroom | Web Component

**NSG-568: Environmental Health**

This course provides an overview of the core principles in environmental health. Emphasis is on application of basic concepts to address specific environmental hazards that affect the health of individuals and populations.

3.00 Online Only

**NSG-569: Maternal Child Mgt for FNP**

This course addresses the diagnosis and management of 1) common acute and chronic health care problems in children from infancy through adolescence and 2) pregnancy and fertility issues for women of child-bearing age. Prevention, screening, diagnosis, treatment and counseling of these patients and their families form the framework for students to refine evidence-based clinical decision-making and reasoning skills. Quality, cost-effectiveness and safety are integrated in the development of patient-centered management plans.

3.00 Classroom | Web Component

**NSG-570A: Pharmacotherapeutics Acute Care**

This course provides the advanced practice nurse with knowledge of pharmacotherapeutics for common acute and chronic health conditions across the life span, according to specialty area of practice. Building on the student's knowledge of pharmacokinetics and pharmacodynamics, content includes medications used for the diagnosis and treatment of a variety of physical and psychiatric disorders and monitoring the physical, behavioral and psychiatric responses to such interventions. The course is offered in sections according to specialty area of practice.

3.00 Classroom | Web Component

**NSG-570B: Pharmacotherapeutics Primary Care**

This course provides the advanced practice nurse with knowledge of pharmacotherapeutics for common acute and chronic health conditions across the life span, according to specialty area of practice. Building on the student's knowledge of pharmacokinetics and pharmacodynamics, content includes medications used for the diagnosis and treatment of a variety of physical and psychiatric disorders and monitoring the physical, behavioral and psychiatric responses to such interventions. The course is offered in sections according to specialty area of practice.

3.00 Classroom | Web Component

**NSG-571A: Management: Adult/Gerontology I**

This course addresses the diagnosis and management of selected common acute and chronic health care problems in the late adolescent through older adult populations. Prevention, screening, diagnosis, treatment and counseling adult patients form the framework for students to refine evidenced-based clinical decision-making and reasoning skills. Quality, cost-effectiveness and safety are integrated in the development of patient-centered management plans. The major focus of this course is cardiovascular, pulmonary, endocrine, women's health problems and gerontological considerations.

3.00 Classroom | Web Component

**NSG-571B: Management: Adult/Gerontology II**

This course addresses the diagnosis and management of selected common acute and chronic health care problems in the late adolescent through older adult populations. Prevention, screening, diagnosis, treatment and counseling adult patients form the framework for students to refine evidenced-based clinical decision-making and reasoning skills. Quality, cost-effectiveness and safety are integrated in the development of patient-centered management plans. The focus of this course is neurological, sensory, musculoskeletal, dermatological, psychiatric, oncological, women's health problems and gerontological considerations.

3.00 Online Only

**NSG-571C: Mgt: Adult/Ger Acute & Critical Illness I**

This course addresses the diagnosis and management of selected acute, chronic and critical health care problems in the late adolescent (16 years) through older adult populations. Prevention, screening, diagnosis, treatment and counseling adult patients form the framework for students to refine evidence-based clinical decision-making and reasoning skills. Quality, cost-effectiveness and safety are integrated in the development of patient-centered management plans.

4.00 Classroom | Web Component

**NSG-571D: Mgmt: Adlt/Gero Acute & Crit Illness II**

This is the third clinical management course that focuses on the advanced management of the critically ill adult patient. This course addresses the synthesis of critical illness management.

2.00 Classroom | Web Component

**NSG-572: Quality & Safety for the Aging Adult**

This course prepares nurse leaders to create a culture of quality improvement and patient safety for the aging adult. Current models of quality and patient safety are evaluated in the context of national trends and health care priorities. The essential role of interprofessional teams as a mechanism to improve quality and patient safety is addressed. LT grade.

3.00 Online Only

**NSG-575: Psychopharmacology**

This course provides advanced practice nursing students with knowledge of pharmacotherapeutics for common acute and chronic health conditions across the life span. It also prepares PHMNP students to use, interpret and apply appropriate laboratory diagnostic procedures to the use of medications to treat a variety of psychological and psychiatric disorders. Building on the student's knowledge of pharmacokinetics and pharmacotherapeutics, content includes medications used for the diagnosis and treatment of a variety of psychological and psychiatric disorders and monitoring the physiological, psychiatric and behavioral responses to these interventions.

3.00 Online Only

**NSG-576: Neuropathophysiology: Life Span Approach**

This course provides advanced practice nursing students with knowledge of the essential neuropathophysiology of mental illness, across the life span. Building on the basics of cell physiology and neural transmission, this course focuses on the neurobiology of select serious mental illnesses. There is emphasis throughout on the neural structures and functions thought to be implicated in symptom presentation and disease progression of select serious mental illnesses.

3.00 Online Only

**NSG-577A: Diagnostics & Management I: Psychiatric Assessment Across Life Span**

This course focuses on the methods for gathering pertinent data to conduct a psychiatric assessment, arrive at a differential diagnosis and make appropriate treatment recommendations with clients across the life span demonstrating psychiatric symptoms.

3.00 Online Only

**NSG-577B: Diagnostics & Management II: Evidence-Based Treatment**

The theoretical basis for psychotherapeutic nursing interventions across the life span is examined. Cognitive treatment and evidence-based therapy techniques receive particular emphasis. Management of common psychiatric disorders via clinical practice guidelines is a third course thread.

3.00 Online Only

**NSG-577C: Diagn Mgt III: Group Therapy and Complex Care**

This course has three foci: in depth analysis of theory and research as a basis for the clinical practice of group psychotherapy; exploration of the mental health recovery paradigm; and finally, the assessment, planning and intervention in complex care of individuals with co-morbid substance use and medical conditions.

3.00 Online Only

**NSG-578: Interprofessional Cultural Competency Via Community Based Service**

This interprofessional course provides students across the disciplines with the knowledge and skills to provide care within diverse populations and communities. Students will examine personal attitudes and beliefs as they relate to cultural competency and will develop and implement a service learning project in conjunction with the needs of the community setting in which they are placed. They will reflect on their experiences as they examine their personal beliefs, values and views, as well as their experiences interacting with each other and their community partners.

LT grade.  
3.00 Online Only

**NSG-600: Leadership in Evolving Healthcare Environment**

This course guides students in explorations of leadership in evolving health care environments. Students complete an assessment and analysis of their leadership style. Leadership trends, styles and competencies are applied to specific leadership scenarios and challenges. In addition, students develop a leadership e-portfolio including a vision statement, goals and specific strategies for attaining these goals.

3.00 Online Only

**NSG-601: Leader as Change Catalyst in an Evolving Health Care Environment**

This course engages students in explorations of leadership. Advanced leadership principles and concepts are analyzed through case studies of exemplary leaders and self-assessment of leadership potential. Issues related to enacting the practice doctorate will be explored.

3.00 Online Only

**NSG-602: Health Care Economics, Policy, Finance**

This course will examine current trends in health care policy and economics and their impact on financing and care delivery in the U.S. Using informatics as a tool, costs associated with specific health care delivery systems will be analyzed at the organizational level

3.00 Online Only

**NSG-603: Effective Project Plan: Implementation/Evaluation**

This course provides students with the information and tools needed to strategically plan, implement and evaluate change initiatives and outcomes in practice and health care environments.

3.00 Online Only

**NSG-604A: DNP Project Planning I**

This course is the first of three consecutive one hour seminars. Each seminar focuses on a specific aspect of planning for implementation and evaluation related to a significant project that impacts at least one of the Institute of Medicine's six aims: health care safety, effectiveness, patient-centeredness, timeliness, efficiency, or equity. The focus of this course is on the project problem statement, review of related literature, and application of a planning model. Each student is guided by a DNP project advisor in the development of a project or capstone proposal and in the integration of core content obtained throughout the DNP program. Upon completion of this series of seminars, the student will have developed and received the required approvals on a project proposal and submitted necessary Institutional Review Board requirements.

1.00 Online Only

**NSG-604B: DNP Project Planning II**

This course is the second of three consecutive one hour seminars. Each seminar focuses on a specific aspect of planning for implementation and evaluation related to a significant project that impacts at least one of the Institute of Medicine's six aims: health care safety, effectiveness, patient-centeredness, timeliness, efficiency, or equity. The focus of this course is on the project evaluation and resource needs. Each student is guided by a DNP project advisor in the development of a project or capstone proposal and in the integration of core content obtained throughout the DNP program. Upon completion of this series of seminars, the student will have developed and received the required approvals on a project proposal and submitted necessary Institutional Review Board requirements.

1.00 Online Only



### **NSG-604C: DNP Project Planning III**

This course is the third of three consecutive one hour seminars. Each seminar focuses on a specific aspect of planning for implementation and evaluation related to a significant project that impacts at least one of the Institute of Medicine's six aims: health care safety, effectiveness, patient-centeredness, timeliness, efficiency, or equity. Each student is guided by a DNP project advisor in the development of a project or capstone proposal and in the integration of core content obtained throughout the DNP program. Upon completion of this course, the student will have developed and received the required approvals on a project proposal and submitted necessary Institutional Review Board requirements.

1.00 Online Only

### **NSG-604D: DNP Project Planning II & III**

The seminar focuses on specific aspects of planning for implementation and evaluation related to a significant project that impacts at least one of the Institute of Medicine's six aims: health care safety, effectiveness, patient-centeredness, timeliness, efficiency, or equity. Students are guided by their DNP project advisors in the development of their project proposals and in the integration of core content obtained throughout the DNP program. Upon completion of this course, the students will understand project evaluation and resource needs and will have developed and received the required approvals on project proposals and submitted necessary Institutional Review Board requirements. PF grade.

2.00 Online Only

### **NSG-605: DNP Capstone**

The DNP Capstone Project provides a faculty-guided experience in the application of advanced clinical practice and systems-level knowledge and skill in a practice setting. The capstone experience is directed at the completion of a significant project that impacts at least one of the Institute of Medicine's six aims: health care safety, effectiveness, patient-centeredness, timeliness, efficiency or equity. The project represents a synthesis of knowledge gained in all previous course work and involves development, implementation and evaluation of a process for change in health care delivery for individuals, groups or populations. The project should be of such a nature that it serves as a foundation for future scholarship. The student's chosen program of study will inform the level of practice change for the project. This course is taken during the term that a student intends to do his or her public presentation.

2.00 Classroom | Web Component

### **NSG-606: DNP/Spec Practicum**

Practica are planned conjointly by the student and faculty member. The minimum number of hours of practica may be determined by the specialty specific credentialing body and DNP requirements, and may vary across specialty programs. Clinical conference is included. Prerequisite or corequisite: core courses as determined by each program, RN licensure as required by the state in which the practicum will be conducted. Postgraduate student requirements are individually determined. P/N grading. 1.00-12.00 Practicum | Online Only

### **NSG-607: DNP/Specialty Immersion Residency**

This course provides each advanced nursing practice student with an opportunity to achieve specialty competence at the DNP level. The experience is accomplished under the guidance of an approved preceptor or facilitator. The minimum number of clock hours of residency may be determined by the specialty specific credentialing body, and DNP requirements and may vary across specialty programs.

1.00-14.00 Online Only

### **NSG-611: Financial & Business Concepts**

This course will enable students to understand, apply and communicate the concepts required for effective financial planning, decision-making, and management in health care programs and organizations. The long-term financial impact of practice changes will be assessed at the organizational level.

3.00 Online Only

### **NSG-612: Appl Organiz Analysis/Mgt HR**

This course focuses on the structure and function of organizations. The elements of organizational features, culture, and human talent and the influence on outcomes are explored.

3.00 Online Only

### **NSG-613: Data and Decision-Making for Strategic Outcomes Management**

This course focuses on acquiring and demonstrating the skills to effectively utilize data for health care decision-making based on the process of outcomes management. Students will acquire and demonstrate the skills needed to effectively utilize data to change health care environments, to formulate an outcomes management plan, and to evaluate aspects of the outcomes management process.

3.00 Online Only

### **NSG-614: The Leader and Policy, Politics, Power, & Ethics**

This course will prepare a nursing leader to analyze and influence health policy environments. The student will learn to apply methods of analysis to policies of relevance to their practice

settings, and to use the results to advocate for populations and organizations/systems. The student will learn methods for evaluating policy outcomes and how to design interventions to influence policymaking and intervention implementation. Applying these skills in an organizational context will enhance the policy process, as well as help a leader to assist an organization in responding to policy opportunities and threats.

3.00 Online Only

#### **NSG-625: Adv Health Assessment-APRN Across Lf Spn**

This course enhances the advanced practice nursing student's knowledge of a history and physical examination and the diagnosis of physical findings of individuals across the life span. The course introduces the student to clinical problem solving through a series of lectures, case presentations and class discussion. This course emphasizes the importance of the careful collection of data by history and physical examination and their systematic analysis. The content of the course is organized around the health assessment of specific body systems and provides a framework of critical thinking and development of differential diagnosis.

2.00 Online Only

#### **NSG-625L: Adv Hth Assmt-APRN: Lab**

In this course, students will develop skills needed to conduct a comprehensive history and physical examination of individuals across the life span and document the findings. The course provides a framework of critical thinking based on careful collection of history and physical findings and their systematic analysis. The course content is organized around advanced health assessment of specific body systems of individuals across the life span.

1.00 Classroom | Online (75% or Greater)

#### **NSG-675: Literature Synthesis Approach**

This doctoral-level course examines aspects pertinent to synthesizing the literature in the form of integrative and systematic literature reviews. Content emphasizes the principles of a literature review, including the review question, review protocol, search strategies, data extraction, and synthesis.

3.00 Online Only

#### **NSG-678: The Rsch Process: Mixed Methods Design**

This Web-based course will focus on the history, nomenclature, typologies, design, conduct and dissemination of mixed methods research. Emphasis will be on the comparison of various mixed method typologies, the selection of appropriate design for the research questions, and the integration of both the qualitative and quantitative data in analysis, and dissemination of results. Prerequisite: ehe Research Process: Qualitative Design; the Research Process: Quantitative Design Methods Part I and Part II (corequisite is acceptable).

3.00 Online Only

#### **NSG-679: Evidence-Based Teaching in Health Professions**

Focus is on essential components of a health professional's education, including learning theories and evidence-based methods of facilitating and assessing learning. Course and curriculum design are examined, and course, program and institutional evaluation are reviewed. The tripartite faculty role is explored with an emphasis on the scholarship of teaching and the faculty member's responsibilities to professional and institutional service and leadership.

3.00 Classroom | Web Component

#### **NSG-680: Understanding Sci Paradigms**

This course will provide students with a foundation in relevant philosophies of science that have influenced knowledge development and scientific inquiry in nursing. The learner will examine how philosophies of science have influenced the development of knowledge and will analyze a concept embedded within a particular context or phenomenon of interest.

3.00 Online Only

#### **NSG-681: Understanding Theoretical Framework Deve**

This course provides learners with the opportunity to develop or expand a theoretical framework that will guide their Advanced Clinical Research Practicum (ACRP) and their dissertation research. Integration of the literature is emphasized.

3.00 Online Only

#### **NSG-682: Developing Professional Writing Skills**

This course assists students in developing their publication knowledge and skills. Issues related to the publication process will be explored. Emphasis is on health science writing and publication in professional journals.

3.00 Online Only

#### **NSG-683: Ethical Conduct-Rsrch Setting**

This course provides the student with an in-depth examination of the ethical principles that guide the conduct of responsible research. These principles will be examined in the context of current, historical and future scientific achievements.

3.00 Online Only

#### **NSG-684: Intermediate Statistics**

This course develops a student's knowledge of the application of database management principles and intermediate statistical principles in health care research.

3.00 Online Only

#### **NSG-685: Multivariate Statistics**

This course develops a student's knowledge of the application of multivariate statistical principles in health care research. LT grade.

3.00 Online Only

**NSG-686: The Research Process: Quantitative Design & Methods Part I**

This course is the first in a series of three doctoral-level research courses that promote the development, integration and application of the knowledge, attitudes and skills required to function as a clinical nurse scientist. This course provides an overview of the research process and a brief history of nursing research within the context of current issues and trends in nursing.

The research literature serves as the foundation for examining research problems, developing problem statements, and conceptualizing research questions. Finally, theoretical and conceptual frameworks ground and enrich the research process as students explore appropriate samples and sampling designs.

3.00 Online Only

**NSG-686: The Research Process: Quantitative Design & Methods Part I**

This course promotes the development, integration and application of the knowledge, attitudes and skills required to function as a clinical scientist. This course provides an overview of the research process and a brief history of clinical research within the context of current issues and trends in healthcare.

The research literature serves as the foundation for examining research problems, developing problem statements, and conceptualizing research questions. Finally, theoretical and conceptual frameworks ground and enrich the research process as students explore appropriate samples and sampling designs.

3.00 Online Only

**NSG-687: Rsch Process:Quan Dsgn/Mth II**

This course is the second in a series of three doctoral-level research courses that promote the development, integration and application of the knowledge, attitudes and skills required to function as an independent clinical researcher. The course will include research design, measurement, instrument development, intervention fidelity, data management, cross-cultural issues, and research translation. Emphasis is on the critical appraisal of selected research designs and measurement strategies relevant to quantitative research.

3.00 Classroom

**NSG-688: The Research Process: Qualitative Design & Methods**

This course will focus on the design, conduct and dissemination of qualitative research. Emphasis will be on the critical appraisal of qualitative research methodologies, data analysis, and analysis and interpretation of findings.

3.00 Online Only

**NSG-690: Grantsmanship**

This course examines grant writing and review skills. Content focuses on grant mechanisms, strategies, format, and the review process. Guidelines address writing particular NIH grant sections, such as specific aims and research approach, human subjects, budget, personnel, and supporting materials.

3.00 Classroom | Online Only

**NSG-691: ACRP**

Encompasses a minimum of 12 credit hours of individually designed courses of independent study that are planned jointly by the student and academic advisor.

1.00-12.00 Online Only

**NSG-699: Dissertation Research**

The student contracts with faculty members and the Associate Dean for Academic Affairs for independent research. The doctoral candidate must be enrolled for at least three quarter hours each quarter or until the dissertation has been defended. The successful dissertation defense constitutes a submitted paper and verbal defense.

3.00-4.00 Online Only

**NSG-900A: Independent Study**

The student contracts with faculty members to complete an academic independent study in a selected area of nursing content.

1.00-9.00 Independent Study | Web Component

**NSG-900B: Independent Clinical Study**

Intensive independent study in a specialty clinical area of nursing with faculty contract. Prerequisites: RN licensure and admission to the College of Nursing.

1.00-9.00 Clinical

**NSG-999: Continuous Enrollment**

The requirement for continuous enrollment applies to all students admitted or re-admitted for fall 2015 or later. Doctoral students should follow program requirements for continuous enrollment and degree completion. Students who have not completed their degree requirements are required to maintain continuous enrollment through the college of their program until the degree is earned. Continuous enrollment courses are graduate level courses set up by departments at Rush University for students who need to remain actively enrolled in the University while they finish their graduate work.

1.00 Continuous Enrollment

**NTR-503: Leadership in Dietetics**

Theories of leadership will be examined. Discussion will focus on practices and principles related to developing leadership skills.

2.00 Classroom | Web Component

**NTR-505: Advanced Medical Nutrition Therapy I**

Technical, conceptual and behavioral aspects of dietary prevention and treatment of disease states are presented. Students apply principles of medical nutrition therapy to various disease states.

2.00 Classroom | Web Component

**NTR-506: Advanced Medical Nutrition Therapy II**

Technical, conceptual and behavioral aspects of dietary prevention and treatment of disease states are presented. Students apply principles of medical nutrition therapy to various disease states.

3.00 Classroom | Web Component

**NTR-511: Supervised Experience in Food Systems Management I**

Students function as members of the management team in the food service units of the Medical Center. Through increasingly complex learning experiences, students are expected to develop competence as entry-level practitioners in food service management. Limited to clinical nutrition students. P/N grading.

3.00 Classroom

**NTR-512: Superv Exper-Food Syst Mgt II**

Students function as members of the management team in the food service units of the Medical Center. Through increasingly complex learning experiences, students are expected to develop competence as entry-level practitioners in food service management. Limited to clinical nutrition students. P/N grading.

2.00 Classroom | Web Component

**NTR-513: Supervised Experience in Clinical Nutrition I**

Students will plan, organize, direct and evaluate nutrition care for individuals and groups of varying ages and lifestyles, across the continuum of care. Students will function as members of the health care team with increasingly complex learning experiences and clinical responsibilities. Limited to clinical nutrition students. P/N grading.

2.00 Clinical

**NTR-514: Supervised Experience in Clinical Nutrition II**

Students will plan, organize, direct and evaluate nutrition care for individuals and groups of varying ages and lifestyles, across the continuum of care. Students will function as members of the health care team with increasingly complex learning experiences and clinical responsibilities. Limited to clinical nutrition students. P/N grading.

4.00 Classroom | Clinical | Web Component

**NTR-515: Supervised Experience in Clinical Nutrition III**

Students will plan, organize, direct and evaluate nutrition care for individuals and groups of varying ages and lifestyles, across the continuum of care. Students will function as members of the health care team with increasingly complex learning experiences and clinical responsibilities. Limited to clinical nutrition students. P/N grading.

4.00 Classroom | Clinical

**NTR-516: Supervised Experience in Clinical Nutrition IV**

Students plan, organize, direct and evaluate nutrition care for individuals and groups of varying ages and lifestyles, across the continuum of care. Students function as members of the health care team with increasingly complex learning experiences and clinical responsibilities. Limited to clinical nutrition students. P/N grading.

6.00 Clinical

**NTR-517: Superv Exper Cln Nutrition V**

Students will plan, organize, direct and evaluate nutrition care for individuals and groups of varying ages and lifestyles, across the continuum of care. Students will function as members of the health care team with increasingly complex learning experiences and clinical responsibilities. Limited to clinical nutrition students. P/N grading.

6.00 Clinical

**NTR-518: Superv Experience in Management**

Students function as members of the management team in the food service and nutrition department of the Medical Center. Each student completes a management project.

3.00 Clinical

**NTR-521: Regulation of Macronutrient Metabolism in Human Nutrition**

In this advanced course in human metabolism, students integrate biochemical and molecular nutrition, emphasizing regulation of dietary carbohydrates, lipid and protein metabolism and their impact on nutritional status and health. Differences in fuel utilization in specific organs under various conditions are highlighted.

4.00 Classroom | Web Component

**NTR-522: Energy Metabolism and Bioactive Ingredients in Human Nutrition**

This advanced course in human metabolism integrates biochemical and molecular nutrition as it relates to the regulation of energy metabolism. Health impact of dietary supplements and phytochemicals as new bioactive molecules of interest in human health will also be covered.

2.00 Classroom | Web Component

**NTR-523: Advances Vitamin/Mineral Nutrition**

This advanced course in human metabolism looks at key metabolic pathways and physiological factors affecting micronutrient needs at various life stages.

2.00 Classroom | Web Component

**NTR-531: Appl Bhv Change/Ed Theories in Nutrition Counseling and Education**

Each student will plan, implement and evaluate a nutrition counseling project around specific dietary behavior and behavior change theory and strategies. The student will share results of experience and project with clinicians.

4.00 Classroom | Web Component

**NTR-534: Nutrition in Critical Care**

An advanced-level supervised experience in enteral and parenteral nutrition. Current rationale and techniques for implementing and monitoring nutritional therapy in critically ill patients will be explored. Special attention is given to metabolic complications associated with enteral and parenteral feeding. Prerequisite: NTR-543 and 516.

1.00-3.00 Classroom

**NTR-535: Nutrition in Pediatric Critical Care**

Supervised practicum based on scientific theory and practical application of nutrition support in critically ill infants and children. Studies include nutritional requirements of premature infants; nutrition delivery in neonatal intensive care unit; and enteral and parenteral nutrition therapies for pediatric patients with a variety of diseases and organ dysfunctions. Prerequisite: NTR-534.

1.00 Classroom

**NTR-541: Integrating Nutrition in Disease Prevention and Treatment I**

Pathophysiology of disease and the interrelated role of nutrition in prevention, etiology and treatment of disease are emphasized in this series. Critical review of the nutrition literature in prevention and treatment of acute and chronic disease.

4.00 Classroom | Web Component

**NTR-542: Integrat Nutr Dis Prev Treat II**

Pathophysiology of disease and the interrelated role of nutrition in prevention, etiology and treatment of disease are emphasized in this series. Critical review of the nutrition literature in prevention and treatment of acute and chronic disease.

4.00 Classroom | Web Component

**NTR-543: Interrelationship of Nutrition and Disease III**

Pathophysiology of disease and the interrelated role of nutrition in etiology and treatment of disease are emphasized in this series.

2.00 Classroom | Web Component

**NTR-545: Nutrition Assessment**

Interpretation of information from dietary, laboratory, anthropometrics and clinical study. Various nutrition assessment techniques and the appropriate use of these tools in determining the nutrition status of a population or individual client.

2.00 Classroom | Web Component

**NTR-549: Physiological Basis of Exercise and Nutrition**

An examination of the physiological and metabolic adaptations to exercise and physical conditioning. Special attention is given to the nutritional needs of the human body in response to specific types of exercise. Prerequisites: NTR522 and 542.

2.00-3.00 Classroom

**NTR-555: Population Studies in Nutrition Epidemiology**

Cross-sectional studies, longitudinal studies and clinical trials that focus on nutritional outcomes, and dietary patterns in relation to health outcomes of population groups. A major emphasis is placed on the findings garnered from major national surveys or trials. Some discussion on how findings have influenced nutrition policy, research and future prevention strategies.

2.00 Classroom | Web Component

**NTR-558: Dietetic Public Policy Initiatives and Advocacy**

This course introduces students to the public policy initiatives supported by the American Dietetic Association, reviews the policy formulation process, and provides opportunities to advocate for food and nutrition initiatives with elected governing officials. Students will monitor and actively advocate for public policy impacting food and nutrition.

1.00 Classroom

**NTR-560: Food & Nutrition Services Mgt**

The course will focus on advanced practices and principles related to management of food and nutrition services in health care operations.

3.00 Classroom | Web Component

**NTR-566: Seminar**

This course allows each student to research the literature related to a specific topic, present a summary and critical analysis of the literature supporting or refuting this topic, respond to questions, and lead a discussion among peers and faculty.

1.00 Classroom | Web Component

**NTR-572: Nutrition Communication**

The course will explore various theoretical perspectives on health-related behavior change and factors that influence behavior. Selection of strategies and design of interventions for nutrition communication with patients in inpatient and outpatient settings.

3.00 Classroom | Web Component

**NTR-582: Introduction to Research**

The course will focus on selection of a research problem and identification of designs and methodologies available to address the research problem. In addition, the course is designed to facilitate student interpretation and critical analysis of nutrition research literature.

3.00 Classroom | Web Component

**NTR-583: Food Systems Operations Analysis**

A study of significant food-systems management issues in the health care industry.

1.00 Classroom

**NTR-587: Thesis II**

Students continue the research process. Data collection and initial data analysis will be performed as defined in the research proposal. Prerequisite or corequisite: NTR-586C.

2.00 Classroom

**NTR-590: Special Topics**

In-depth examination of contemporary professional issues.

Content varies according to topic choices by instructor.

Prerequisite: instructor approval.

2.00-3.00 Classroom

**NTR-592: Individualized Clin Practice**

For students who want advanced experience in one or more areas of clinical nutrition practice. Limited to clinical nutrition students.

1.00-2.00 Online Only

**NTR-595: Scientific Rationale for Diet Reference Intakes (DRIs)**

This course familiarizes the student with scientific rationale for the Dietary Reference Intakes. The application of these dietary standards for populations, subgroups and individuals will be reviewed in both a historical context and one based on current literature.

2.00 Online Only

**NTR-598: Thesis**

Under faculty supervision, each student prepares and presents a research proposal. Emphasis is on a review of current research literature and appropriate research design and methodology in support of research objectives.

1.00-5.00 Classroom

**NTR-601: Theory & Measurement of Protein and Energy Needs Throughout Lifecycle**

Through lecture and group discussion, this seminar will review the history of principles associated with assessment of protein and energy needs throughout the lifecycle with an analysis of approaches appropriate for each application. Follow-up discussions will address the controversies surrounding protein needs during aging and certain disease states, i.e., AIDS, diabetes and congestive health failure.

3.00 Classroom

**NTR-602: Adv Principles Nutritional Epidemiology**

Through seminar discussion, this course continues the interpretation of epidemiological data regarding nutrition and disease. An exploration of the nature of variation in diet, correction for measurement error, issues in analysis and presentation of dietary data will be conducted. Examination of factor and cluster analyses used to describe dietary patterns of population subgroups will be conducted.

3.00 Classroom

**NTR-603: Advanced Vitamin Nutrition**

This course provides an in-depth examination of the understanding of vitamins with respect to current dietary reference intakes with an emphasis on critical analyses of the criterion/criteria of adequacy for specific age groups. Additional discussion and evidence will be assessed regarding the basis for tolerable upper limits for each vitamin.

3.00 Classroom

**NTR-604: Critical Topics: Clinical Nutrition**

This is an independent study in which the student, in collaboration with a faculty advisor, will choose a topic of interest. Focus of course will be on thorough analysis and application of the topic. Project/paper will be defined by student in association with faculty advisor.

3.00 Independent Study

**NTR-605: Advanced Mineral Metabolism**

This course provides an in-depth examination of the understanding of essential minerals with respect to current dietary reference intakes with an emphasis on critical analyses of the

criterion/criteria of adequacy for specific age groups. Additional discussion and evidence will be assessed regarding the basis for tolerable upper limits for each mineral.

3.00

### **NTR-606: Theory-Based Approaches to Promotion of Dietary Changes**

Introduction to the theories of health behavior, targets for change, and the methods for accomplishing dietary change in a variety of settings that characterize the diverse practice of nutrition and public health education — worksites, hospitals, ambulatory care settings, schools and communities.

3.00

### **NTR-607: Nutritional Response to Exercise**

An examination of the physiological and metabolic adaptations to exercise and physical conditioning. Special attention is given to the nutritional needs of the human body in response to specific types of exercise.

3.00

### **NTR-900: Independent Study**

Independent work on a selected topic. Each student will complete a literature search and written paper on a topic related to nutrition or food systems management. Arrangements are made with advisor prior to registration. Prerequisite: instructor approval.

1.00-12.00 Classroom

### **NTR-999: Continuous Enrollment**

The requirement for continuous enrollment applies to all students admitted or re-admitted for fall 2015 or later. Doctoral students should follow program requirements for continuous enrollment and degree completion. Students who have not completed their degree requirements are required to maintain continuous enrollment through the college of their program until the degree is earned. Continuous enrollment courses are graduate level courses set up by departments at Rush University for students who need to remain actively enrolled in the University while they finish their graduate work.

1.00 Continuous Enrollment

### **NUR-501: Theoretical Perspective/Nur Sci Practice**

As nursing evolves as a professional scientific discipline, the delineation of the scientific basis of nursing practice becomes increasingly important. The course provides students with the skills and knowledge to critique and evaluate theories needed to practice as an advanced practice nurse and understand how theory is the basis of research and practice. Selected non-nursing theories/models (e.g., developmental, physiological, health promotion, family, ethical and decision-making) are analyzed with

emphasis on their application and utility for nursing.

3.00 Online Only

### **NUR-510: Intro to Biostatistics**

This course is a basic introduction to the use of statistics for nurses in the field of health sciences. Topics include descriptive statistics, hypothesis tests (t-tests, chi-square, one-way analysis of variance and non-parametric tests) and linear regression. Students will be required to do statistical computation on the computer and must have SPSS available. Prerequisite: undergraduate statistics.

3.00-4.00 Classroom | Web Component

### **NUR-517: Informatics/Hlth Care Environments**

Introduces the student to health care informatics. Functional knowledge of theory and application of nursing informatics to improve patient care and support best practices is emphasized.

2.00 Online Only

### **NUR-521: Rsch Evidence-Based Nsg Prac**

This course emphasizes identification of specific clinical problems and the critique and synthesis of data sources to improve patient care and outcomes. Content includes accessing databases, critiquing individual and synthesis research studies, and establishing a scientific basis for changing practice and improving patient outcomes. Prerequisite: NUR-510, PVM-541 or equivalent.

Prerequisite or corequisite: NUR-501.

3.00 Online Only

### **NUR-522: Hlth Prom/Disease Prev Div Pop**

This course enables students to assess diverse populations and discuss the major biological and psychosocial health problems in terms of risk and prevention. Students will be able to describe broad constructs of health promotion and steps for initiating and evaluating programs that address health problems of national and local concern, including attention to cultural sensitivity.

3.00 Online Only

### **NUR-999: Continuous Enrollment**

The requirement for continuous enrollment applies to all students admitted or re-admitted for fall 2015 or later. Doctoral students should follow program requirements for continuous enrollment and degree completion. Students who have not completed their degree requirements are required to maintain continuous enrollment through the college of their program until the degree is earned. Continuous enrollment courses are graduate level courses set up by departments at Rush University for students who need to remain actively enrolled in the University while they finish their graduate work.

1.00 Continuous Enrollment

**OBG-703: Core Clerkship: Obstetrics & Gynecology**

This course in clinical obstetrics and gynecology familiarizes the student with the female reproductive tract. Emphasis is placed on routine obstetric and gynecologic health care maintenance and patient education. Identification and management of high-risk pregnancy, infertility and other endocrinopathies, gynecologic oncology, family planning psychosomatic disorders, and normal physiological changes in obstetrics and gynecology, as well as gynecologic surgery, are some of the areas covered in detail.

6.00 Clinical | Web Component

**OBG-731: Maternal-Fetal/High Risk**

Emphasis of this elective is on the identification and management of high-risk pregnancy. Ultrasonography, amniocentesis, medical and surgical complications of pregnancy, and operative obstetrics are some of the specific topics dealt with in detail. Students participate in antepartum management of hospitalized and ambulatory pregnant patients with high-risk conditions. Additional exposure to intrapartum problems is obtained through daily clinical teaching rounds and through follow-up of high-risk antepartum patients as they go through labor and delivery. Special experiences and involvement in genetic counseling, prenatal diagnosis and obstetric ultrasound are also available.

4.00 Clinical

**OBG-761: Gynecologic Oncology**

The purpose of the senior elective rotation is to expose the student directly to medical, surgical and research aspects of gynecologic cancer care, beyond the scope of what is achieved during short-term required rotations. The student functions as a partner in a team of attendings, residents and nurses.

2.00-4.00 Clinical

**OBG-767: Reproductive Endocrinology & Infertility**

This elective provides clinical experience in diagnostic evaluation and therapeutic management of couples with infertility and women with gynecologic endocrine problems. The students participate in routine diagnostic studies such as ovulation timing, postcoital tests and endocrine evaluation, and are introduced to the use of diagnostic and therapeutic procedures such as hysterosalpingography, ultrasonography, laparoscopy and hydro-tubation. The students scrub in on surgical reconstructive procedures involving the female reproductive system and participate in the activities of the in-vitro fertilization program. Laboratory experience in performing hormone radioimmunoassay, sperm separation and other procedures may also be included.

4.00 Clinical

**OBG-781: Research: Obstetrics & Gynecology**

A student may arrange research rotations individually with faculty at Rush. To receive credit for such a rotation, the person to whom the student will be responsible must write a letter describing the student's activities, responsibilities, amount of supervision, and the specific dates of the rotation. Students must submit a proposal to the Office of Clinical Curriculum for approval at least eight weeks before the rotation and must have written approval from the Office of Clinical Curriculum before beginning the rotation. Research rotations are scheduled for a minimum of four weeks of credit with the expectation that the full project will extend beyond the formal course duration. Depending on the proposal, the weeks of credit may or may not apply to the rule of eight-weeks' maximum credit for course work in a single subspecialty. This decision is at the discretion of the Office of Medical Student Programs.

4.00-8.00 Clinical

**OBG-7EI: Obstetrics**

A student may receive credit for an individually arranged elective with Rush faculty member. To receive credit for such a rotation, the person to whom the student will be responsible must write a letter stating the student's activities, responsibilities, amount of supervision, and specific dates of the rotation. The sponsoring faculty member must complete an evaluation of the student's performance at the conclusion of the elective. The student must submit a proposal to the Office of Clinical Curriculum for approval at least eight weeks before the rotation and must have written approval from the Assistant Dean of Clinical Curriculum before beginning the rotation. A student may receive four weeks of credit for an individually arranged elective. Credit for only one individually arranged elective will count toward graduation requirements.

4.00 Clinical

**OBG-EXM: OB/GYN Exam Remediation**

Remediation of OBG-703, Core Clerkship: Obstetrics-Gynecology through exam retake only.

2.00-8.00 Clinical

**OBG-REM: Obstetrics Clinical Remediation**

Remediation of core obstetrics and gynecology clinical weeks only. Student is not required to repeat the exam.

4.00 Clinical

**OCC-500: OT Orientation/Computer Appl**

This course familiarizes the occupational therapy student with general OT practice, curriculum and professional organizations. An additional component of this class is computer applications in areas related to scholarly and clinical components of occupational therapy.

2.00 Classroom | Web Component



**OCC-502: OT History and Philosophy**

Overview of the historical foundations of occupational therapy as they relate to the frames of reference and philosophical perspectives upon which the field is based.

4.00 Classroom | Web Component

**OCC-503: Foundational Theories in Occupational Therapy**

This course focuses on the prevalent theories of occupational therapy and the impact of theory on clinical practice. It introduces students to the difference between models of practice and frames of reference and how theory can be used to guide professional reasoning across the life span.

3.00 Classroom | Web Component

**OCC-504: Human Structure and Principles of Movement**

The primary goal of this course is to understand and evaluate the musculoskeletal system related to the skill components of occupational behavior. Biomechanical principles are presented with application to treatment in examples of occupational performance dysfunction. The student will learn and demonstrate the ability to give evaluation of posture, joint motion, muscle strength and body mechanics in selected activities.

4.00 Classroom | Web Component

**OCC-505: Clinical Foundations Skills**

The primary goal is for students to acquire basic clinical reasoning and practice skills as a foundation for their clinical placements and preceptorship at Rush University Medical Center and in the community. Pass/no pass grading only.

2.00 Classroom | Web Component

**OCC-506: Medical Conditions Seminar**

Selected medical, surgical, neurological and orthopedic conditions with emphasis on their etiology, treatment and prognosis will be explored through presentations and discussions.

3.00 Classroom | Web Component

**OCC-507: Psychosocial Dysfunction**

This course focuses on the functional abilities that are compromised by mental disorders and the side effects of pharmacotherapy. Interdisciplinary and occupational therapy interventions of mental disorders and chemical dependency are reviewed from the rehabilitation and occupational performance perspectives.

3.00 Classroom | Web Component

**OCC-508: Group Dynamics**

Didactic and experiential activities familiarize the student with basic principles underlying group process and group behavior. Clinical application of these principles in occupational therapy

are studied.

3.00 Classroom | Web Component

**OCC-509: Analysis of Occupational Performance**

Focus will be on the development of task analysis skills by applying logical thinking, critical analysis, problem solving and creativity. Students will demonstrate an ability to grade and adapt occupation-based tasks and purposeful activity including the interaction of performance areas, components and contexts through dynamic classroom exercises.

3.00 Classroom | Web Component

**OCC-510: Occupational Perspectives in Ethics and Multiculturalism**

This course will focus on understanding the many dimensions of multiculturalism so that the students may develop a basis from which to be sensitive to the uniqueness of individuals and increase awareness of cultural diversity. Various perspectives with regards to the cultural beliefs about health, illness and treatment and how these beliefs direct the formation of policy will also be explored. The cultural aspects of occupation will be discussed as well as the Cultural Competence Continuum. This course is also a supplement to the CHS Interprofessional Ethics in Health Care course. It will cover the AOTA code of ethics and its application to current practice.

2.00 Classroom | Web Component

**OCC-511: Occupational Interventions I**

Students learn to apply theories and conceptual models for restoration of occupational performance based on psychosocial principles. The occupational therapy planning and implementation process is introduced and developed through concurrent interface with the preclinical experience.

5.00 Classroom | Web Component

**OCC-512: Occupational Interventions II**

Students learn to apply theories and conceptual models for the restoration of occupational performance based on biomechanical and rehabilitative principles. The laboratory component includes splinting, wheelchair positioning experiences, and skill building in interventions and documentation. This course interfaces with the preclinical experience.

5.00 Classroom | Web Component

**OCC-513: Occupational Interventions III**

Students learn to apply theories and conceptual models for the restoration of occupational performance based on motor learning, cognitive-perceptual and rehabilitation models of practice. Student will become familiar with basic splinting principles and demonstrate skill in constructing static splints. The occupational therapy planning and implementation process is introduced

and developed through concurrent interface with the preclinical experience.

5.00 Classroom | Web Component

#### **OCC-514: OT Interventions IV**

Students learn to apply theories and conceptual models for the prevention, development, remediation and restoration of occupational performance as it relates to various pediatric populations.

4.00 Classroom | Web Component

#### **OCC-516: OT Interventions I Fieldwork**

This course will offer lecture and practical application opportunities to facilitate the development of professional behaviors required for successful fieldwork experiences. A supervised level I fieldwork experience related to the theory and application of occupational therapy in various practice settings will also be completed.

1.00 Classroom | Web Component | Fieldwork

#### **OCC-517: OT Interventions II Fieldwork**

This course will provide didactic and lab training of the use of physical agent modalities. In addition, this course focuses on development of professional behaviors to prepare students for fieldwork experiences. A supervised two-week field experience related to the theory and application of occupational therapy in the areas of biomechanical, rehabilitation and psychosocial principles will also be a component of this course.

1.00 Classroom | Web Component | Fieldwork

#### **OCC-518: OT Interventions III Fieldwork**

This course will provide didactic and lab training of the use of physical agent modalities and review of clinical skills necessary for successful completion of fieldwork experiences. In addition, this course focuses on development of professional behaviors to prepare students for fieldwork experiences. A supervised two-week field experience related to the theory and application of occupational therapy in the areas of biomechanical, rehabilitation and psychosocial principles will also be a component of the course.

1.00 Classroom | Web Component | Fieldwork

#### **OCC-525: Intro to Neuroscience**

Lecture-discussion formats cover the anatomy, functions, and selected lesions of the central and peripheral nervous systems. The student will learn the basic principles of organization, structure and function within the human nervous system and correlate specific clinical signs and symptoms to lesions within the central and peripheral nervous systems. Examples of application to medical care and occupational therapy are included in

selected assessment and treatment descriptions.

4.00 Classroom | Web Component

#### **OCC-530: OT Persp in Health & Wellness**

This course provides students with a holistic overview of the multifaceted dimensions of health and wellness across the life span. The six dimensions of health are explored within the context of occupational therapy. Students will also examine the influence of chronic disease on health, wellness and occupational performance.

2.00 Classroom | Web Component

#### **OCC-532: OT Perspectives in Technology**

Exposure to assistive technology with emphasis on

2.00 Classroom | Web Component

#### **OCC-536: Issues and Perspectives in Pediatric OT**

Issues and perspectives that are unique to the pediatric population are explored in this course. The course begins with foundational topics of occupational performance as it relates to various pediatric populations. To provide the students with clinical reasoning tools used in the occupational therapy process with children and their families, exploration of various frames of reference is then completed.

4.00 Classroom | Web Component

#### **OCC-537: Issues and Perspectives in Geriatric OT**

This course focuses on understanding the occupational therapist's role in working with the geriatric population, including service delivery systems, normal and pathological changes occurring as one ages, and specific interventions utilized by practitioners.

3.00 Classroom | Web Component

#### **OCC-538: Evaluation & Assessments**

Administration, scoring, interpretation and reporting of selected tests and informal assessments useful in an occupational therapy evaluation of clients of varying ages and disability will be examined in this course. Students will critically assess the merits of various instruments based upon the essential components of credibility, and will recognize the strengths and limitations of the instruments reviewed. Focus on the clinical reasoning used in the evaluation and re-evaluation process (i.e., selection of assessments, interpretation and application of results) will be explored and implemented. Ethical considerations required in evaluation process will also be addressed.

3.00 Classroom | Web Component

#### **OCC-543: Health Care Organizations**

This course reviews and identified the factors, fo

3.00 Classroom | Web Component

**OCC-544: Management Concepts for OT**

Students will examine administrative activities related to the effective delivery of OT services, including program planning, organization, control and leadership. Personnel management, communication and effective use of professional and nonprofessional staff, fiscal accountability, quality management, marketing/promotions, and resource allocation will be presented.

3.00 Classroom | Web Component

**OCC-580: Research Methods**

The focus of this course is on different types of research methods and design specific to quantitative research methodology. As part of this course, students read and interpret research literature to further their understanding of the application of these different methods to occupation-based research. The course includes a discussion of the contributions of different levels of research to developing experimental designs that allow evidence for the effect of therapeutic interventions in occupational therapy.

1.00 Classroom | Web Component

**OCC-581: Qualitative Rsch Method/Design**

This course provides students with an opportunity to explore and experience how both mixed methods and qualitative research methodologies are used in clinical and management outcome research. Emphasis will be on design, data collection, analysis and interpretation, as well as communication and presentation of findings.

2.00 Classroom | Web Component

**OCC-582: Quantitative Research: Evidence Base Practice**

This course provides students with an opportunity to explore and experience how quantitative research is used and interpreted for evidence-based outcomes research and clinical practices and research. Emphasis will be on the history and implementation of evidence-based practice (EBP) in occupational therapy through the professional organization and national health care leadership. Different research designs and their individual relationships to levels of evidence, as well as their contribution to internal and external validity of the research, are discussed. Methodologies for accruing evidence, such as systematically using a search engine, asking an appropriate EB clinical question and using a PICO, CAP and CAT format are integral to course learning. Team-based learning principles are used throughout the class.

3.00 Classroom | Web Component

**OCC-583: Graduate Research Project**

This course culminates the research sequence in the occupational therapy curriculum. It provides students with the

opportunities to explore and experience clinical research and the outcomes that guide practice. The clinically based beginning research investigator activities are conducted under the guidance of faculty in selected clinical programs. Emphasis will be on strategies related to collection, analysis, interpretation and reporting findings of data used to evaluate clinical practice. Small groups of students participate in weekly faculty-student seminars to explore the literature, activities and processes associated with the clinical outcomes studies culminating in a final report and presentation.

1.00-6.00 Classroom | Web Component

**OCC-584: Graduate Research Project I**

The three graduate research project courses (OCC-584, OCC-585 and OCC-586) are the culmination of the research sequence in the occupational therapy curriculum. They provide students with the opportunity to explore and experience clinical research and the outcomes during development of a master's project. Emphasis will be on strategies related to data collection, analysis, interpretation and data presentation. Small groups of students participate in weekly faculty-student seminars to explore the literature and to create and conduct a research project leading to dissemination of the week, which will be a final paper and presentation.

2.00 Classroom | Web Component

**OCC-585: Graduate Research Project II**

The three graduate research project courses (OCC-584, OCC-585 and OCC-586) are the culmination of the research sequence in the occupational therapy curriculum. They provide students with the opportunity to explore and experience clinical research and the outcomes during development of a master's project. Emphasis will be on strategies related to data collection, analysis, interpretation and data presentation. Small groups of students participate in weekly faculty-student seminars to explore the literature and to create and conduct a research project leading to dissemination of the week, which will be a final paper and presentation.

2.00 Classroom | Web Component

**OCC-586: Graduate Research Project III**

The three graduate research project courses (OCC-584, OCC-585 and OCC-586) are the culmination of the research sequence in the occupational therapy curriculum. They provide students with the opportunity to explore and experience clinical research and the outcomes during development of a master's project. Emphasis will be on strategies related to data collection, analysis, interpretation and data presentation. Small groups of students participate in weekly faculty-student seminars to

explore the literature and to create and conduct a research project leading to dissemination of the week, which will be a final paper and presentation.

2.00 Classroom | Web Component

### **OCC-590: Advanced Practice Seminar**

This course will expose students to advanced and emerging practice topics to foster interest in future professional growth opportunities. Professional development and competencies for varied specialized role and functions are also explored. This course will provide didactic lectures, invited speakers and intentionally designed field outings to deliver the course content.

3.00 Classroom | Web Component

### **OCC-595: Advanced Fieldwork I**

Supervised field experiences applying theoretical OT concepts on subjects having psychosocial or physical dysfunctions. Full-time student status is continued while engaged in fieldwork.

12.00 Fieldwork | Web Component

### **OCC-596: Advanced Fieldwork II**

Supervised field experiences applying theoretical OT concepts on subjects having psychosocial or physical dysfunctions. Full-time student status is continued while engaged in fieldwork.

12.00 Fieldwork | Web Component

### **OCC-598A: Preparation for Master's Thesis**

This course will introduce students to the master's thesis process. It will allow students to explore various topics in OT and to select research problems relevant to current occupational therapy practice for their thesis projects. Completion of the thesis option will require enrollment in at least nine credit hours between OCC-598A, OCC-598B and OCC-598C.

1.00 Classroom

### **OCC-598B: Master's Thesis Proposal**

The student will complete and defend preliminary thesis proposal. After revisions are made, the student will complete and submit IRB proposal. Completion of the thesis option will require enrollment in at least nine credit hours between OCC-598A, OCC-598B and OCC-598C.

1.00-7.00 Classroom

### **OCC-598C: Research Implementation**

The student will finalize preparation for research implementation, after which, implementation of the thesis project, based on the research proposal, will be completed and defended. Topic is to be relevant to current occupational therapy practice. Completion of the thesis option will require enrollment in at least nine credit hours between OCC-598A, OCC-598B, and OCC-598C.

1.00-7.00 Classroom

### **OCC-601: Theory of Skill Acq/App-Therapeutic Prac**

Through lecture and group discussion, this seminar will introduce the student to the principles associated with the cognitive motor task taxonomy and skill acquisition from child to adult. These principles and theories will provide the student with selected concepts with a framework drawn from motor learning research as applied to both typical and special populations. The objective of this course is the development of an understanding of the learning processes and psychological procedures that support both new learning and recovery of learning as applied to both unfamiliar and familiar skills.

3.00 Classroom

### **OCC-602: Theory and Principles of Motor Control and Processess of Skilled OCC Perform**

Through seminar discussion, this course introduces the student to the theoretical, methodological, selected neurophysiological and mechanical factors essential to understanding the processes of human skilled performance and motor control. Such processes underlie the acquisition of skills and will be framed within the perception action paradigm, the dynamical systems, perspective and the human information processing model.

3.00 Classroom | Web Component

### **OCC-603: Advanced Theories in Occupational Therapy**

This course provides an in-depth examination of the development, organization and application of the theories that guide occupational therapy practice. Each student will complete a thorough analysis of one theory that is used in his or her practice area.

3.00 Classroom | Web Component

### **OCC-604: Critical Topics in Occupational Therapy**

This is an independent study in which the student, in collaboration with a faculty advisor, will choose a topic of interest. The focus of the course will be on thorough analysis and application of the topic. A project will be defined by the student in association with the faculty advisor.

2.00 Classroom

### **OCC-605: Cognitive and Psychometric Behavior**

This course will critically examine human behavior, routines, habits and occupational performances and how these elements are influenced by mental processes. The course will be discussion intensive and will focus on questions, methods, research findings, theories and applications.

3.00 Classroom | Web Component

### **OCC-606: Generating Practice-Based Evidence in Occupational Therapy**

Introduction to the concepts of practice-based evidence and its role in the study and solution of OT problems, the improvement of health care, and the development of OT science. Specific quantitative and qualitative design and relevant advanced statistical analyses will be discussed.

3.00 Classroom | Web Component

### **OCC-900: Independent Study**

Creative project designed by the student and supervised by faculty.

1.00-12.00 Classroom

### **OCC-999: Continuous Enrollment**

The requirement for continuous enrollment applies to all students admitted or re-admitted for fall 2015 or later. Doctoral students should follow program requirements for continuous enrollment and degree completion. Students who have not completed their degree requirements are required to maintain continuous enrollment through the college of their program until the degree is earned. Continuous enrollment courses are graduate level courses set up by departments at Rush University for students who need to remain actively enrolled in the University while they finish their graduate work.

1.00 Continuous Enrollment

### **PAS-510: Human Anatomy**

This course will provide students with a thorough understanding of functional and applied human anatomy. Lectures, anatomic models and cadaver dissection will be utilized in teaching this course.

7.00 Classroom | Laboratory | Web Component

### **PAS-511: Human Physiology**

This course provides students with a comprehensive understanding of human physiologic function, regulation and integration as a basis for understanding the complex interaction of specific body systems and their relationship to disease.

6.00 Classroom | Web Component

### **PAS-512: History & Physical I**

This two-part course will prepare students to conduct effective medical interviews, use appropriate formatting to document and orally present clinical information, perform comprehensive physical examinations, and interpret examination findings. In this course, students will learn and practice interviewing techniques and interpersonal communication skills that result in effective exchange of information with patients, their families, and other

health care providers. Instruction on the components of the health history (chief complaint, present illness, past history, family history, personal and social history, and review of symptoms) is provided.

2.00 Classroom | Web Component

### **PAS-513: PA Prof Issues and Ethics**

This course introduces and familiarizes the student with the major issues of importance to the physician assistant (PA) profession. The course will cover the PA profession's history and evolution, the scope of PA practice in health care today, the requirements to attain and maintain professional certifications and licensure, as well as professional issues facing PA practice moving forward into the future. The course will also introduce students to foundational theories of health care ethics, ethical decision-making frameworks, and professional standards of ethical behavior.

2.00 Classroom | Web Component

### **PAS-514: Diagnostic Methods I**

A two-part course that discusses the essentials of ordering, interpreting and performing clinical studies used in the screening, diagnosis, management and monitoring of human disease. The course will cover topics related to clinical laboratory studies (hematology, chemistry, microbiology, urinalysis, molecular diagnostic techniques, histology, cytology, skin testing, sputum, and pleural fluid examination), blood gases. The course will discuss basic radiography and advanced imaging techniques (CT, MRI and PET/CT), the electrocardiogram, pulmonary function and stress testing, sonography, endoscopy techniques, and sleep laboratory. Using diagnostic testing in disease assessment and management, including generation of the differential diagnosis, is included throughout both courses.

2.00 Classroom | Web Component

### **PAS-520: Human Anatomy & Physiology II**

This two-part course provides a thorough foundation of functional and applied human anatomy and physiology as a basis for understanding the mechanisms of disease. Lectures, anatomic models and cadaver prosections will be utilized in teaching this course. The course will cover the central nervous, cardiovascular, respiratory system and lymphatic systems.

4.00 Classroom | Web Component

### **PAS-521: Clinical Medicine I**

This three-series course covers the essential principles of disease diagnosis and management for the major problems seen by PAs in clinical practice. Using an organ systems approach, lectures and case analysis will discuss the etiology, pathophysiology, diagnosis and management of disease. Lectures on patient assessment and management considerations will include the generation of a differential diagnosis, the role of pharmacotherapeutic and adjuvant

therapies, and appropriate patient referral issues. Instruction in important aspects of patient care will include considerations of prevention and long-term and rehabilitative care issues. Case studies will be used to teach problem solving and clinical decision-making using an evidence-based practice approach.  
5.00 Classroom | Web Component

### **PAS-522: History & Physical Examination II**

This two-part course will prepare students to conduct effective medical interviews, use appropriate formatting to document and orally present clinical information, perform comprehensive physical examinations, and interpret examination findings. This course will cover the performance and interpretation of the physical examination including the general survey of the patient, vital signs, skin, head and neck exam, thorax and lungs, cardiovascular and peripheral vascular systems, breasts and axillae, abdomen, genitalia and rectal exams, musculoskeletal system, and the mental status and nervous system exams. Special considerations for assessing infants and children and the obstetrical patient will also be covered.

3.00 Classroom | Laboratory | Web Component

### **PAS-530: Principles of Epidemiology & Pub Health**

This course will provide students with a general review of the public health practices and principles within the United States over the past century. The course will discuss how race, class, gender and immigration status play a role in access to health care for both individuals and populations. The course will provide students with paradigms beyond the biomedical model through which to view, research and explain public health. The course will discuss the identification of selected infectious pathogens, principles of epidemiology and public health practice in relation to disease management and mechanisms to control the spread of infectious disease.

2.00 Classroom | Web Component

### **PAS-531: Clinical Medicine II**

The PAS-521, -531 and -541 course series covers the essential principles of disease diagnosis and management for the major problems seen by PAs in clinical practice. Using an organ systems approach, lectures and case analysis will discuss the etiology, pathophysiology, diagnosis and management of disease. Lectures on patient assessment and management considerations will include the generation of a differential diagnosis, the role of pharmacotherapeutic and adjuvant therapies, and appropriate patient referral issues. Instruction in important aspects of patient care will include considerations of prevention and long-term and rehabilitative care issues. Case studies will be used to teach problem-solving and clinical decision-making

using an evidence-based practice approach. Clinical topics will include neurologic disease; cardiovascular disease; pulmonary and critical care medicine; gastrointestinal disease; diseases of the hepatobiliary system; renal disease; genitourinary disorders; hematological disease; oncologic disease; immunological disorders; metabolic disease; endocrine disease; rheumatology and diseases of bone and bone mineral metabolism; musculoskeletal and connective tissue disease; and dermatologic disease. An introduction to molecular medicine and the genetic and molecular mechanisms of health and disease will be discussed as well. Disorders related to specific populations, such as the aging patient and women's health, will be discussed and a systematic presentation of behavioral medicine and psychiatry to include the normal psychological development of across the life span is provided. Health promotion and disease prevention, diet and nutrition, detection and treatment of substance abuse will also be discussed.

5.00 Classroom | Web Component

### **PAS-533: Diagnostic Reasoning**

This course will introduce students to critical thinking skills essential to patient care and evaluation. Evidence-based practice will be introduced, and techniques for identifying the best evidence for clinical decision-making will be explored. Using case study analysis, clinical reasoning and decision-making in medical practice, patient assessment, management, care plan development, and health promotion and counseling as part of patient management will be discussed. Techniques for correct oral presentation of patient data to a supervising physician will also be covered.

2.00 Classroom | Web Component

### **PAS-534: Diagnostic Methods II**

A two-part course discussing the essentials of ordering, interpreting and performing clinical studies used in the screening, diagnosis, management and monitoring of human disease. Topics include clinical laboratory studies (hematology, chemistry, microbiology, urinalysis, molecular diagnostic techniques, histology, cytology, skin testing, sputum, and pleural fluid examination), blood gases, pulmonary function and stress testing, basic radiography and advanced imaging techniques (CT, MRI and PET/CT), sonography, the electrocardiogram, endoscopy techniques, nutritional assessment, and sleep laboratory. Advanced patient care monitoring techniques will be introduced to include EKG interpretation, oximetry, and hemodynamic monitoring, telemetry and the use of telemedicine techniques. Using diagnostic testing in disease assessment and management, including generation of the differential diagnosis, is included.

2.00 Classroom | Web Component

**PAS-535: Pediatrics**

Care of infants and children as seen in the primary care, acute care and emergency care setting will be discussed. A chronological approach is used to address preventive health care services, and the assessment and management of acute and chronic health problems found in infants, children and adolescents. Instruction is provided in the stages of normal psychosocial, physical and sexual development in children and adolescents. 3.00 Classroom | Web Component

**PAS-541: Clinical Medicine III**

This three-series course covers the essential principles of disease diagnosis and management for the major problems seen by PAs in clinical practice. Using an organ systems approach, lectures and case analysis, the course will discuss the etiology, pathophysiology, diagnosis and management of disease. Lectures on patient assessment and management considerations will include the generation of a differential diagnosis, the role of pharmacotherapeutic and adjuvant therapies, and appropriate patient referral issues. Instruction in important aspects of patient care will include considerations of prevention and long-term and rehabilitative care issues. Case studies will be used to teach problem solving and clinical decision-making using an evidence-based practice approach. Clinical topics will include neurologic disease; cardiovascular disease; pulmonary and critical care medicine; gastrointestinal disease; diseases of the hepatobiliary system; renal disease; genitourinary disorders; hematological disease; oncologic disease; immunological disorders; metabolic disease; endocrine disease; rheumatology and diseases of bone and bone mineral metabolism; musculoskeletal and connective tissue disease; and dermatologic disease. An introduction to molecular medicine and the genetic and molecular mechanisms of health and disease will be discussed as well. Disorders related to specific populations, such as the aging patient and women's health, will be discussed. A systematic presentation of behavioral medicine and psychiatry to include the normal psychological development of across the life span is provided. Health promotion and disease prevention, diet and nutrition, detection and treatment of substance abuse will also be discussed. 5.00 Classroom | Web Component

**PAS-542: Fundamentals of Surgery**

An introduction to surgical concepts needed for the physician assistant to provide care and assist the surgeon in major surgical areas, such as a day surgery unit or a hospital operating room. Lectures will discuss indications for surgery, and surgical concepts and techniques such as asepsis, anesthesia (general, local and conscious sedation) and wound management. Specific surgical techniques used for day surgery, elective surgery, emergency surgery, abdominal and thoracic surgery, minimally invasive

surgery, laparoscopic and arthroscopic surgery, microsurgery, robotic surgery, and organ transplant surgery will be described. Preoperative and postoperative patient assessment and management will be discussed.

3.00 Classroom | Web Component

**PAS-543: Psychosocial Medicine**

This course will explore the psychosocial aspects of patient care to help students develop their understanding of the impact that one's attitudes, biases and values have on interpersonal relationships, medical practice and patient communication. Discussions and presentations will cover the basic counseling and patient education skills necessary to help patients and families cope with illness and injury, and to modify their behaviors as needed to adhere to therapeutic management plans and improve outcomes. Discussions include issues of culture, faith, religion and sexuality, and the impact these forces have on attitudes towards health and patient counseling.

2.00 Classroom | Web Component

**PAS-545: Emergency Medicine**

An introduction to the diagnosis and treatment of disease states and conditions encountered in an emergency setting to include the response to illness, injury and stress. Basic and advanced life support, airway management and cardiopulmonary resuscitation; management of chest pain, acute cardiac events, congestive heart failure and pulmonary edema; shock, trauma and environmental injuries; endocrine emergencies; hematologic and oncologic emergencies; poisoning, abdominal disorders and gastrointestinal bleeding; asthma, COPD, pneumonia and acute respiratory failure; neurologic disease, altered mental status and behavioral emergencies; detection and treatment of substance abuse and drug overdose; eye, ear, nose and throat emergencies; anaphylaxis; infectious disease in the ED; common emergencies in infants and children; and disaster preparedness and response are some of the topics that will be covered.

3.00 Classroom | Web Component

**PAS-579: Master's Research Project**

Building on both the concepts taught in PAS-502 and on the evidence-based evaluation and application skills developed during the academic year of the program, each student will work with a faculty advisor to develop a clinical research question and then gather, analyze and critique relevant research literature related to the proposed question. The student will then prepare a master's length thesis paper that synthesizes the research literature to derive a clinically appropriate recommendation to the proposed clinical question. Finally, each student will defend the project in either an oral or poster presentation. Acceptable arenas for defense presentations will be either to the University

faculty or at an institutionally recognized research forum or conference.

2.00 Classroom | Web Component

### **PAS-580: Master's Research Project**

Building on concepts taught in CHS-503, Research and Statistical Methods, and on the evidence-based evaluation and application skills developed during the academic year of the program, each student will work with a faculty advisor to develop a clinical research question and then gather, analyze and critique relevant research literature related to the proposed question. The student will then prepare a master's length thesis paper that synthesizes the research literature to derive a clinically appropriate recommendation to the proposed clinical question. Finally, each student will defend the project in an oral presentation to the faculty, and submit to a peer forum for publication. Acceptable arenas for peer presentations will be to the University faculty, the PA Student Writing Competition, or other institutionally recognized research forum or conference.

2.00 Laboratory

### **PAS-581: Family Medicine**

During this experience in family medicine, students see patients, perform assessments and formulate care plans under the supervision of a physician, PA or advanced practice nurse. Comprehensive, longitudinal care is stressed. Common problems are reviewed and the responsibilities of a primary care physician assistant are observed and taught. Principles of health, wellness, prevention, recognition and treatment of substance abuse, and chronic disease management and chronic care are introduced in the clinical setting. Patient assessment and management are reviewed to include the generation of a differential diagnosis, oral presentation of patient data to the supervising physician and appropriate referral of patients.

4.00 Clinical

### **PAS-582: Internal Medicine**

This rotation introduces students to the practice of internal medicine. Through participating directly in patient care, students evaluate and manage a variety of patients and their health problems. Students further develop their skills in history taking and physical examination and review pathophysiologic principles as a guide to caring for patients. The rotation stresses the team approach to patient care, which allows students the opportunity to actively work toward the goals of quality patient care while reinforcing medical principles. Patient assessment and management are reviewed to include the generation of a differential diagnosis, oral presentation of patient data to the supervising physician and appropriate patient referral.

8.00 Clinical | Web Component

### **PAS-583: General Surgery**

The principles of preoperative and postoperative patient care, diagnosis of surgical disease, indications for surgery, recognition and response to surgical emergencies, and the physiological principles of surgery are presented. Technical training is provided through operating room experience. Participation in lectures and conferences provide additional didactic surgical learning experience.

8.00 Clinical

### **PAS-584: Women's Health/Obstetrics & Gynecology**

The student will learn the routine care, counseling and education, and health maintenance for obstetric and gynecologic patients. Identification and management considerations for gynecologic surgery, high-risk pregnancy, infertility, gynecologic oncology and family planning, including the normal psychological changes in obstetrics and gynecology are introduced.

4.00 Clinical

### **PAS-585: Pediatrics**

Principles and practice of care for the child from birth through adolescence through patient care experiences. Students will learn principles of basic pediatric assessment, diagnosis and treatment. Both inpatient and outpatient clinical facilities will be utilized. Seminars, conferences, lectures and case presentations will provide additional learning experiences. Pediatric patient assessment and management are reviewed to include the generation of a differential diagnosis, oral presentation of patient data to the supervising physician and appropriate referral of patients.

8.00 Clinical

### **PAS-586: Behavioral Health**

This rotation will provide students with clinical experience recognizing and managing patients with behavioral disorders. Emphasis is placed on understanding disorder diagnosis and the therapeutic modalities available for patient management, and recognizing significant biological, psychological and social/environmental factors contributing to the patient's illness.

4.00 Clinical

### **PAS-587: Long-Term Care/Geriatrics**

Supervised clinical practice experience is provided in the long-term and geriatric care setting, with a focus on rehabilitative medicine and the care of patients with chronic disease. Physical therapy, occupational therapy, and rehabilitation of patients with physical, behavioral and social disabilities is introduced.

4.0 Clinical



**PAS-588: Emergency Medicine**

Students will see patients in all areas of the emergency department under supervision of attending physicians and PAs. Students will perform histories and physical examinations, record their findings and discuss cases with attending physicians. Students will formulate diagnostic plans, bearing in mind the inherent time and cost factors unique to the ER setting. Patient assessment and management are reviewed to include the generation of a differential diagnosis, oral presentation of patient data to the supervising physician and appropriate referral of patients.

4.00 Clinical

**PAS-589: Elective Rotation**

Elective rotations may include general surgery, orthopedics, sports medicine, cardiothoracic surgery, vascular surgery, neurologic surgery, surgical oncology, otolaryngology, cardiology, and pulmonary and critical care medicine. Students may request other elective rotations, but these must be approved by the program director. This four-week rotation may provide a more in-depth study of the clinical practice area that the student may wish to pursue during phase III of the program.

4.00 Clinical

**PAS-590A: Internal Medicine Advanced Clinical Practice I**

This three-course sequence consists of nine months of rotations in a single focused area of advanced clinical practice. Students will select an area of clinical focus in one of the following areas of practice: orthopedics, cardiothoracic surgery, vascular surgery, emergency medicine, internal medicine, pulmonary and critical care medicine, urology, interventional radiology, neurosurgery, geriatrics, and physical medicine and rehabilitation. The advanced training rotations will generally require a minimum of 40 contact hours per week, and night call will generally be required. For the internal medicine advanced rotation, students will have an opportunity to concentrate on general practice skills to provide effective health care to adults. Emphasis is placed on providing comprehensive maintenance, as well as acute and chronic care health care across the adult life span.

10.00 Clinical

**PAS-590B: Pulmonary/Critical Care Medicine Advance Clinical Practice I**

This three-course sequence consists of nine months of rotations in a single focused area of advanced clinical practice. Students will select an area of clinical focus in one of the following areas of practice: orthopedics, cardiothoracic surgery, vascular surgery, emergency medicine, internal medicine, pulmonary and

critical care medicine, urology, interventional radiology, neurosurgery, geriatrics, and physical medicine and rehabilitation. The advanced training rotations will generally require a minimum of 40 contact hours per week, and night call will generally be required. For the pulmonary medicine and critical care advanced rotation, students will be exposed to the diagnosis and management of patients with a wide variety of pulmonary disorders. The essentials of pulmonary physiology, the use and interpretation of pulmonary function testing, and the provision of mechanical ventilatory support are emphasized. Critical care rotations include experiences in various intensive care unit settings.

10.00 Clinical

**PAS-590C: Emergency Medicine Adv Clin Practice I**

This three-course sequence consists of nine months of rotations in a single focused area of advanced clinical practice. Students will select an area of clinical focus in one of the following areas of practice: orthopedics, cardiothoracic surgery, vascular surgery, emergency medicine, internal medicine, pulmonary and critical care medicine, urology, interventional radiology, neurosurgery, geriatrics, and physical medicine and rehabilitation. The advanced training rotations will generally require a minimum of 40 contact hours per week, and night call will generally be required. For the emergency department advanced rotation, students will practice, under the supervision of a staff member, the diagnosis, treatment and follow-up care of patients suffering from both minor and major emergency problems.

10.00 Clinical

**PAS-590D: Vascular Surgery Adv Clin Prac I**

This three-course sequence consists of nine months of rotations in a single focused area of advanced clinical practice. Students will select an area of clinical focus in one of the following areas of practice: orthopedics, cardiothoracic surgery, vascular surgery, emergency medicine, internal medicine, pulmonary and critical care medicine, urology, interventional radiology, neurosurgery, geriatrics, and physical medicine and rehabilitation. The advanced training rotations will generally require a minimum of 40 contact hours per week, and night call will generally be required. For the surgical advanced rotation, students will review the principles of preoperative and postoperative care, diagnosis of surgical disease, indications for surgery, recognition and response to surgical emergencies, and the physiological principles of surgery. Students may choose general, thoracic, cardiac/cardiovascular, oncology, or vascular surgery for specialty rotations.

10.00 Clinical

**PAS-590E: Cardiothoracic Surgery Adv Clin Pract I**

This three-course sequence consists of nine months of rotations in a single focused area of advanced clinical practice. Students will select an area of clinical focus in one of the following areas of practice: orthopedics, cardiothoracic surgery, vascular surgery, emergency medicine, internal medicine, pulmonary and critical care medicine, urology, interventional radiology, neurosurgery, geriatrics, and physical medicine and rehabilitation. The advanced training rotations will generally require a minimum of 40 contact hours per week, and night call will generally be required. For the surgical advanced rotation, students will review the principles of preoperative and postoperative care, diagnosis of surgical disease, indications for surgery, recognition and response to surgical emergencies, and the physiological principles of surgery. Students may choose general, thoracic, cardiac/cardiovascular, oncology, or vascular surgery for specialty rotations.

10.00 Clinical

**PAS-590F: Orthopedics Adv Clin Pract I**

This three-course sequence consists of nine months of rotations in a single focused area of advanced clinical practice. Students will select an area of clinical focus in one of the following areas of practice: orthopedics, cardiothoracic surgery, vascular surgery, emergency medicine, internal medicine, pulmonary and critical care medicine, urology, interventional radiology, neurosurgery, geriatrics, and physical medicine and rehabilitation. The advanced training rotations will generally require a minimum of 40 contact hours per week, and night call will generally be required. For the orthopedic advanced rotation, students will acquire in-depth knowledge of the care and treatment of patients with musculoskeletal problems. Students will work with individual attending physicians and PAs in various areas of orthopedic practice, such as joint reconstructive service, foot-ankle-hand service, sports medicine service, pediatric and tumor service, or the spine service. Students will work in an office clinic setting, assist in surgery, and round on inpatients.

10.00 Clinical

**PAS-590G: Urology Adv Clin Pract I**

This three-course sequence consists of nine months of rotations in a single focused area of advanced clinical practice. Students will select an area of clinical focus in one of the following areas of practice: orthopedics, cardiothoracic surgery, vascular surgery, emergency medicine, internal medicine, pulmonary and critical care medicine, urology, interventional radiology, neurosurgery, geriatrics, and physical medicine and rehabilitation. The advanced training rotations will generally require a minimum

of 40 contact hours per week, and night call will generally be required. For the urology advanced rotation, students will gain experience in the diagnosis and management of disorders of the genitourinary system. The discipline crosses both medical and surgical management considerations, and emphasis is placed on the recognition of disease and gaining experience across a wide range of therapeutic modalities.

10.00 Clinical

**PAS-590H: Interv Radiol Adv Clin Pract I**

This three-course sequence consists of nine months of rotations in a single focused area of advanced clinical practice. Students will select an area of clinical focus in one of the following areas of practice: orthopedics, cardiothoracic surgery, vascular surgery, emergency medicine, internal medicine, pulmonary and critical care medicine, urology, interventional radiology, neurosurgery, geriatrics, and physical medicine and rehabilitation. The advanced training rotations will generally require a minimum of 40 contact hours per week, and night call will generally be required. For the interventional radiology advanced rotation, students will gain familiarity with managing a wide range of disorders using a range of radiographic techniques, including angioplasty, stents, atherectomy and thrombolysis. Interventional radiology involves using these techniques to treat disorders in various organs in combination with imaging techniques, such as fluoroscopy, CT, MRI and ultrasound.

10.00 Clinical

**PAS-590I: Neurosurgery Advanced Clinical Practice I**

This three-course sequence consists of nine months of rotations in a single focused area of advanced clinical practice. Students will select an area of clinical focus in one of the following areas of practice: orthopedics, cardiothoracic surgery, vascular surgery, emergency medicine, internal medicine, pulmonary and critical care medicine, urology, interventional radiology, neurosurgery, geriatrics, and physical medicine and rehabilitation. The advanced training rotations will generally require a minimum of 40 contact hours per week, and night call will generally be required. For the neurosurgery advanced rotation, students will gain familiarity with managing a wide range of neurologic disorders using a range of surgical techniques, including shunts, burr holes, and stereotactic techniques. Neurosurgery involves the use of these techniques to treat disorders of the central and peripheral nervous system and the spine, in combination with imaging techniques, such as fluoroscopy, CT and MRI.

10.00 Clinical

**PAS-590J: Geriatrics Advanced Clinical Practice I**

This three-course sequence consists of nine months of rotations in a single focused area of advanced clinical practice. Students will select an area of clinical focus in one of the following areas of practice: orthopedics, cardiothoracic surgery, vascular surgery, emergency medicine, internal medicine, pulmonary and critical care medicine, urology, interventional radiology, neurosurgery, geriatrics, and physical medicine and rehabilitation. The advanced training rotations will generally require a minimum of 40 contact hours per week, and night call will generally be required. For the geriatric advanced rotation, students will gain familiarity with managing a wide range of disorders seen in the geriatric population. Geriatric medicine involves treating all organ systems affected by aging, as well as disorders specific to the elderly patient population, such as polypharmacy, falls and depression. Care of the geriatric patient is often multidisciplinary, and participation in team activities and care planning is required.

10.00 Clinical

**PAS-590K: Physical Medicine and Rehabilitation Advanced Clinical Practice I**

This three-course sequence consists of nine months of rotations in a single focused area of advanced clinical practice. Students will select an area of clinical focus in one of the following areas of practice: orthopedics, cardiothoracic surgery, vascular surgery, emergency medicine, internal medicine, pulmonary and critical care medicine, urology, interventional radiology, neurosurgery, geriatrics, and physical medicine and rehabilitation. The advanced training rotations will generally require a minimum of 40 contact hours per week, and night call will generally be required. For the physical medicine and rehabilitation advanced rotation, students will gain familiarity with managing a wide range of disorders seen in the adult and pediatric rehabilitation population. Rehabilitation medicine involves diagnosis, evaluation and treatment of patients with cognitive and physical disabilities, as well as the management of co-morbidities and pain. Care of the PM and R patient is often multidisciplinary, and participation in team activities and care planning is required.

10.00 Clinical

**PAS-591A: Internal Medicine Adv Clin Prac II**

This three-course sequence consists of nine months of rotations in a single focused area of advanced clinical practice. Students will select an area of clinical focus in one of the following areas of practice: orthopedics, cardiothoracic surgery, vascular surgery, emergency medicine, internal medicine, pulmonary and critical care medicine, urology, interventional radiology, neurosurgery, geriatrics, and physical medicine and rehabilitation. The advanced training rotations will generally require a minimum of 40 contact hours per week, and night call will generally be required. In the

internal medicine advanced rotation, students will have an opportunity to concentrate on general practice skills to provide effective health care to adults. Emphasis is placed on providing comprehensive maintenance, as well as acute and chronic care, across the adult life span.

10.00 Clinical

**PAS-591B: Pulmonary and Critical Care Medicine Adv Clin Prac II**

This three-course sequence consists of nine months of rotations in a single focused area of advanced clinical practice. Students will select an area of clinical focus in one of the following areas of practice: orthopedics, cardiothoracic surgery, vascular surgery, emergency medicine, internal medicine, pulmonary and critical care medicine, urology, interventional radiology, neurosurgery, geriatrics, and physical medicine and rehabilitation. The advanced training rotations will generally require a minimum of 40 contact hours per week, and night call will generally be required. For the pulmonary medicine and critical care advanced rotation, students will be exposed to the diagnosis and management of patients with a wide variety of pulmonary disorders. The essentials of pulmonary physiology, the use and interpretation of pulmonary function testing, and the provision of mechanical ventilatory support are emphasized. Critical care rotations will be included.

10.00 Clinical

**PAS-591C: Emergency Med Adv CI Prac II**

This three-course sequence consists of nine months of rotations in a single focused area of advanced clinical practice. Students will select an area of clinical focus in one of the following areas of practice: orthopedics, cardiothoracic surgery, vascular surgery, emergency medicine, internal medicine, pulmonary and critical care medicine, urology, interventional radiology, neurosurgery, geriatrics, and physical medicine and rehabilitation. The advanced training rotations will generally require a minimum of 40 contact hours per week, and night call will generally be required. For the emergency department advanced rotation, students will practice, under the supervision of a staff member, the diagnosis, treatment and follow-up care of patients suffering from both minor and major emergency problems.

10.00 Clinical

**PAS-591D: Vascular Surg Adv CI Prac II**

This three-course sequence consists of nine months of rotations in a single focused area of advanced clinical practice. Students will select an area of clinical focus in one of the following areas of practice: orthopedics, cardiothoracic surgery, vascular surgery, emergency medicine, internal medicine, pulmonary and critical care medicine, urology, interventional radiology, neurosurgery,

geriatrics, and physical medicine and rehabilitation. The advanced training rotations will generally require a minimum of 40 contact hours per week, and night call will generally be required. For the surgical advanced rotation, students will review the principles of preoperative and postoperative care, diagnosis of surgical disease, indications for surgery, recognition and response to surgical emergencies, and the physiological principles of surgery. Students may choose general, thoracic, cardiac/cardiovascular, oncology, or vascular surgery for specialty rotations.

10.00 Clinical

#### **PAS-591E: Cardiothoracic Sur Adv Cl II**

This three-course sequence consists of nine months of rotations in a single focused area of advanced clinical practice. Students will select an area of clinical focus in one of the following areas of practice: orthopedics, cardiothoracic surgery, vascular surgery, emergency medicine, internal medicine, pulmonary and critical care medicine, urology, interventional radiology, neurosurgery, geriatrics, and physical medicine and rehabilitation. The advanced training rotations will generally require a minimum of 40 contact hours per week, and night call will generally be required. For the surgical advanced rotation, students will review the principles of preoperative and postoperative care, diagnosis of surgical disease, indications for surgery, recognition and response to surgical emergencies, and the physiological principles of surgery. Students may choose general, thoracic, cardiac/cardiovascular, oncology, or vascular surgery for specialty rotations.

10.00 Clinical

#### **PAS-591F: Orthopedics Adv Clin Pract II**

This three-course sequence consists of nine months of rotations in a single focused area of advanced clinical practice. Students will select an area of clinical focus in one of the following areas of practice: orthopedics, cardiothoracic surgery, vascular surgery, emergency medicine, internal medicine, pulmonary and critical care medicine, urology, interventional radiology, neurosurgery, geriatrics, and physical medicine and rehabilitation. The advanced training rotations will generally require a minimum of 40 contact hours per week, and night call will generally be required. For the orthopedic advanced rotation, students will acquire an in-depth knowledge of the care and treatment of patients with musculoskeletal problems. Students will work with individual attending physicians and PAs in various areas of orthopedic practice, such as joint reconstructive service, foot-ankle-hand service, sports medicine service, pediatric and tumor service, or the spine service. Students will work in an office clinic setting, assist in surgery and round on inpatients. Students are required to attend various clinical and resident education conferences. All students meet weekly with the course director for a student-only education conference.

Educational goals include review of functional anatomy, understanding of injury triage, and concepts of treatment.

10.00 Clinical

#### **PAS-591G: Urology Adv Clin Pract II**

This three-course sequence consists of nine months of rotations in a single focused area of advanced clinical practice. Students will select an area of clinical focus in one of the following areas of practice: orthopedics, cardiothoracic surgery, vascular surgery, emergency medicine, internal medicine, pulmonary and critical care medicine, urology, interventional radiology, neurosurgery, geriatrics, and physical medicine and rehabilitation. The advanced training rotations will generally require a minimum of 40 contact hours per week, and night call will generally be required. For the urology advanced rotation, students will gain experience in the diagnosis and management of disorders of the genitourinary system. The discipline crosses both medical and surgical management considerations, and emphasis is placed on the recognition of disease and gaining experience across a wide range of therapeutic modalities.

10.00 Clinical

#### **PAS-591H: Int Radiol Adv Clin Pract II**

This three-course sequence consists of nine months of rotations in a single focused area of advanced clinical practice. Students will select an area of clinical focus in one of the following areas of practice: orthopedics, cardiothoracic surgery, vascular surgery, emergency medicine, internal medicine, pulmonary and critical care medicine, urology, interventional radiology, neurosurgery, geriatrics, and physical medicine and rehabilitation. The advanced training rotations will generally require a minimum of 40 contact hours per week, and night call will generally be required. For the interventional radiology advanced rotation, students will gain familiarity with managing a wide range of disorders using a range of radiographic techniques, including angioplasty, stents, atherectomy and thrombolysis. Interventional radiology uses these techniques to treat disorders in various organs in combination with imaging techniques, such as fluoroscopy, CT, MRI and ultrasound.

10.00 Clinical

#### **PAS-591I: Neurosurgery Advanced Clinical Practice II**

This three-course sequence consists of nine months of rotations in a single focused area of advanced clinical practice. Students will select an area of clinical focus in one of the following areas of practice: orthopedics, cardiothoracic surgery, vascular surgery, emergency medicine, internal medicine, pulmonary and critical care medicine, urology, interventional radiology, neurosurgery, geriatrics, and physical medicine and rehabilitation.

The advanced training rotations will generally require a minimum of 40 contact hours per week, and night call will generally be required. For the neurosurgery advanced rotation, students will gain familiarity with managing a wide range of neurologic disorders using a range of surgical techniques, including shunts, burr holes and stereotactic techniques. Neurosurgery involves the use of these techniques to treat disorders of the central and peripheral nervous system and the spine, in combination with imaging techniques, such as fluoroscopy, CT and MRI.

10.00 Clinical

#### **PAS-591J: Geriatrics Advanced Clinical Practice II**

This three-course sequence consists of nine months of rotations in a single focused area of advanced clinical practice. Students will select an area of clinical focus in one of the following areas of practice: orthopedics, cardiothoracic surgery, vascular surgery, emergency medicine, internal medicine, pulmonary and critical care medicine, urology, interventional radiology, neurosurgery, geriatrics, and physical medicine and rehabilitation. The advanced training rotations will generally require a minimum of 40 contact hours per week, and night call will generally be required. For the geriatric advanced rotation, students will gain familiarity with managing a wide range of disorders seen in the geriatric population. Geriatric medicine involves treating all organ systems affected by aging, as well as disorders specific to the elderly patient population, such as polypharmacy, falls and depression. Care of the geriatric patient is often multidisciplinary, and participation in team activities and care planning is required.

10.00 Clinical

#### **PAS-591K: Physical Medicine and Rehabilitation Advanced Clinical Practice II**

This three-course sequence consists of nine months of rotations in a single focused area of advanced clinical practice. Students will select an area of clinical focus in one of the following areas of practice: orthopedics, cardiothoracic surgery, vascular surgery, emergency medicine, internal medicine, pulmonary and critical care medicine, urology, interventional radiology, neurosurgery, geriatrics, and physical medicine and rehabilitation. The advanced training rotations will generally require a minimum of 40 contact hours per week, and night call will generally be required. For the physical medicine and rehabilitation advanced rotation, students will gain familiarity with managing a wide range of disorders seen in the adult and pediatric rehabilitation population. Rehabilitation medicine involves diagnosis, evaluation and treatment of patients with cognitive and physical disabilities, as well as the management of co-morbidities and pain. Care of the PM and R patient is often multidisciplinary, and participation in team activities and care planning is required.

10.00 Clinical

#### **PAS-592A: Internal Med Adv Cl Prac III**

This three-course sequence consists of nine months of rotations in a single focused area of advanced clinical practice. Students will select an area of clinical focus in one of the following areas of practice: orthopedics, cardiothoracic surgery, vascular surgery, emergency medicine, internal medicine, pulmonary and critical care medicine, urology, interventional radiology, neurosurgery, geriatrics, and physical medicine and rehabilitation. The advanced training rotations will generally require a minimum of 40 contact hours per week, and night call will generally be required. In the internal medicine advanced rotation, students will have an opportunity to concentrate on general practice skills to provide effective health care to adults. Emphasis is placed on providing comprehensive maintenance, as well as acute and chronic care, across the adult life span.

10.00 Clinical

#### **PAS-592B: Pulm and CC Med Adv Clin Prac III**

This three-course sequence consists of nine months of rotations in a single focused area of advanced clinical practice. Students will select an area of clinical focus in one of the following areas of practice: orthopedics, cardiothoracic surgery, vascular surgery, emergency medicine, internal medicine, pulmonary and critical care medicine, urology, interventional radiology, neurosurgery, geriatrics, and physical medicine and rehabilitation. The advanced training rotations will generally require a minimum of 40 contact hours per week, and night call will generally be required. For the pulmonary medicine and critical care advanced rotation, students will be exposed to the diagnosis and management of patients with a wide variety of pulmonary disorders. The essentials of pulmonary physiology, the use and interpretation of pulmonary function testing, and the provision of mechanical ventilatory support are emphasized. Critical care rotations will be included.

10.00 Clinical

#### **PAS-592C: Emergency Med Adv Cl Prac III**

This three-course sequence consists of nine months of rotations in a single focused area of advanced clinical practice. Students will select an area of clinical focus in one of the following areas of practice: orthopedics, cardiothoracic surgery, vascular surgery, emergency medicine, internal medicine, pulmonary and critical care medicine, urology, interventional radiology, neurosurgery, geriatrics, and physical medicine and rehabilitation. The advanced training rotations will generally require a minimum of 40 contact hours per week, and night call will generally be required. For the emergency department advanced rotation, students will practice, under the supervision of a staff member, the diagnosis, treatment and follow-up care of patients suffering from both minor and major emergency problems.

10.00 Clinical

**PAS-592D: Vascular Surg Adv Cl Prac III**

This three-course sequence consists of nine months of rotations in a single focused area of advanced clinical practice. Students will select an area of clinical focus in one of the following areas of practice: orthopedics, cardiothoracic surgery, vascular surgery, emergency medicine, internal medicine, pulmonary and critical care medicine, urology, interventional radiology, neurosurgery, geriatrics, and physical medicine and rehabilitation. The advanced training rotations will generally require a minimum of 40 contact hours per week, and night call will generally be required. For the surgical advanced rotation, students will review the principles of preoperative and postoperative care, diagnosis of surgical disease, indications for surgery, recognition and response to surgical emergencies, and the physiological principles of surgery. Students may choose general, thoracic, cardiac/cardiovascular, oncology, or vascular surgery for specialty rotations.

10.00 Clinical

**PAS-592E: Cardiothoracic Sur Ad Cl III**

This three-course sequence consists of nine months of rotations in a single focused area of advanced clinical practice. Students will select an area of clinical focus in one of the following areas of practice: orthopedics, cardiothoracic surgery, vascular surgery, emergency medicine, internal medicine, pulmonary and critical care medicine, urology, interventional radiology, neurosurgery, geriatrics, and physical medicine and rehabilitation. The advanced training rotations will generally require a minimum of 40 contact hours per week, and night call will generally be required. For the surgical advanced rotation, students will review the principles of preoperative and postoperative care, diagnosis of surgical disease, indications for surgery, recognition and response to surgical emergencies, and the physiological principles of surgery. Students may choose general, thoracic, cardiac/cardiovascular, oncology, or vascular surgery for specialty rotations.

10.00 Clinical

**PAS-592F: Orthopedics Adv Clin Prac III**

This three-course sequence consists of nine months of rotations in a single focused area of advanced clinical practice. Students will select an area of clinical focus in one of the following areas of practice: orthopedics, cardiothoracic surgery, vascular surgery, emergency medicine, internal medicine, pulmonary and critical care medicine, urology, interventional radiology, neurosurgery, geriatrics, and physical medicine and rehabilitation. The advanced training rotations will generally require a minimum of 40 contact hours per week, and night call will generally be required. For the orthopedic advanced rotation, students will

acquire an in-depth knowledge of the care and treatment of patients with musculoskeletal problems. Students will work with individual attending physicians and PAs in various areas of orthopedic practice, such as joint reconstructive service, foot-ankle-hand service, sports medicine service, pediatric and tumor service, or the spine service. Students will work in an office clinic setting, assist in surgery, and round on inpatients. Students are required to attend various clinical and resident education conferences. All students meet weekly with the course director for a student-only education conference. Educational goals include review of functional anatomy, understanding of injury triage, and concepts of treatment.

10.00 Clinical

**PAS-592G: Urology Adv Clin Pract III**

This three-course sequence consists of nine months of rotations in a single focused area of advanced clinical practice. Students will select an area of clinical focus in one of the following areas of practice: orthopedics, cardiothoracic surgery, vascular surgery, emergency medicine, internal medicine, pulmonary and critical care medicine, urology, interventional radiology, neurosurgery, geriatrics, and physical medicine and rehabilitation. The advanced training rotations will generally require a minimum of 40 contact hours per week, and night call will generally be required. For the urology advanced rotation, students will gain experience in the diagnosis and management of disorders of the genitourinary system. The discipline crosses both medical and surgical management considerations, and emphasis is placed on the recognition of disease and gaining experience across a wide range of therapeutic modalities.

10.00 Clinical

**PAS-592H: Int Radiol Adv Clin Pract III**

This three-course sequence consists of nine months of rotations in a single focused area of advanced clinical practice. Students will select an area of clinical focus in one of the following areas of practice: orthopedics, cardiothoracic surgery, vascular surgery, emergency medicine, internal medicine, pulmonary and critical care medicine, urology, interventional radiology, neurosurgery, geriatrics, and physical medicine and rehabilitation. The advanced training rotations will generally require a minimum of 40 contact hours per week, and night call will generally be required. For the interventional radiology advanced rotation, students will gain familiarity with managing a wide range of disorders using a range of radiographic techniques, including angioplasty, stents, atherectomy and thrombolysis. Interventional radiology uses these techniques to treat disorders in various organs in combination with imaging techniques, such as fluoroscopy, CT, MRI and ultrasound.

10.00 Clinical

**PAS-592I: Neurosurgery Advanced Clinical Practice III**

This three-course sequence consists of nine months of rotations in a single focused area of advanced clinical practice. Students will select an area of clinical focus in one of the following areas of practice: orthopedics, cardiothoracic surgery, vascular surgery, emergency medicine, internal medicine, pulmonary and critical care medicine, urology, interventional radiology, neurosurgery, geriatrics, and physical medicine and rehabilitation. The advanced training rotations will generally require a minimum of 40 contact hours per week, and night call will generally be required. For the neurosurgery advanced rotation, students will gain familiarity with managing a wide range of neurologic disorders using a range of surgical techniques, including shunts, burr holes and stereotactic techniques. Neurosurgery involves the use of these techniques to treat disorders of the central and peripheral nervous system and the spine, in combination with imaging techniques, such as fluoroscopy, CT and MRI.

10.00 Clinical

**PAS-592J: Geriatrics Advanced Clinical Practice III**

This three-course sequence consists of nine months of rotations in a single focused area of advanced clinical practice. Students will select an area of clinical focus in one of the following areas of practice: orthopedics, cardiothoracic surgery, vascular surgery, emergency medicine, internal medicine, pulmonary and critical care medicine, urology, interventional radiology, neurosurgery, geriatrics, and physical medicine and rehabilitation. The advanced training rotations will generally require a minimum of 40 contact hours per week, and night call will generally be required. For the geriatric advanced rotation, students will gain familiarity with managing a wide range of disorders seen in the geriatric population. Geriatric medicine involves treating all organ systems affected by aging, as well as disorders specific to the elderly patient population, such as polypharmacy, falls and depression. Care of the geriatric patient is often multidisciplinary, and participation in team activities and care planning is required.

10.00 Clinical

**PAS-592K: Physical Medicine and Rehabilitation  
Advanced Clinical Practice III**

This three-course sequence consists of nine months of rotations in a single focused area of advanced clinical practice. Students will select an area of clinical focus in one of the following areas of practice: orthopedics, cardiothoracic surgery, vascular surgery, emergency medicine, internal medicine, pulmonary and critical care medicine, urology, interventional radiology, neurosurgery, geriatrics, and physical medicine and rehabilitation. The advanced training rotations will generally require a minimum of 40 contact hours per week, and night call will generally be required. For

the physical medicine and rehabilitation advanced rotation, students will gain familiarity with managing a wide range of disorders seen in the adult and pediatric rehabilitation population. Rehabilitation medicine involves diagnosis evaluation and treatment of patients with cognitive and physical disabilities, as well as the management of co-morbidities and pain. Care of the PM and R patient is often multidisciplinary, and participation in team activities and care planning is required.

10.00 Clinical

**PAS-593: Advanced Clinical Practice I**

This course is part one of a three-part series in an advanced area of PA practice. This course consists of a 10-week rotation in a single, focused area of advanced PA clinical practice. Students will select from several areas of medicine or surgery as they are available. Availability of advanced practice clinical areas and locations are determined by the Director of Clinical Education. Advanced clinical rotations will generally require a minimum of 40 contact hours per week. Advanced clinical practice students will acquire an in-depth knowledge of the care and treatment of patients in a single focused area while maintaining their study in general, primary care medicine. Students are expected to work with all members of the health care team and will be supervised by physicians, PAs or APN preceptors at all times. Students may work in an outpatient setting, inpatient setting, ER or operating room. Students are required to attend various clinical education conferences as determined by the clinical preceptor. Educational goals include mastering of history and exam skills, cost-effective and safe laboratory and radiology choices, detailed differential diagnosis, and independent formulation of assessments and plans. Student may be expected to work days, nights and/or weekends. Call may be required.

10.00 Classroom

**PAS-594: Advanced Clinical Practice II**

This course is part two of a three-part series in an advanced area of PA practice. This course consists of a 10-week rotation in a single, focused area of advanced PA clinical practice. Students will select from several areas of medicine or surgery as they are available. Availability of advanced practice clinical areas and locations are determined by the Director of Clinical Education. Advanced clinical rotations will generally require a minimum of 40 contact hours per week. Advanced clinical practice students will acquire an in-depth knowledge of the care and treatment of patients in a single focused area while maintaining their study in general, primary care medicine. Students are expected to work with all members of the health care team and will be supervised by physicians, PAs or APN preceptors at all times. Students may work in an outpatient setting, inpatient setting, ER or operating room. Students are required to attend various clinical education

conferences as determined by the clinical preceptor. Educational goals include mastering of history and exam skills, cost-effective and safe laboratory and radiology choices, detailed differential diagnosis, and independent formulation of assessments and plans. Student may be expected to work days, nights and/or weekends. Call may be required.

10.00 Classroom

### **PAS-595: Advanced Clinical Practice III**

This course is part three of a three-part series in an advanced area of PA practice. This course consists of a 10-week rotation in a single, focused area of advanced PA clinical practice. Students will select from several areas of medicine or surgery as they are available. Availability of advanced practice clinical areas and locations are determined by the Director of Clinical Education. Advanced clinical rotations will generally require a minimum of 40 contact hours per week. Advanced clinical practice students will acquire an in-depth knowledge of the care and treatment of patients in a single focused area while maintaining their study in general, primary care medicine. Students are expected to work with all members of the health care team and will be supervised by physicians, PAs or APN preceptors at all times. Students may work in an outpatient setting, inpatient setting, ER or operating room. Students are required to attend various clinical education conferences as determined by the clinical preceptor. Educational goals include mastering of history and exam skills, cost-effective and safe laboratory and radiology choices, detailed differential diagnosis, and independent formulation of assessments and plans. Student may be expected to work days, nights and/or weekends. Call may be required.

10.00 Classroom

### **PAS-601: Current Issues in Physician Assistant Practice**

This seminar course will provide an in-depth examination of professional practice issues of relevance to the PA profession. The impact of health care reform, insurance reimbursement, professional lobbying, organizational management, and professional development trends will be discussed.

3.00

### **PAS-602: Adv Leadership for PA**

This course will provide a critical examination of topics related to PA leadership. The history of various PA professional organizations and the role of leadership in the advancement of the profession will be discussed. Students will engage in research and develop projects to test leadership theories and their impact on future PA leaders and the profession.

4.00 Classroom

### **PAS-603: Advanced Topics in Physician Assistant Education**

This seminar course will explore educational theory and methods specifically as it relates to PA education. The relationship between adult education theory, assessment modalities, learning outcomes assessment, and student satisfaction will be discussed. The course will also discuss issues related to the application of learning theory to the unique demands of the intensive PA training model to improve learning outcomes and advance PA practice.

3.00

### **PAS-604: Evidence-Based Topics in Physician Assistant Practice**

Advanced theories of evidence-based medicine practice and its application to PA clinical decision-making will be discussed. Students will engage in in-depth discussions of research methodology, study design, outcomes assessment, and the impact of research on clinical decision-making.

3.00

### **PAS-605: Topics in Physician Assistant Practice**

This independent study course will provide the student with an opportunity to collaborate with a faculty mentor to select a topic of interest for research analysis and application to PA clinical or professional practice. The scope of the project will be defined by the student under the guidance of the faculty mentor.

3.00 Classroom

### **PAS-999: Continuous Enrollment**

The requirement for continuous enrollment applies to all students admitted or re-admitted for fall 2015 or later. Doctoral students should follow program requirements for continuous enrollment and degree completion. Students who have not completed their degree requirements are required to maintain continuous enrollment through the college of their program until the degree is earned. Continuous enrollment courses are graduate level courses set up by departments at Rush University for students who need to remain actively enrolled in the University while they finish their graduate work.

1.00 Continuous Enrollment

### **PAS-CLIN1: Clinical Curriculum Enrollment**

This course acts as place holder for billing purposes.

1.00 Placeholder | Web Component

### **PAS-CLIN2: Clin Curriculum Enrollment**

This course acts as place holder for billing purposes.

1.00 Placeholder



**PED-701: Core Clerkship: Pediatrics**

The principles and practice of care of the patient from birth through adolescence are studied through direct patient contact. The primary objective is to provide an opportunity for students to become proficient in the clinical basis of pediatric diagnosis. The clinical facilities of both the inpatient and outpatient services of Rush University Medical Center, John H. Stroger, Jr. Hospital of Cook County, and private physicians' offices are utilized. Regular conferences, lectures and case presentations provide additional learning experiences. Students will have an eight-week assignment to pediatrics, which includes rotations in inpatient and ambulatory settings, and the nursery. Ambulatory activities constitute 50% of the clerkship. Night call is approximately every fourth night including weekends.

8.00 Clinical | Web Component

**PED-710: Pediatric Subinternship**

The subintern will function in a capacity similar to an intern on one of two pediatric ward services. Senior residents and faculty physicians will provide supervision. This experience is only offered to fourth-year students. The students are expected to take call every fourth night. The four-week subinternship rotation is taken during the fourth year. This clerkship will be scheduled during the elective lottery, which takes place in the spring of the M3 year.

4.00 Clinical

**PED-711: Pediatric Cardiology**

Ambulatory experience can be obtained in the care of children with congenital and acquired heart disease, as well as assessment of innocent heart murmurs. Clinical history and physical findings are correlated with X-ray, electrocardiographic, echocardiographic, and cardiac catheterization data. Didactic sessions are offered once a week, which include learning the interpretation of ECG and chest X-ray.

4.00 Clinical

**PED-711X: Pediatric Cardiology-Away**

Ambulatory experience can be obtained in caring for children with congenital and acquired heart disease, as well as assessment of innocent heart murmurs. Clinical history and physical findings are correlated with X-ray and electrocardiographic, echocardiographic, and cardiac catheterization data. Didactic sessions are offered once a week, which include learning the interpretation of ECG and chest X-ray. Prerequisite: PED-701.

4.00 Clinical

**PED-715: Chronic Diseases in Children**

Based at Shriner's Hospital for Crippled Children, students will participate in an active inpatient and outpatient program that

provides referral services to children with musculoskeletal disorders, neural tube defects and other chronic diseases.

4.00 Clinical

**PED-716: Pediatric Ambulatory Care**

This rotation offers students the opportunity to participate in primary care pediatrics in a variety of settings. A hands-on approach with individual attending supervision is emphasized. The student will follow private and clinic patients for both health maintenance and acute and chronic medical problems. Students generate their goals and learning experiences for the rotation. The elective will be geared toward satisfying the student's individual needs and interests. NOTE: Students must attend Pediatric Grand Rounds on Tuesdays from 8 to 9 a.m.

4.00 Clinical

**PED-716X: Pediatric Ambulatory Care-Away**

This rotation offers students the opportunity to participate in primary care pediatrics in a variety of settings. A hands-on approach with individual attending supervision is emphasized. The student will follow private and clinic patients for both health maintenance and acute and chronic medical problems. Other settings available for student participation include Misericordia (chronic illnesses), the Rush General Care Nursery, and multiple homeless shelters. Students generate their goals and learning experiences for the rotation. The elective will be geared toward satisfying the student's individual needs and interests.

Prerequisite: PED-701.

4.00 Clinical

**PED-721: Pediatric Endocrinology**

This rotation provides students with a problem-oriented approach to pediatric endocrinology. All aspects of pediatric endocrinology are covered, but particular emphasis is placed on the outpatient assessment of the normal and abnormal aspects of growth and pubertal development. The elective aims to highlight the role of the primary care provider in the initial evaluation of pediatric patients with a suspected endocrine disorder and to provide the student with an introduction to specialized diagnostic endocrine testing and management of the endocrine patient. The student will be expected to evaluate any inpatient consult which presents during the rotation. The student will be provided with up to eight endocrine case exercises with questions for review, as well as other didactic material. The student will be expected to present an endocrine topic researched from the literature for 15 to 20 minutes at the end of the rotation.

4.00 Clinical

**PED-724: Pediatric Intensive Care Unit**

This course will expose the student to the type of care provided to medical, subspecialty and surgical pediatrics patients who require higher acuity of care. The student will be part of a medical team comprised of residents of varying experience levels. The student will be expected to perform at a subintern level with regard to expectations and work requirements. By the end of the rotation, the student will be expected to learn the following: 1) the initial evaluation and stabilization of a critically ill patient; 2) pediatric resuscitation techniques; 3) basic ventilator management; and 4) procedures such as intubation and central line placement.

4.00 Clinical

**PED-726: Pediatric Nephrology**

This rotation will provide the student with experience in the care of children with renal problems in hospital and ambulatory settings. The emphasis in this clerkship is on participation on an active consulting service with concentration on normal and abnormal renal functions, electrolyte imbalances, proteinuria, hematuria, hypertension, urinary tract infections, and developmental diseases of the kidney.

4.00 Clinical

**PED-726X: Pediatric Nephrology-Away**

Experience in the care of children with renal problems in hospitalized and ambulatory patients. Emphasis is on participation on an active consulting service with concentration on normal and abnormal renal functions, electrolyte imbalances, proteinuria, hematuria, hypertension, urinary tract infection, and developmental diseases of the kidney. Prerequisite: PED-701.

4.00 Clinical

**PED-731: Pediatric Radiology**

Students observe radiologic procedures and participate in analyses, reviews and general radiology conferences. Analysis involves assessment of appropriateness of an examination, detection of pertinent findings, interpretation of findings, and synthesis of interpretation and clinical presentation into reasonable diagnoses.

4.00 Clinical

**PED-732: Pediatric GI/Nutrition**

This clerkship will provide a core set of didactic materials and discussions. Emphasis will be on understanding the pathophysiology of, and basic approach to, common clinical problems. The nutrition component will include fundamentals of enteral and total parenteral nutrition management. The student will be expected to perform a literature review of one or more topics.

2.00-4.00 Clinical

**PED-741: Pediatric Allergy/Immunology**

This elective teaches the clinical approach to problems of allergy, other immune-mediated diseases, and immunodeficiency in both children and adults. Diagnosis and treatment of commonly encountered IgE-mediated diseases (allergic rhinitis, asthma, eczema and urticaria), as well as connective tissue diseases and immunodeficiency syndromes are explained. Rotators are responsible for following medicine and pediatric inpatient consults at RUMC and Stroger Hospital and report to the attending physician-on-service for daily rounds. Allergy/immunology outpatient care is demonstrated at Fantus Clinic (part of the Stroger Hospital Ambulatory Care Network) as well as the allergy/immunology office at Rush University Medical Center. Rotators also learn about skin testing techniques, spirometry and immunological tests performed by the Rush Medical Laboratory. Teaching (basic science or clinical lecture, journal club, research and chart review) conferences are held at Rush on Friday mornings. The attending physician-on-service or fellow-on-service also teach on daily rounds. A pretest and final quiz are given to measure achievement as a basis for evaluation.

4.00 Clinical

**PED-742: Pediatric Hematology/Oncology**

This course provides an introduction to the care of children with hematologic disorders and malignancies of childhood. A core lecture series is presented during the elective, as well as a review of blood and marrow morphology. Students will participate in the evaluation of new patients as well as established patients. Ward rounds are made daily for inpatients on the service and consultations. Outpatient clinics are held five days a week. Several multidisciplinary conferences are held weekly. A course syllabus will be provided. Students will complete the elective by taking an oral and written ("open-book") examination.

4.00 Clinical

**PED-742X: Pediatric Hematology/Oncology-Away**

This course provides an introduction to the care of children with a variety of hematologic disorders or malignancies of childhood. A core lecture series is presented, as well as a review of blood and marrow morphology. Students participate in the evaluation of new as well as established patients. Ward rounds are made daily for inpatients on the service and consultations. Outpatient clinics are held five days a week. Prerequisite: PED-701.

4.00 Clinical

**PED-746: Pediatric Infectious Disease**

This elective clerkship focuses on clinical and laboratory evaluation of pediatric infections. An active inpatient consultation service provides ample opportunity for patient evaluation and follow-up. Correct use of laboratory facilities is stressed. Pathophysiology of infectious diseases, differential diagnosis, and antibiotic use are discussed on daily ward rounds and weekly conferences. The student will see outpatients with diagnostic problems as well as attend specialized clinics for children with HIV infection, tuberculosis and congenital toxoplasmosis.  
4.00 Clinical

**PED-746X: Pediatric Infectious Disease-Away**

The focus is on clinical and laboratory evaluation of pediatric infections. An active consultation service provides ample opportunity for patient evaluation and follow-up. Correct use of laboratory facilities is stressed. Pathophysiology of infectious diseases, differential diagnosis, and antibiotic use are discussed on daily ward rounds and weekly conferences. Students see outpatients with diagnostic problems and attend specialized clinics for children with HIV infection, tuberculosis and congenital toxoplasmosis. Prerequisite: PED-701.  
4.00 Clinical

**PED-751: Pediatric Neurology**

On this clerkship, fourth-year medical students will become acquainted with the broad scope of pediatric neurology, with an emphasis on the basic examination of children with neurologic and developmental problems. Basic interpretation of common neurodiagnostic studies in the course of inpatient rounds and outpatient clinics will be emphasized. The student will become familiar with common diagnoses such as epilepsy, migraine, autism, muscular dystrophy, "developmental delay," tics and attention deficit disorder.  
4.00 Clinical

**PED-772: Pediatric Respiratory Medicine**

The objectives for this clerkship are to expose the medical student to all facets of clinical practice involving pediatric patients with respiratory disease.  
4.00 Clinical

**PED-781: Research in Pediatrics**

Students may arrange research rotations individually with faculty at Rush. To receive credit for such a rotation, the person to whom the student will be responsible must write a letter describing the student's activities, responsibilities, amount of supervision, and the specific dates of the rotation. A student must submit a proposal to the Office of Clinical Curriculum for approval at least eight weeks before the rotation and must have

written approval from the Office of Clinical Curriculum before beginning the rotation. Research rotations are scheduled for a minimum of four weeks of credit with the expectation that the full project will extend beyond the formal course duration. Depending on the proposal, the weeks of credit may or may not apply to the rule of eight-weeks' maximum credit for course work in a single subspecialty. This decision is at the discretion of the Office of Medical Student Programs.  
4.00-8.00 Clinical

**PED-793: Neonatal Intensive Care Unit**

This course is an introduction to the care of sick and premature newborn infants in the intensive care setting, with emphasis on the normal sequence of events in the birth-recovery period, disruptions to that sequence, and adaptation of the baby during the postpartum period. Care of the most common complications occurring at this age will be emphasized. Visiting students are eligible for four-week rotations only.  
2.00-4.00 Clinical

**PED-794: Adolescent & Young Adult Medicine**

This course provides direct experience in the care of hospitalized and outpatient adolescents and young adults. Hospitalized patients are seen at Rush University Medical Center. Outpatients are seen at a variety of sites, including the Pediatric Ambulatory Care Center at Rush, the Teen/Family Planning Clinic in Evergreen Park, the Joliet and Chicago Job Corps Center and the Orr High School Clinic.  
4.00 Clinical

**PED-7E1: Pediatrics**

4.00 Clinical

**PED-804: Adolescent & Young Adult Medicine**

This course provides experience in outpatient settings, including a hospital-based adolescent clinic, HIV adolescent specialty clinic, the juvenile detention center, and school-based clinics. In addition, students are required to do short presentations and to participate in didactic sessions and a journal club that is adolescent-focused.  
2.00-4.00 Clinical

**PED-842: Pediatric Hematology/ Oncology**

This course provides an introduction to the care of children with hematologic disorders and malignancies of childhood. A core lecture series is presented during the elective, as well as a review of blood and marrow morphology. Students will participate in the evaluation of new patients as well as established patients. Ward rounds are made daily for inpatients on the service and consultations. Outpatient clinics are held two days a week.

Several multidisciplinary conferences are held weekly. A course syllabus will be provided.

4.00 Clinical

### **PED-861: Child Abuse and Neglect**

Students doing this elective will work one-on-one with the attending physicians in the Division of Child Protective Services at John H. Stroger, Jr. Hospital of Cook County, and will actively participate in the work-up, management and follow-up care of children suspected of being maltreated. Students can expect to learn medical aspects of physical abuse, sexual abuse, and neglect (including failure to thrive). Students will also have the opportunity to observe and participate in the developmental evaluations of patients and in the psychosocial evaluations of patients and their families. Students also attend and provide care in the weekly comprehensive follow-up clinic for abused and neglected children, and will also attend the Medical Clinic at the Children's Advocacy Center. In addition to participating in the clinical work-up of suspected abuse/neglect, students will learn about the role of the physician as advocate for the child within the Child Welfare and Legal Systems and will learn about the physician's role in coordinating multidisciplinary care for high-risk patients and their families. There is required reading for the elective, and students will be expected to attend lectures and present cases during rounds and weekly multidisciplinary patient staffing.

4.00 Clinical

### **PED-EXM: Pediatrics Exam Remediation**

Remediation of core pediatrics exam only.

4.00 Clinical

### **PED-REM: Pediatrics Clinical Remediation**

Remediation of pediatrics clinical weeks only. The student is not required to repeat the exam.

4.00 Clinical

### **PHR-501: Medical Pharmacology I**

Introduction to the basic concepts that describe drug actions. The autonomic nervous system and related drug actions, anti-inflammatory drugs, autacoids, neuropharmacology, psychopharmacology, and anesthetic/analgesic pharmacology. Prerequisite: permission of instructor.

1.00 Classroom | Web Component

### **PHR-501G: Graduate Medical Pharmacology**

Introduction to the basic concepts that describe drug actions. The autonomic nervous system and related drug actions, anti-inflammatory drugs, autacoids, neuropharmacology, psychopharmacology, and anesthetic/analgesic pharmacology.

3.00 Classroom

### **PHR-502: Medical Pharmacology II**

Cardiovascular, diuretic and respiratory agents, hypoglycemic agents, drugs acting on the blood and blood-forming organs, toxicology, antibiotics and cancer chemotherapeutic agents.

Prerequisite: PHR-501.

1.00 Classroom | Web Component

### **PHR-502G: Graduate Medical Pharmacology II**

Cardiovascular, diuretic and respiratory agents, hypoglycemic agents, drugs acting on the blood and blood-forming organs, toxicology, antibiotics and cancer chemotherapeutic agents.

Prerequisite: PHR-501G.

3.00 Classroom | Web Component

### **PHR-503E: Med Pharm III-Exam Makeup**

Med Pharm III exam makeup only.

1.00 RMC Exam Makeup

### **PHR-523B: Readings in Clinical Research II**

This course consists of seminars evaluating clinical research studies in the literature. Each seminar will evaluate a clinical study, its attributes, as well as the methodological problems. Many of the studies discussed will have been undertaken by clinical investigators at Rush, and one of the investigators will lead the discussion.

2.00 Classroom

### **PHR-556: Tools for Research**

This course focuses on the practical elements required to work as a scientist in modern times. It includes didactic lecture and computer practice on PowerPoint, poster making, importing into Word documents, Adobe Photoshop, Sigma Plot, Grants.org, online proposal submission, advanced Medline searches, Excel spreadsheets, and reference managing systems.

1.00 Classroom

### **PHR-559B: Readings Spec Populations II**

This course covers issues relating to doing clinical research with special populations. The course is a seminar discussion of these issues, when research is undertaken in populations of prisoners, the elderly, the mentally retarded, emergency situations, minority groups, as well as other groups considered special populations.

1.00 Classroom

### **PHR-563: Adv Concepts in Pharmacology**

This course will cover biotransformation, drug activation, pharmacogenetics, kinetics and toxicology.

4.00 Classroom | Web Component

**PHR-590: Special Topics in Pharmacology**

The course allows the student flexibility in independently pursuing a particular area of interest. May be taken for one or more terms. Note that this course receives a letter grade. For a letter grade, a public presentation or literature review is required for evaluation.

1.00-9.00 Classroom

**PHR-590B: Special Topics in Pharmacology**

The course allows the student flexibility in independently pursuing a particular area of interest. May be taken for one or more terms.

1.00-12.00 Classroom

**PHR-593: Intro to Grantsmanship**

This course provides the practical aspects of proposal submission. In addition to covering basic writing skills, it addresses specific elements that should be included in each of the various sections of federal grants, foundation applications and biotech contracts. In addition, it talks about ways of identifying sources for funding, a survey of the NIH landscape and how to prepare budgets. The online submission process is also reviewed.

1.00 Classroom | Web Component

**PHR-594: Advanced Receptor Pharmacology**

This course provides specific information about different classes of receptors with emphasis on how the structure relates to their function, as well as on their downstream signaling. The course also aims to help students understand the pharmacological analyses of the interactions of drugs and drug receptors, the fundamentals of pharmacokinetics, and modern approaches to drug design. The course includes a strong emphasis on reading and discussion of current literature to illustrate the concepts presented.

3.00 Classroom | Web Component

**PHR-595: Readings in Pharmacology**

This course allows the student flexibility in independently pursuing a particular area of interest. May be taken for one or more terms. This course is typically an independent study or a journal club focused on a particular topic of interest to the faculty or student.

1.00-2.00 Classroom

**PHR-598: Research in Pharmacology**

Laboratory research in an area of interest that will form the basis of a dissertation proposal or a master's thesis. These research hours are taken prior to passage of comprehensive exams. By special arrangement.

1.00-9.00 Laboratory

**PHR-691: Pharmacology Seminar**

A pharmacology seminar series featuring speakers from outside and within the department. Students are required to make presentations at least once a year.

1.00 Classroom

**PHR-699: Doctoral Research**

Laboratory research for the doctoral dissertation for PhD candidates only. By special arrangement.

1.00-9.00 Laboratory

**PHR-999: Continuous Enrollment**

The requirement for continuous enrollment applies to all students admitted or re-admitted for fall 2015 or later. Doctoral students should follow program requirements for continuous enrollment and degree completion. Students who have not completed their degree requirements are required to maintain continuous enrollment through the college of their program until the degree is earned. Continuous enrollment courses are graduate level courses set up by departments at Rush University for students who need to remain actively enrolled in the University while they finish their graduate work.

1.00 Continuous Enrollment

**PHY-501: Medical Physiology I**

Comprehensive physiology course dealing with all major organ systems except the CNS. Concept formation and problem solving are stressed. Lectures are supplemented by small group discussions and laboratory exercises. Students are expected to discuss assigned study questions in group discussions. Laboratory exercises are divided between conventional experiments and computer simulations of physiological systems.

1.00 Classroom | Web Component

**PHY-501E: Med Physiology I-Exam Makeup**

Med Physiology I exam makeup only.

1.00 RMC Exam Makeup

**PHY-502: Medical Physiology II**

Continuation of PHY-501. Prerequisite: PHY-501.

1.00 Classroom | Web Component

**PHY-503: Physiology of Striated Muscle**

This course serves as an introduction to the basic properties of cellular electrophysiology using the cardiac muscle as an example. It introduces structural, molecular and cellular factors of cell excitation as well as its spread throughout the cell and tissue. The course should be useful to students of the cardiovascular system or muscle at all different levels across disciplines such as physiology, biochemistry, pharmacology and pathophysiology.

The course includes lectures as well as laboratory sessions in which experimental techniques are demonstrated that allow the quantification of the parameters discussed in the lecture.

3.00 Classroom | Web Component

### **PHY-505: Introductory Membrane Biophysics**

Study of fundamental processes involved in movement of ions across membranes, excitability in nerve and muscle, equivalent circuit analysis, artificial membrane systems, structure of membranes, and active transport processes.

4.00 Classroom

### **PHY-511: Graduate Physiology I**

Comprehensive physiology course dealing with all major organ systems except the CNS. Concept formation and problem solving are stressed. Lectures are supplemented by small group discussions and laboratory exercises. Students are expected to discuss assigned study questions in group discussions. Laboratory exercises are divided between conventional experiments and computer simulations of physiological systems.

5.00 Classroom | Web Component

### **PHY-512: Graduate Physiology II**

Continuation of PHY-511. Prerequisite: PHY-511.

5.00 Classroom | Web Component

### **PHY-590: Special Topics in Physiology**

Advanced course dealing with selected topics in physiology. Particular subjects vary from year to year.

1.00-9.00 Classroom

### **PHY-598: Introduction to Research**

A tutorial course to familiarize students with the literature and techniques applicable to modern physiological research.

1.00-9.00 Laboratory

### **PHY-690: Research Topics in Physiology**

With a member of the staff, the student participates in a laboratory-based experience in an area of current research. The level of participation depends on the student's background and will include examination of the literature, a review of the topics being investigated, and opportunities to participate in experimental work. In addition to work in the laboratories, independent experimental or bibliographic projects may be undertaken with the approval of a faculty member. A report is prepared describing the work attempted and accomplished. PF grade.

1.00-9.00 Classroom

### **PHY-699: Doctoral Research**

Post-candidacy research by arrangement.

1.00-9.00 Laboratory

### **PHY-999: Continuous Enrollment**

The requirement for continuous enrollment applies to all students admitted or re-admitted for fall 2015 or later. Doctoral students should follow program requirements for continuous enrollment and degree completion. Students who have not completed their degree requirements are required to maintain continuous enrollment through the college of their program until the degree is earned. Continuous enrollment courses are graduate level courses set up by departments at Rush University for students who need to remain actively enrolled in the University while they finish their graduate work.

1.00 Continuous Enrollment

### **PMR-781: Research in Phys Med & Rehabilitation**

Students may arrange research rotations individually with faculty at Rush. To receive credit for such a rotation, the person to whom the student will be responsible must write a letter describing the student's activities, responsibilities, amount of supervision, and the specific dates of the rotation. Credit toward graduation is granted assuming that the research project is ongoing throughout the academic year. Each student must submit a proposal to the Office of Clinical Curriculum for approval at least eight weeks before the rotation and must have written approval from the Office of Clinical Curriculum before beginning the rotation. Research rotations are scheduled for a minimum of four weeks of credit with the expectation that the full project will extend beyond the formal course duration. Depending on the proposal, the weeks of credit may or may not apply to the rule of eight-weeks' maximum credit for course work in a single subspecialty. This decision is at the discretion of the Office of Medical Student Programs.

4.00 Clinical

### **PMR-791: Physical Medicine & Rehabilitation**

This clerkship will introduce the student to the field of physical medicine and rehabilitation. The course will include introduction in the care of patients with disabilities due to strokes, spinal cord injuries, head trauma, amputations, movement disorders, arthroplasties, etc. In addition, the student will be expected to observe, understand and learn what services are provided by the allied health professional staff, and when it is appropriate to prescribe these services.

2.00-4.00 Clinical

**PRF-301: Intro to Perfusion Technology**

The history of the profession, as well as the present and future role of the perfusionist, will be studied. Aseptic techniques and a survey of cardiopulmonary components will be examined. This course includes both a clinical and lab component where the student will be introduced to ancillary procedures and extracorporeal circuit set-up.

3.00 Classroom | Web Component

**PRF-302: Pathophysiology of Cardiopulmonary Bypass I**

Cardiovascular physiology and pathophysiology will be studied. Pathophysiology will include acquired and congenital heart diseases.

5.00 Classroom | Web Component

**PRF-303: Pathophysiol of Cardiopulm Bypass II**

Physiology and pathophysiology relating to the patient undergoing extracorporeal circuit support will be explored. Topics will include gas transfer, acid-base, hemostasis and inflammation.

5.00 Classroom | Web Component

**PRF-311: Junior Seminar I**

Theory and practice of laboratory analysis, in-line monitors, extracorporeal safety devices and hemodynamic monitoring will be presented. This course includes a lab and clinical component where students will continue to improve their clinical skills. The clinical component will be reinforced in a discussion format during class time.

3.00 Classroom | Web Component

**PRF-312: Junior Seminar II**

Special procedures in extracorporeal technology will be explored. The clinical and lab component will consist of patient management during extracorporeal circulatory support and special circuit demonstrations.

5.00 Classroom | Web Component

**PRF-313: Junior Seminar III**

Special procedures in extracorporeal technology will be explored.

3.00 Classroom | Web Component

**PRF-331: Anatomy & Physiology**

The purpose of this course is to provide the perfusion student with an overview of specific areas of human anatomy and physiology as a basis for understanding the complex interaction of the open heart surgery patient with the heart-lung machine. Students will develop an understanding of specific body systems to include the cardiovascular and respiratory systems, and the central and autonomic nervous systems.

5.00 Classroom | Web Component

**PRF-332: Anatomy & Physiology II**

This course is the continuation of PRF-331. The purpose of this course is to give students an overview of renal anatomy and physiology, and fluid, electrolytes and acid-base homeostasis as a basis for understanding the interaction of the patient undergoing open heart surgery with the heart-lung machine.

3.00 Classroom | Web Component

**PRF-333: Pharmacology**

The student will learn the fundamental principles and concepts of pharmacology. The course presents the principles of drug absorption, distribution and metabolism; the concept of drug receptor inaction; and the therapeutic uses and mechanisms of action of prototype drugs in each major drug group, particularly as it applies to the open heart surgical patient before, during and after surgery.

3.00 Classroom

**PRF-381: Project Design & Research**

Research studies are analyzed and evaluated relative to an identified clinical problem. Includes concepts, methods and strategies inherent to the research process with a focus on design, internal and external validity, sampling, measurement and ethical issues.

3.00 Classroom | Web Component

**PRF-431: Clinical Experience I**

This series of courses represents the student's clinical experience. Students will rotate through various locations, several of which will be outside of the Chicago area. By the end of the series, the student will be able to demonstrate all skills of a competent perfusionist. P/N grading only.

10.00 Clinical | Classroom | Web Component

**PRF-432: Clinical Experience II**

This series of courses represents the student's clinical experience. Students will rotate through various locations, several of which will be outside of the Chicago area. By the end of the series, the student will be able to demonstrate all skills of a competent perfusionist. P/N grading only.

10.00 Clinical | Classroom | Web Component

**PRF-433: Clinical Experience III**

This series of courses represents the student's clinical experience. Students will rotate through various locations, several of which will be outside of the Chicago area. By the end of the series, the student will be able to demonstrate all skills of a competent perfusionist. P/N grading only.

10.00 Clinical | Classroom | Web Component

**PRF-434: Clinical Experience IV**

This series of courses represents the student's clinical experience. Students will rotate through various locations, several of which will be outside of the Chicago area. By the end of the series, the student will be able to demonstrate all skills of a competent perfusionist. P/N grading only.

10.00 Clinical | Classroom | Web Component

**PRF-441: Project Design and Research I**

In this series of courses, the student will complete a research project suitable for submission to a peer-reviewed publication.

2.00 Classroom | Web Component

**PRF-442: Project Design and Research II**

In this series of courses, the student will complete a research project suitable for submission to a peer-reviewed publication.

2.00 Classroom | Web Component

**PRF-443: Project Design and Research III**

In this series of courses, the student will complete a research project suitable for submission to a peer-reviewed publication.

2.00 Classroom | Web Component

**PRF-444: Project Design & Research IV**

In this series of courses, the student will complete a research project suitable for submission to a peer-reviewed publication.

2.00 Classroom | Web Component

**PRF-451: Senior Seminar I**

In this series of courses, advanced topics in extracorporeal technology will be discussed. Due to out-of-town clinical rotations, portions of this course material will be offered online.

2.00 Classroom | Web Component

**PRF-452: Senior Seminar II**

In this series of courses, advanced topics in extracorporeal technology will be discussed. Due to out-of-town clinical rotations, portions of this course material will be offered online.

2.00 Classroom | Web Component

**PRF-453: Senior Seminar III**

In this series of courses, advanced topics in extracorporeal technology will be discussed. Due to out-of-town clinical rotations, portions of this course material will be offered online.

2.00 Classroom | Web Component

**PRF-501: Intro to Perfusion Technology**

The history of the profession, as well as the present and future role of the perfusionist, will be studied. Aseptic techniques and a survey of cardiopulmonary components will be examined. This

course includes both clinical and lab components where the student will be introduced to ancillary procedures and extracorporeal circuit set-up.

3.00 Classroom | Web Component

**PRF-502: Pathophysiology of Cardiopulmonary Bypass I**

Cardiovascular physiology and pathophysiology will be studied. Pathophysiology will include acquired and congenital heart diseases.

5.00 Classroom | Web Component

**PRF-503: Pathophysiology Cardiopulmology Bypass II**

Physiology and pathophysiology relating to the patient undergoing extracorporeal circuit support will be explored. Topics will include gas transfer, acid-base, hemostasis and inflammatory processes as they relate to the conduct of cardiopulmonary bypass.

5.00 Classroom | Web Component

**PRF-510: Seminar I**

This seminar will focus on the principles of laboratory analysis with special emphasis on blood chemistry, coagulation/hematology and blood banking. Additionally, focus will be placed on the hemodynamic monitoring of patients undergoing cardiovascular surgery.

3.00 Classroom | Web Component

**PRF-511: Seminar II**

Focus will be on the role of the perfusionist in special operative procedures. This will include issues relating to heart, lung, and liver transplantations, left heart bypass, and conduct of cardiopulmonary bypass.

5.00 Classroom | Web Component

**PRF-512: Seminar III**

This is a continuation of Seminar II. The focus will continue to be on special procedures. Topics will include extracorporeal membrane oxygenation, antegrade and retrograde cerebral perfusion, sickle cell disease, and perfusion of the pregnant patient.

3.00 Classroom | Web Component

**PRF-513: Seminar IV**

Topics include medical imaging and diagnostic technology, and pressure flow and resistance relationships.

2.00 Classroom | Web Component

**PRF-521: Anatomy & Physiology**

The purpose of this course is to provide the perfusion student with an overview of specific areas of human anatomy and physiology as a basis for understanding the complex interaction



of the open heart surgery patient with the heart-lung machine. Students will develop an understanding of specific body systems to include the cardiovascular and respiratory systems, and the central and autonomic nervous systems.

5.00 Classroom | Web Component

### **PRF-522: Anatomy & Physiology II**

This course is the continuation of PRF-521. The purpose of this course is to give students an overview of renal anatomy and physiology, and fluid, electrolytes, and acid-base homeostasis as a basis for understanding the interaction of the patient undergoing open heart surgery with the heart-lung machine.

3.00 Classroom | Web Component

### **PRF-523: Pharmacology**

Students will learn the fundamental principles and concepts of pharmacology. Discussions will focus on the principles of drug absorption, distribution and metabolism; drug receptor activities; and the therapeutic uses and mechanism of action of drugs in each major drug group.

3.00 Classroom | Web Component

### **PRF-531: Clinical Experience I**

This series of courses represents the student's clinical experience. Students will rotate through various locations, several of which will be outside of the Chicago area. By the end of the series, the student will be able to demonstrate all skills of a competent perfusionist.

10.00 Clinical | Classroom | Web Component

### **PRF-532: Clinical Experience II**

This series of courses represents the student's clinical experience. Students will rotate through various locations, several of which will be outside of the Chicago area. By the end of the series, the student will be able to demonstrate all skills of a competent perfusionist.

10.00 Clinical | Classroom | Web Component

### **PRF-533: Clinical Experience III**

This series of courses represents the student's clinical experience. Students will rotate through various locations, several of which will be outside of the Chicago area. By the end of the series, the student will be able to demonstrate all skills of a competent perfusionist.

10.00 Clinical | Classroom | Web Component

### **PRF-534: Clinical Experience IV**

This series of courses represents the student's clinical experience. Students will rotate through various locations, several of which will be outside of the Chicago area. By the end of the series,

the student will be able to demonstrate all skills of a competent perfusionist.

10.00 Clinical | Classroom | Web Component

### **PRF-541: Project Design & Research**

In this series of courses, students will complete a master's project that will be submitted for publication in a peer-reviewed publication.

3.00 Classroom | Web Component

### **PRF-542: Project Design/Rrsch & Master's Project**

In this series of courses, each student will complete a master's project that will be submitted for publication in a peer-reviewed publication.

2.00 Classroom | Web Component

### **PRF-543: Master's Project II**

In this series of courses, each student will complete a master's project that will be submitted for publication in a peer-reviewed publication.

2.00 Classroom | Online (75% or Greater)

### **PRF-544: Master's Project III**

In this series of courses, each student will complete a master's project that will be submitted for publication in a peer-reviewed publication.

2.00 Classroom | Web Component

### **PRF-545: Master's Project IV**

In this series of courses, each student will complete a master's project that will be submitted for publication in a peer reviewed publication.

2.00 Classroom | Web Component

### **PRF-551: Advanced Topics: Cardiac Physiology**

Advanced course designed to further the student's knowledge in the fields of management, educational methods, and advanced cardiovascular physiology and pharmacology. The student is expected to develop research-quality papers that the student will present to faculty and peers.

2.00 Classroom | Web Component

### **PRF-552: Advanced Topics: Cardiac Pharmacology**

Advanced course designed to further the student's knowledge in the fields of management, educational methods and advanced cardiovascular physiology and pharmacology. The student is expected to develop research quality papers that the student will present to faculty and peers.

2.00 Classroom | Web Component

**PRF-553: Advanced Topics: Management**

Advanced course designed to further the student's knowledge in the fields of management, educational methods, and advanced cardiovascular physiology and pharmacology. The student is expected to develop research quality papers that the student will present to faculty and peers.

2.00 Classroom | Web Component

**PRF-554: Advanced Topics: Educational Methods**

Advanced course designed to further the student's knowledge in the fields of management, educational methods and advanced cardiovascular physiology and pharmacology. The student is expected to develop research quality papers that the student will present to faculty and peers.

2.00 Classroom | Web Component

**PRF-601: Pharmacology**

In this course, general information about drugs and specific terms used in pharmacology are presented. Factors that affect absorption, distribution, biotransformation, elimination, dose-response relationships, and drug receptors are discussed. Important pharmacological concepts and principles are illustrated through in-depth discussion of select agents from key major drug groups.

4.00 Classroom

**PRF-602: Adv Topics: Cardiovascular Physiology**

This course will provide students with the opportunity to combine the didactic knowledge gained in Pathophysiology of Cardiopulmonary Bypass I and II with the clinical application in the laboratory environment. The relationships between heart rate, stroke volume, cardiac output, peripheral vascular resistance, mean arterial pressure, central venous pressures, and pulsatility of the vascular system will be explored.

3.00 Classroom

**PRF-603: Adv Topics: Educational Methods**

This course will focus on helping students develop a knowledge base on the principles of adult learning. Through the understanding of self learning/teaching styles, students will be able to facilitate adult learning in the classroom and clinical arena, and provide leadership to subordinates in the workplace.

3.00 Classroom | Web Component

**PRF-604: Advanced Topics: Management**

This course will provide students with organizational and leadership skills to enable them to assume positions with managerial responsibilities, such as the management of perfusion departments. Students will prepare and analyze case studies and

discuss the skills needed to integrate clinical and managerial skills in the workplace.

3.00 Independent Study

**PRF-605: Advanced Topics: Cardiac Pharmacology**

This course will build on the basic principles of pharmacology as taught during the winter quarter of year one. Emphasis will be placed on the interrelationship between the cardiovascular drugs most widely used in the preoperative, intraoperative and postoperative periods and in the management of the heart-lung machine. Important pharmacological concepts and principles are considered as they pertain to these specific classes of drugs.

3.00 Classroom

**PRF-900: Independent Study**

Independent study courses give students a unique opportunity to pursue a course of study not commonly included in the curriculum. If you are interested in pursuing an independent study, meet with the faculty member you want to work with to define the course work and expectations.

1.00-12.00 Independent Study

**PRF-999: Continuous Enrollment**

The requirement for continuous enrollment applies to all students admitted or re-admitted for fall 2015 or later. Doctoral students should follow program requirements for continuous enrollment and degree completion. Students who have not completed their degree requirements are required to maintain continuous enrollment through the college of their program until the degree is earned. Continuous enrollment courses are graduate level courses set up by departments at Rush University for students who need to remain actively enrolled in the University while they finish their graduate work.

1.00 Continuous Enrollment

**PSY-501: Intro to Psychopathology**

A study of the range of psychopathology that will be manifested in clinical situations. By reviewing diagnostic criteria and by studying etiological factors underlying various forms of psychopathology that range from disturbances in cellular and neurotransmitter function through psychological and social stresses, students develop a basic understanding of common psychiatric conditions.

1.00 Classroom | Web Component

**PSY-501E: Intr Psychopathol-Exam Makeup**

Intr Psychopathol exam makeup only.

1.00 RMC Exam Makeup

**PSY-701: Core Clerkship: Psychiatry**

The core psychiatry clerkship provides basic medical and didactic exposure to the major psychiatric disorders focusing on their diagnosis and management. Emphasis is placed on aspects of psychiatry relevant to the primary practitioner with a holistic approach to patient care, recognizing the significant biological, psychological, and social/environmental factors contributing to the patient's illness. Systems concepts of care are presented in an integrated manner through graded, intensive clinical experiences. Inpatient settings employed for assignment of patient responsibility include general adult, intensive adult, consultation-liaison services, and clinical research. Outpatient settings include Stroger Hospital and clinical research at the Treatment Research Center at Rush.

4.00 Clinical | Web Component

**PSY-783: Research in Psychiatry**

The student will be exposed to basic clinical psychiatric research and be involved with patients with a wide spectrum of psychiatric disorders. Most of the research is based on using medical treatment that is investigational. The objectives of this clerkship are to become familiar with basic clinical research, including use of psychiatric rating scales and basic research design.

4.00 Clinical

**PSY-792: Psychosomatic Medicine**

This elective is designed for senior students interested in the internal medicine/psychiatry residency or psychiatry in a consultation or liaison setting. Adults hospitalized on medical, surgical, obstetric and neurological services are studied with supervised diagnostic evaluation and continuing management. Integration of medical, psychological and family issues are emphasized, including the role of the milieu — home, community and hospital. Special work is done with dialysis patients, transplant patients, patients with malignancy, and those undergoing intensive care. The elective is planned as an experience in all areas, with emphasis depending upon student interest and needs. Those interested in the combined internal medicine/psychiatry residency may choose to have additional experiences to acquaint them with the residency and this combined approach to patient care. Students may also enroll in this clerkship for six weeks by contacting the Office of Medical Student Programs.

4.00-6.00 Clinical

**PSY-793: Child Psychiatry**

Students will work with the treatment teams of the 4 Kellogg Child Psychiatric Inpatient Unit, the Rush Therapeutic Day School, the Medication Clinic, a residential treatment center for emotionally and behaviorally disturbed students, and

outpatient services for children and adolescents. The student will attend seminars in child development, psychopathology, psychopharmacology and therapeutic modalities. The student will participate in multidisciplinary staffing's case conferences, departmental grand rounds and the journal club. Optional experience in school consultation at a therapeutic school for autistic children, and forensic consultant at the Juvenile Detention Center is available. Students will be supervised by faculty members and child psychiatry fellows.

4.00 Clinical

**PSY-794: Adult Psychiatry**

The objective of this elective is to increase the student's knowledge of various psychiatric disorders and to improve knowledge and skills in drug therapy, individual psychotherapy, family therapy and group therapy. Emphasis is placed on crisis management and brief therapy in inpatient settings (open unit in 13 Kellogg and closed unit in 12 Kellogg).

4.00 Clinical

**PSY-795: Geriatric Psychiatry**

Objectives of this rotation are to increase the amount of experience in treating elderly patients with psychiatric diagnostic skills, and the use of psychotherapy and pharmacotherapy with elderly patients; to learn the psychological changes that accompany the aging process; and to become familiar with normal and abnormal states and processes in the elderly. These objectives are accomplished via readings in the field of geriatric psychiatry, and direct treatment of selected patients with supervision by attending psychiatrists, fellows and residents.

4.00 Clinical

**PSY-7EI: Psychiatry Elective**

A student may receive credit for an individually arranged elective with a Rush faculty member. To receive credit for such a rotation, the person to whom the student will be responsible must write a letter stating the student's activities, responsibilities, amount of supervision, and specific dates of the rotation. The sponsoring faculty member must complete an evaluation of the student's performance at the conclusion of the elective. The student must submit a proposal to the Office of Clinical Curriculum for approval at least eight weeks before the rotation and must have written approval from the Assistant Dean of Clinical Curriculum before beginning the rotation. A student may receive four weeks of credit for an individually arranged elective. Credit for only one individually arranged elective will count toward graduation requirements.

4.00 Clinical

**PSY-EXM: Psychiatry Exam Remediation**

Remediation of core psychiatry examination only.  
4.00 Clinical

**PSY-REM: Psychiatry Clinical Remediation**

Remediation of core psychiatry clinical weeks only. Student is not required to repeat the examination.  
4.00 Clinical

**PTH-511: Systemic Pathology I**

Basic, systemized study of human diseases affecting the various organ systems presented in lectures, seminars and laboratory sessions. Concepts covered in PTH-500 will be stressed and correlated with the special pathology of organ systems and their functional and structural alterations. Fundamentals of laboratory testing are presented with emphasis placed on interpretation of tests and the appropriateness of test ordering. Students learn to draw blood and will be expected to perform and interpret a few simple, but diagnostically important, laboratory tests such as urinalysis, hemacrit and blood smear. No examinations are given in this course, but attendance is required.  
1.00 Classroom | Laboratory | Web Component

**PTH-512: Systemic Pathology II**

Basic, systemized study of human diseases affecting the various organ systems presented in lectures, seminars and laboratory sessions. Concepts covered in PTH-500 will be stressed and correlated with the special pathology of organ systems and their functional and structural alterations. Fundamentals of laboratory testing are presented with emphasis placed on interpretation of tests and the appropriateness of test ordering. Students learn to draw blood and will be expected to perform and interpret a few simple, but diagnostically important, laboratory tests such as urinalysis, hemacrit and blood smear. No examinations are given in this course, but attendance is required.  
1.00 Classroom | Web Component

**PTH-513: Systemic Pathology III**

Basic, systemized study of human diseases affecting the various organ systems presented in lectures, seminars and laboratory sessions. Concepts covered in PTH-500 will be stressed and correlated with the special pathology of organ systems and their functional and structural alterations. Fundamentals of laboratory testing are presented with emphasis placed on interpretation of tests and the appropriateness of test ordering. Students learn to draw blood and will be expected to perform and interpret a few simple, but diagnostically important, laboratory tests such as urinalysis, hemacrit and blood smear. No examinations are given in this course, but attendance is required.  
1.00 Classroom | Web Component

**PTH-513E: Syst Path III-Exam Makeup**

Syst Path III exam makeup only.  
1.00 RMC Exam Makeup

**PTH-781: Research in Pathology**

Students may arrange research rotations individually with faculty at Rush. To receive credit for such a rotation, the person to whom the student will be responsible must write a letter describing the student's activities, responsibilities, amount of supervision, and the specific dates of the rotation. Credit toward graduation is granted assuming that the research project is ongoing throughout the academic year. Each student must submit a proposal to the Office of Clinical Curriculum for approval at least eight weeks before the rotation and must have written approval from the Office of Clinical Curriculum before beginning the rotation. Research rotations are scheduled for a minimum of four weeks of credit with the expectation that the full project will extend beyond the formal course duration. Depending on the proposal, the weeks of credit may or may not apply to the rule of eight-weeks' maximum credit for course work in a single subspecialty. This decision is at the discretion of the Office of Medical Student Programs.  
4.00 Clinical

**PTH-791: Pathology Clerkship**

This elective is aimed at students who are considering post-graduate training in pathology or students who desire to enhance and complement their knowledge of general pathology. During this elective, which lasts four to six weeks, students will come to appreciate what training in pathology is all about and realize that there are many aspects to this intriguing field. For the past several years, there has been a positive transformation in the field that has awakened the interest of medical students, physicians and the community-at-large. Pathologists, more than ever, are perceived as critical members of the health care team. The students will have hands-on experience in the techniques of grossing specimens in surgical pathology, molecular diagnostic techniques, image analyses, and clinical laboratory procedures. Students are encouraged to get involved in the performance of autopsies, including weekends, if so desired. On their last day of the elective, students are expected to prepare a 20-minute presentation to the department on a topic mutually agreed upon with the course director. The students will be in close contact with the residents and attending staff. Their activities will be supervised by the course director on a regular basis. Student evaluations will be completed based on the input of residents and attendings with whom students worked.  
4.00 Clinical

**PTH-791X: Pathology-Away**

This course is aimed at students considering postgraduate training in pathology or those who desire to enhance and complement their knowledge of general pathology. The elective may be tailored to focus on student's specialty interests, if other than general pathology. Students will have hands-on experience in techniques of grossing specimens in surgical pathology, molecular diagnostic techniques, image analyses, and clinical laboratory procedures. Students are encouraged to be involved in performance of autopsies, including weekends, if desired. This service usually requires 10 to 20 percent of the student's time in the elective. Students will be in close contact with residents and attending staff. Prerequisite: MED-701.

4.00-6.00 Clinical

**PTH-7EI: Pathology Individualized Elective**

Students may receive credit for individually arranged activities with Rush faculty members, outside faculty personnel, private physicians or researchers, or persons in a medically related field such as medical historians, ethicists, attorneys and medical journalists. To receive credit for such a rotation, the person to whom the student will be responsible must write a letter stating the student's activities, responsibilities, amount of supervision, specific dates of the rotation and that the student will not receive any monetary compensation. The student must submit a proposal to the Office of Clinical Curriculum for approval at least eight weeks before the rotation and must have written approval from the Director of Clinical Curriculum before beginning the rotation. A student may receive four weeks of credit for an individually arranged elective. Credit for only one individually arranged elective will count toward graduation requirements.

4.00 Clinical

**PVM-505: Epidemiology/Biostatistics**

The purpose of this review course is to provide students with a working knowledge of key concepts in epidemiology and biostatistics. These concepts, presented as important terms in each lecture hour, have been selected based upon their coverage on the USMLE Board exam. Thus, this course will serve as a preparation for this exam. The course is team taught in a lecture format by epidemiologists and biostatisticians from the Departments of Preventive Medicine, Internal Medicine, and Psychiatry. An assigned textbook that covers the key concepts is highly recommended; lecture handouts are provided.

1.00 Classroom | Web Component

**PVM-553: Observational Epidemiology**

This course will provide an in-depth description of case-control and cohort studies. Topics include the different study types (e.g., hospital- or population-based controls, retrospective and prospective cohorts, nested case-control), their strengths, weaknesses and uses, the definition and selection of cases and controls, matching and sampling, the definition and selection of exposure and comparison groups, the ascertainment of disease status and exposure status, and issues in analysis and interpretation of data, including the role of bias (selection bias, confounding bias, recall bias, misclassification of disease and exposure status), the effect of non-participation and loss to follow-up, and the application of various analytic approaches (stratification, standardization and multivariate models). The computation, interpretation and application of basic epidemiologic concepts and statistics will be reinforced throughout the course, including measures of disease frequency (prevalence, incidence, attack rate) and measures of association (relative risk, odds ratio, risk difference, population attributable risk). Landmark studies illustrating the different types of case-control and cohort studies will be described. Trainees will be assigned readings from basic epidemiologic texts as well as publications from major case-control and cohort studies.

1.00 Classroom

**PVM-559: Research-Special Populations**

The material in this course will concentrate on public health and research issues in African-Americans, women, Hispanics and children. Issues that are accentuated include barriers for recruitment of patients into clinical trials, role of the coordinator in aiding with protocol compliance and recruitment, influence of culture on disease processes, influence of environment and genetic predisposition for common disorders such as diabetes, hypertension, cancer and cardiovascular disease.

2.00 Classroom

**PVM-597: Clinical Thesis Research**

For trainees doing thesis research or writing. Prerequisite: consent of the trainee's advisor, and acceptance of the thesis topic and preliminary thesis outline by the thesis committee. A minimum of six hours is required. P/N grading only.

1.00-12.00 Classroom

**PVM-721: Infectious Diseases & Public Health**

The student will become oriented to infectious diseases public health work by joining the state epidemiologist's daily activities, including outbreak investigation. When an outbreak is not occurring, the student will be assigned either a brief research project to review medical literature and present findings for

critical review by the state epidemiologist or an analytic project involving a database of cases of a reportable infectious disease, such as typhoid fever or meningococcal meningitis. The remainder of time will be spent on field trips (e.g., county TB clinic, restaurant inspections with a sanitarian, tour of state laboratory or the quarantine station at O'Hare Airport). Lectures on various topics will be provided (e.g., West Nile virus in Illinois, epidemiology of pertussis, and outbreak investigations of many diseases). The course has the following educational objectives: 1) to gain a basic understanding of public health infectious disease issues; 2) to expose medical students to career opportunities in public health; and 3) to develop an understanding of the local, state and federal role in surveillance and control of infectious diseases. 2.00 Clinical

### **PVM-781: Research in Preventive Medicine**

Students may arrange research rotations individually with faculty at Rush. To receive credit for such a rotation, the person to whom the student will be responsible must write a letter describing the student's activities, responsibilities, amount of supervision, and the specific dates of the rotation. Credit toward graduation is granted assuming that the research project is ongoing throughout the academic year. The students must submit a proposal to the Office of Clinical Curriculum for approval at least eight weeks before the rotation and must have written approval from the Office of Clinical Curriculum before beginning the rotation. Research rotations are scheduled for a minimum of four weeks of credit with the expectation that the full project will extend beyond the formal course duration. Depending on the proposal, the weeks of credit may or may not apply to the rule of eight-weeks' maximum credit for course work in a single subspecialty. This decision is at the discretion of the Office of Medical Student Programs. 4.00 Clinical

### **PVM-900: Independent Study**

Independent study courses give students a unique opportunity to pursue a course of study not commonly included in the curriculum. If you are interested in pursuing an independent study, meet with the faculty member you want to work with to define the course work and expectations. 1.00-12.00 Independent Study

### **PVM-999: Continuous Enrollment**

The requirement for continuous enrollment applies to all students admitted or re-admitted for fall 2015 or later. Doctoral students should follow program requirements for continuous enrollment and degree completion. Students who have not completed their degree requirements are required to maintain continuous enrollment through the college of their program until the degree

is earned. Continuous enrollment courses are graduate level courses set up by departments at Rush University for students who need to remain actively enrolled in the University while they finish their graduate work.

1.00 Continuous Enrollment

### **RAD-711: Interventional Radiology**

This clinical clerkship exposes the student to interventional radiology with emphasis on patient care. Both nonvascular and vascular interventional examinations are performed on inpatients as well as outpatients. Students will have assigned readings and will be able to attend lectures given by the diagnostic radiology attending staff and residents included under this clerkship. 4.00 Clinical

### **RAD-712: Correlative Imaging**

This clerkship exposes students to ultrasound, computed tomography, and magnetic resonance imaging with emphasis on correlation of radiologic findings. Students will be assigned reading and spend time in each of the various imaging sections in the radiology department working with the radiology attending physicians and resident physicians. 4.00 Clinical

### **RAD-721: Radiation Oncology**

The student will participate in the normal activities of the department including consultations, treatment planning, and follow-up care of cancer patients. The student will be assigned to multiple services, allowing exposure to different cancer sites. 2.00-4.00 Clinical

### **RAD-781: Research in Radiology**

Students may arrange research rotations individually with faculty at Rush. To receive credit for such a rotation, the person to whom the student will be responsible must write a letter describing the student's activities, responsibilities, amount of supervision, and the specific dates of the rotation. Credit toward graduation is granted assuming that the research project is ongoing throughout the academic year. The student must submit a proposal to the Office of Clinical Curriculum for approval at least eight weeks before the rotation and must have written approval from the Office of Clinical Curriculum before beginning the rotation. Research rotations are scheduled for a minimum of four weeks of credit with the expectation that the full project will extend beyond the formal course duration. Depending on the proposal, the weeks of credit may or may not apply to the rule of eight-weeks' maximum credit for course work in a single subspecialty. This decision is at the discretion of the Office of Medical Student Programs. 4.00 Clinical

**RAD-781X: Research in Radiology-Away**

Students may arrange research rotations individually with faculty at Rush. To receive credit for such a rotation, the person to whom the student will be responsible must write a letter describing the student's activities, responsibilities, amount of supervision, and the specific dates of the rotation. Credit toward graduation is granted assuming that the research project is ongoing throughout the academic year.

4.00 Clinical

**RAD-791: Diagnostic Radiology**

Basic radiologic principles are demonstrated, and the role of the diagnostic radiologist in the clinical setting of general patient care, and medical and surgical specialty consultations, is emphasized. Each student prepares one case for the teaching file and gives one oral presentation. Students have assigned readings to complete, and are tested by a written final examination. Students are also urged to attend the two daily departmental teaching conferences.

4.00 Clinical

**RAD-791X: Diagnostic Radiology-Away**

Basic radiologic principles are demonstrated and the role of diagnostic radiology as a clinical setting for patient care, and medical and surgical specialty consultations, is emphasized. Students prepare one case for the teaching file and gives one oral presentation. Students are assigned readings, teaching tapes to review, and they are tested by a written final examination. A special lecture series designed specifically for the students, with lectures and unknown cases, is presented by the diagnostic radiology attending staff and residents. Students are also urged to attend the two daily departmental teaching conferences. A minimum of four students any four week rotation. Approval of course director is required to drop the course within eight weeks of the start of rotation. This course is not offered in June, July, November, December or January.

4.00 Clinical

**RAD-796: Nuclear Medicine**

All facets of the disciplines of nuclear medicine are studied, with particular emphasis on radionuclide scanning of organ systems for diagnostic and research purposes. Emphasis is on patho-physiologic correlation and case study. Literature review and individual topics are encouraged to provide in-depth study in the broad field of nuclear medicine.

2.00 Clinical

**RAD-7EI: Diagnostic Radiology Individualized Elec**

Students may receive credit for individually arranged activities with Rush faculty members, outside faculty personnel, private

physicians or researchers, or persons in a medically related field such as medical historians, ethicists, attorneys and medical journalists. To receive credit for such a rotation, the person to whom the student will be responsible must write a letter stating the student's activities, responsibilities, amount of supervision, specific dates of the rotation and that the student will not receive any monetary compensation. The student must submit a proposal to the Office of Clinical Curriculum for approval at least eight weeks before the rotation and must have written approval from the Director of Clinical Curriculum before beginning the rotation. A student may receive four weeks of credit for an individually arranged elective. Credit for only one individually arranged elective will count toward graduation requirements.

4.00 Clinical

**RC-311: Intro to Respiratory Care**

This course is an introduction to the field of respiratory care. Historical development of the professions, the principles of chemistry and physics as they apply to respiratory care, cardiopulmonary anatomy and physiology, as well as respiratory care procedures, are covered. Specific modes of respiratory care are examined to understand the indications, hazards, contraindications and evaluation of therapy. Modes of care include medical gases, humidity/aerosol therapy, aerosol medications, positive pressure breathing, incentive spirometry, expiratory resistance, postural drainage and percussion/vibration. Prerequisite: admission to the program.

5.00 Classroom | Web Component

**RC-312: Cardiopulmonary Physiology**

Provides an in-depth study of cardiopulmonary anatomy and physiology. Topics include the function of the respiratory system, ventilatory mechanics, gas transport in the blood, natural and chemical regulation of breathing, circulation, blood flow and pressure, and cardiac output. The heart-lung relationship, clinical applications of respiratory care and common disorders will be emphasized.

5.00 Classroom | Web Component

**RC-313: Respiratory Equip & Techniques**

This course provides students with hands-on experience with respiratory care equipment in a laboratory setting. Students select, assemble and check equipment for proper function, operation and cleanliness. Equipment malfunctions and actions to correct malfunctions will also be covered. Equipment will include oxygen delivery devices, humidifiers, aerosol generators, pressure ventilators, gas delivery, metering and analyzing devices, percussors, vibrators, environmental devices, manometers and gauges and vacuum systems. Basic and advanced life support will be covered to include cardiopulmonary resuscitation, artificial

ventilation and circulation, endotracheal intubation, airway care, recognition and treatment of arrhythmias, and cardiovascular pharmacology. Related equipment will also be reviewed to include manual resuscitators, artificial airways, defibrillators and cardiac monitors. Prerequisite: admission to the program.

5.00 Classroom | Web Component

### **RC-321: Patient Assessment**

Fundamentals of cardiopulmonary assessment will be covered to include review of existing data in the patient record, patient history, physical examination, oximetry, blood gases, respiratory monitoring, pulmonary function assessment, laboratory studies, chest and upper airway radiographs, ventilation/perfusion scans, bedside EKG interpretation, cardiovascular monitoring, and nutritional assessment.

5.00 Classroom | Laboratory | Web Component

### **RC-322: Pulmonary Disease**

Topics include the etiology, pathophysiology, diagnosis, treatment and prognosis of common pulmonary diseases and conditions. Management of nonrespiratory disorders commonly encountered in the critical care unit will also be covered. Pulmonary and critical care medicine, obstructive and restrictive pulmonary disease, neoplastic disease of the lung, disordered breathing, cardiac and cardiovascular disorders, neurologic and neuromuscular disorders, shock, trauma, sepsis, near drowning, burns, smoke inhalation, carbon monoxide poisoning, drug overdose, renal failure, acute G. disturbances, and respiratory care of the postoperative patient will be reviewed.

5.00 Classroom | Web Component

### **RC-323: Mechanical Ventilation**

Provides instruction in the theory, set-up, operation and maintenance of mechanical ventilators and related equipment. Topics include mechanical ventilator theory, ventilator operation, ventilator maintenance and troubleshooting. Maintenance of artificial airways, fiberoptic bronchoscopy, thoracentesis, chest tube maintenance, and arterial blood gas sampling will also be discussed related to the critical care patient.

4.00 Classroom | Laboratory | Web Component

### **RC-324: Pharmacology**

This course introduces the physiologic and pharmacologic basis of cardiopulmonary medications. Preparation, calculation of dosages and mixtures, and general principles of pharmacology will be covered followed by an in-depth discussion of bronchoactive drugs and drug groups related to the cardiopulmonary system, such as neuromuscular blocking agents, central nervous system depressants, cardiovascular agents, and diuretics. Prerequisite: admission to the program.

3.00 Classroom | Web Component

### **RC-331: Critical Respiratory Care**

Instruction on all phases of adult critical care and continuous mechanical ventilation is provided. The history of mechanical ventilation, modes of mechanical ventilatory support, implementation, monitoring, ventilator weaning and discontinuance will be covered. Advanced critical care techniques for invasive and noninvasive patient monitoring will be covered. Hemodynamic monitoring will include arterial pressure monitoring, central venous and pulmonary artery catheters, and cardiac output measurement. Noninvasive monitoring techniques including oximetry, transcutaneous monitoring, inductance plethysmography, capnography and metabolic testing are included.

5.00 Classroom | Web Component

### **RC-332: Cardiopulmonary Diagnostics & Pulmonary Function Testing**

An overview of the various areas comprising cardiopulmonary diagnostics to include normal and abnormal pulmonary function and related technology. The student will learn to perform, interpret and evaluate pulmonary function studies. In addition, the student will learn the operation and maintenance of pulmonary function and gas analysis equipment. Other topics include sleep laboratory, stress and exercise testing, metabolic testing, ventilation/perfusion scanning, cardiac catheterization laboratory, and noninvasive cardiology.

5.00 Classroom | Laboratory | Web Component

### **RC-333: Peds & Neonatal Respiratory Care**

The processes of growth and development relating to respiratory care from the fetus to the adolescent will be discussed. Topics include fetal growth and development, neonatal growth and development, fetal assessment, fetal evaluation, neonatal assessment, neonatal evaluation, neonatal respiratory care, neonatal pathology, pediatric pathology and pediatric respiratory care, to include critical care and mechanical ventilation

5.00 Classroom | Laboratory | Web Component

### **RC-334: Clinical Observation I**

Students will observe respiratory care procedures in general medical and surgical floors, intensive care units, the emergency department and pediatric units.

2.00 Clinical | Web Component

### **RC-401: Education**

An introduction to basic principles and techniques used in respiratory care education. Topics include patient education, inservice education, course design, objectives, lesson plan development, learning activities, use of media, development of presentations, testing and evaluation. Credit at the graduate level requires completion of a course project. Prerequisite: admission to program.

5.00 Classroom | Web Component



**RC-402: Management**

Management principles and problems as they relate to respiratory care and the management of the department, hospital, service organization, and health care programs will be discussed. Credit at the graduate level requires completion of a course project. Prerequisite: admission to program.

5.00 Classroom | Web Component

**RC-403: Intro to Research**

An introduction to the methods of scientific research to include research design and statistical analysis. Critical review of the components of research reports will be performed to include definition of the problem, review of the literature, research design, data analysis and results. Prerequisite: admission to program.

5.00 Classroom | Web Component

**RC-404: Clinical Observation II**

Students will observe respiratory care procedures in general medical and surgical floors, intensive care units, the emergency department and pediatric units.

2.00 Clinical | Web Component

**RC-411: Clinical Practice I**

Introduces students to clinical respiratory care procedures. Topics include introduction to the clinical affiliate, patient assessment, medical gas therapy, aerosol therapy, incentive spirometry, positive pressure breathing, chest physiotherapy, and airway care using nasal, endotracheal and tracheal tubes. Critical respiratory care is introduced to include basic care as applied in the intensive care unit. In addition, ventilator monitoring, arterial puncture and blood gas analysis, endotracheal intubation, EKG services, and bronchoscopy observation are introduced. Prerequisite: satisfactory completion of first year course work.

12.00 Clinical | Classroom | Web Component

**RC-412: Clinical Seminar I**

Case presentations are required to integrate clinical and theory. Review of respiratory care with an emphasis on problem solving and decision-making. Practice board credentialing examinations will be administered for CRT examination preparation. Current issues relevant to respiratory care will be explored to include new trends in management, new treatments and technologies, ethical issues in health care, and issues related to professional development and practice. Prerequisite: second year status.

3.00 Classroom | Web Component

**RC-413: Research Project I**

Guided activities to develop an appropriate research question and research methodology for completion of the required research requirements. Prerequisite: second year status.

2.00 Classroom | Web Component

**RC-421: Clinical Practice II**

This course provides students the opportunity to further develop skills required in the intensive care of the respiratory patient. Topics include initiation of mechanical ventilation, patient stabilization and monitoring, measurement and evaluation of hemodynamic variables, bronchial hygiene, evaluation for weaning, extubation, arterial line samples, and noninvasive monitoring. Students will rotate through bronchoscopy services and the OR for endotracheal intubation.

12.00 Clinical | Web Component

**RC-422: Clinical Seminar II**

Case presentations are required to integrate clinical and theory. Review of respiratory care as it pertains to the registry (RRT) credentialing examinations administered by the National Board for Respiratory Care (NBRC). A series of simulation examinations will be used to prepare the students for these exams. Emphasis will be placed on decision-making and problem solving as they relate to clinical respiratory care. Current issues relevant to the cardiopulmonary sciences and respiratory care will be explored, and issues and trends in health care will be discussed. Successful completion of the NBRC certification examination is required to meet course requirements. Prerequisite: second year status.

3.00 Classroom | Web Component

**RC-423: Research Project II**

Guided activities to develop an appropriate research question and research methodology and begin data collection for completion of the required program research requirements.

Prerequisite: Ssecond year status

2.00 Classroom | Web Component

**RC-431: Clinical Practice III**

An opportunity to acquire clinical experience is provided in perinatal and pediatric respiratory care in the areas of patient assessment and monitoring (invasive and noninvasive), basic care, mechanical ventilation, ECMO, airway care, and labor and delivery assistance and transport. Also covered in the pulmonary function laboratory are arterial and blood gas analysis, measurement of lung volumes and capacities, flow volume loops, diffusion testing and body plethysmography. Students will also have an opportunity for in-depth application and reinforcement of adult intensive care. Specialty rotations in polysomnography, cardiac catheter lab, endotracheal intubation, pulmonary rehabilitation, bronchoscopy, and exercise testing will be included.

In addition, students are provided with the opportunity for the development of an area of specialization. Prerequisite: RC-421.

12.00 Clinical | Web Component

### **RC-431A: Clinical Practice III Part A**

The purpose of this clinical practice will be to allow the student to acquire special clinical skills or expertise that is not normally achieved in an associate's degree program or through work experience. The student may also use this course to refine or upgrade clinical skills that may have been used infrequently due to the nature of his or her work environment or experiences. A course proposal or prospectus for clinical practice will be designed by the student and submitted to the Director of Clinical Education. The prospectus or proposal must be reviewed and approved by the Committee on Progress and Promotion for Respiratory Care. With the program director's permission, the 12-hour course (RC-431) may be divided into two parts, RC-431A (six hours) and RC-431B (six hours), accomplishing the same course goals outlined above over two terms.  
6.00 Clinical | Web Component

### **RC-431B: Clinical Practice III Part B**

The purpose of this clinical practice will be to allow the student to acquire special clinical skills or expertise that is not normally achieved in an associate's degree program or through work experience. The student may also use this course to refine or upgrade clinical skills that may have been used infrequently due to the nature of his or her work environment or experiences. A course proposal or prospectus for clinical practice will be designed by the student and submitted to the Director of Clinical Education. The prospectus or proposal must be reviewed and approved by the Committee on Progress and Promotion for Respiratory Care. With the program director's permission, the 12-hour course (RC-431) may be divided into two parts, RC-431A (six hours) and RC-431B (six hours), accomplishing the same course goals outlined above over two terms.  
6.00 Clinical | Web Component

### **RC-432: Clinical Seminar III**

Case presentations are required to integrate clinical and theory. Review of respiratory care as it pertains to the credentialing examinations administered by the National Board for Respiratory Care (NBRC). Practice examinations will be used to prepare the students for these exams. Emphasis will be placed on decision-making and problem solving as they relate to clinical respiratory care. Current issues and trends relevant to the cardiopulmonary sciences and respiratory care will be explored. Successful completion of the NBRC registry examinations are required to meet course requirements. Prerequisite: second year status  
3.00 Classroom | Web Component

### **RC-433: Research Project III**

Guided activities to develop an appropriate research question and research methodology and begin data collection for completion of the required program research requirements. Prerequisite: second year status  
2.00 Classroom | Web Component

### **RC-511: Intro to Respiratory Care**

Provides students with the principles of chemistry and physics as they apply to respiratory care, as well as respiratory care procedures. Specific modes of respiratory care are examined to understand principles of application to patients, indications, hazards, contraindications and evaluation of therapy. Modes of care include medical gases, humidity/aerosol therapy, aerosol medications, positive pressure breathing, incentive spirometry, expiratory resistance, postural drainage and percussion/vibration. Prerequisite: admission to the program.  
5.00 Classroom | Web Component

### **RC-512: Cardiopulmonary Physiology**

This course provides an in-depth study of cardiac and pulmonary anatomy and physiology, as well as the diagnostic procedures commonly used in the hospital to evaluate these systems. Topics include the function of the respiratory system, ventilatory mechanics, gas transport in the blood, natural and chemical regulation of breathing, circulation, blood flow and pressure, and cardiac output. The heart-lung relationship and clinical applications of these phenomena in the cardiopulmonary system will be emphasized. Prerequisite: admission to the program.  
5.00 Classroom | Web Component

### **RC-513: Respiratory Equip & Techniques**

This course provides students with the opportunity to gain hands-on experience with respiratory care equipment. Students select, assemble and check equipment for proper function, operation and cleanliness. Equipment malfunctions and actions to correct malfunctions will also be covered. Equipment will include oxygen delivery devices, humidifiers, aerosol generators, pressure ventilators, gas delivery, metering and analyzing devices, percussors, vibrators, environmental devices, manometers and gauges and vacuum systems. Basic and advanced life support will be covered to include cardiopulmonary resuscitation, artificial ventilation and circulation, endotracheal intubation, airway care, recognition and treatment of arrhythmias, and cardiovascular pharmacology. Related equipment will also be reviewed to include manual resuscitators, artificial airways, defibrillators and cardiac monitors. Prerequisite: admission to the program.  
5.00 Classroom | Web Component

**RC-521: Patient Assessment**

Fundamentals of respiratory assessment will be covered to include review of existing data in the patient record, patient history, physical examination, oximetry, blood gases, respiratory monitoring, pulmonary function assessment, laboratory studies, chest and upper airway radiographs, ventilation/perfusion scans, bedside EKG interpretation, cardiovascular monitoring, and nutritional assessment.

5.00 Classroom | Laboratory | Web Component

**RC-522: Pulmonary Medicine**

Topics include the etiology, pathophysiology, diagnosis, treatment and prognosis of common pulmonary diseases and conditions. Respiratory care management of nonrespiratory disorders commonly encountered in the critical care unit will also be covered. Pulmonary and critical care medicine, obstructive and restrictive pulmonary disease, neoplastic disease of the lung, disordered breathing, cardiac and cardiovascular disorders, neurologic and neuromuscular disorders, shock, trauma, sepsis, near drowning, burns, smoke inhalation, carbon monoxide poisoning, drug overdose, renal failure, acute GI disturbances, and respiratory care of the postoperative patient will be reviewed.

5.00 Classroom | Web Component

**RC-523: Mechanical Ventilation**

Provides instruction in the theory, set-up, operation and maintenance of mechanical ventilators and related equipment. Topics include mechanical ventilator theory, ventilator operation, ventilator maintenance and troubleshooting. Maintenance of artificial airways, fiberoptic bronchoscopy, thoracentesis, chest tube maintenance, and arterial blood gas sampling will also be discussed related to the critical care patient.

4.00 Classroom | Laboratory | Web Component

**RC-524: Pharmacology**

Introduces the physiologic and pharmacologic basis of pulmonary and cardiac medications. Students will study the preparation, as well as the calculation of dosages and mixtures. General principles of pharmacology as a basis for an in-depth discussion of bronchoactive drugs and drug groups related to the cardiopulmonary system, such as neuromuscular blocking agents, central nervous system depressants, cardiovascular agents, and diuretics will be included. Prerequisite: admission to the program.

3.00 Classroom | Web Component

**RC-531: Critical Respiratory Care**

Instruction on all phases of adult critical care and continuous mechanical ventilation is provided. The history of mechanical ventilation, modes of mechanical ventilatory support,

implementation, monitoring, ventilator weaning and discontinuance will be covered. Advanced critical care techniques for invasive and noninvasive patient monitoring will be covered. Hemodynamic monitoring will include arterial pressure monitoring, central venous and pulmonary artery catheters, and cardiac output measurement. Noninvasive monitoring techniques including oximetry, transcutaneous monitoring, inductance plethysmography, capnography and metabolic testing are included.

5.00 Classroom | Web Component

**RC-532: Cardiopulmonary Diagnostics & Pulmonary Function Testing**

An overview of the various areas comprising cardiopulmonary diagnostics to include normal and abnormal pulmonary function and related technology. The student will be given the opportunity to learn how to perform, interpret and evaluate various pulmonary function studies. In addition, the student will learn the operation and maintenance of pulmonary function and gas analysis equipment. Other topics include sleep laboratory, stress and exercise testing, metabolic testing, ventilation/perfusion scanning, cardiac catheterization laboratory, and noninvasive cardiology.

5.00 Classroom | Laboratory | Web Component

**RC-533: Pediatric & Neonatal Respiratory Care**

The processes of growth and development relating to respiratory care from the fetus to the adolescent will be discussed. Relates physiologic function to respiratory care including assessment, evaluation and treatment. Topics include fetal growth and development, neonatal growth and development, fetal assessment, fetal evaluation, neonatal assessment, neonatal evaluation, neonatal respiratory care, neonatal pathology, pediatric pathology and pediatric respiratory care.

5.00 Classroom | Laboratory | Web Component

**RC-534: Clinical Observation I**

Students will observe respiratory care procedures in general medical and surgical floors, intensive care units, the emergency department and pediatric units.

2.00 Clinical | Web Component

**RC-561: Education**

An introduction to basic principles and techniques used in respiratory care education. Topics include patient education, inservice education, course design, objectives, lesson plan development, learning activities, use of media, development of presentations, testing and evaluation. Credit at the graduate level requires completion of a course project. Prerequisite: admission to program.

5.00 Classroom | Web Component

**RC-562: Management**

Management principles and problems as they relate to respiratory care and the management of the department, hospital, service organization and health care programs will be discussed. Credit at the graduate level requires completion of a course project.

Prerequisite: admission to program.

5.00 Classroom | Web Component

**RC-563: Intro to Research**

An introduction to the methods of scientific research to include research design and statistical analysis. Critical review of the components of research reports will be performed to include definition of the problem, review of the literature, research design, data analysis and results. Prerequisite: admission to program.

5.00 Classroom | Web Component

**RC-564: Clinical Observation II**

Students will observe respiratory care procedures in general medical and surgical floors, intensive care units, the emergency department and pediatric units.

2.00 Clinical | Web Component

**RC-571: Clinical Practice I**

This course introduces students to clinical respiratory care procedures. Topics include introduction to the clinical affiliate, patient assessment, medical gas therapy, aerosol therapy, incentive spirometry, positive pressure breathing, chest physiotherapy, and airway care using nasal, endotracheal and tracheal tubes. Critical respiratory care is introduced to include basic care as applied in the intensive care unit. In addition, ventilator monitoring, arterial puncture and blood gas analysis, endotracheal intubation, EKG services, and bronchoscopy observation are introduced. Prerequisite: satisfactory completion of first year course work.

12.00 Clinical | Classroom | Web Component

**RC-572: Clinical Seminar I**

Case presentations are required to integrate clinical and theory. Review of respiratory care with an emphasis on problem solving and decision-making. Practice board credentialing examinations will be administered for CRT examination preparation. Current issues relevant to respiratory care will be explored to include new trends in management, new treatments and technologies, ethical issues in health care, and issues related to professional development and practice. Prerequisite: second year status.

3.00 Classroom | Web Component

**RC-573: Research Project I**

Guided activities to develop an appropriate research question and research methodology for completion of the required research requirements. Prerequisite: second year status.

2.00 Classroom | Web Component

**RC-581: Clinical Practice II**

This course provides the opportunity to further develop skills required in the intensive care of the respiratory patient. Topics include initiation of mechanical ventilation, patient stabilization and monitoring, measurement and evaluation of hemodynamic variables, bronchial hygiene, evaluation for weaning, extubation, arterial line samples, and noninvasive monitoring.

12.00 Clinical | Web Component

**RC-582: Clinical Seminar II**

Case presentations are required to integrate clinical and theory. Review of respiratory care as it pertains to the registry (RRT) credentialing examinations administered by the National Board for Respiratory Care (NBRC). A series of simulation examinations will be used to prepare the students for these exams. Emphasis will be placed on decision-making and problem solving as they relate to clinical respiratory care. Current issues relevant to the cardiopulmonary sciences and respiratory care will be explored, and issues and trends in health care will be discussed. Successful completion of the NBRC certification examination is required to meet course requirements. Prerequisite: second year status.

3.00 Classroom | Web Component

**RC-583: Research Project II**

Guided activities to develop an appropriate research question and research methodology and begin data collection for completion of the required program research requirements. Prerequisite: second year status.

2.00 Classroom | Web Component

**RC-591: Clinical Practice III**

An opportunity to acquire clinical experience is provided in perinatal and pediatric respiratory care in the areas of patient assessment and monitoring (invasive and noninvasive), basic care, mechanical ventilation, ECMO, airway care, and labor and delivery assistance and transport. Also covered in the pulmonary function laboratory are arterial and blood gas analysis, measurement of lung volumes and capacities, flow volume loops, diffusion testing and body plethysmography. Students will also have an opportunity for in-depth application and reinforcement of adult intensive care. In addition, students are provided with the opportunity for the development of an area of specialization.

12.00 Clinical | Web Component

**RC-591A: Clinical Practice III Part A**

The purpose of this clinical practice will be to allow the student to acquire special clinical skills or expertise that is not normally achieved in an associate's degree program or through work experience. The student may also use this course to refine or upgrade clinical skills that may have been used infrequently due to the nature of his or her work environment or experiences. A course

proposal or prospectus for clinical practice will be designed by the student and submitted to the Director of Clinical Education. The prospectus or proposal must be reviewed and approved by the Committee on Progress and Promotion for Respiratory Care. With the program director's permission, the 12-hour course (RC-591) may be divided into two parts, RC-591A (six hours) and RC-591B (six hours), accomplishing the same course goals outlined above over two terms.  
6.00 Clinical | Web Component

### **RC-591B: Clinical Practice III Part B**

The purpose of this clinical practice will be to allow the student to acquire special clinical skills or expertise that is not normally achieved in an associate's degree program or through work experience. The student may also use this course to refine or upgrade clinical skills that may have been used infrequently due to the nature of his or her work environment or experiences. A course proposal or prospectus for clinical practice will be designed by the student and submitted to the Director of Clinical Education. The prospectus or proposal must be reviewed and approved by the Committee on Progress and Promotion for Respiratory Care. With the program director's permission, the 12-hour course (RC-591) may be divided into two parts, RC-591A (six hours) and RC-591-B (six hours), accomplishing the same course goals outlined above over two terms.  
6.00 Clinical | Web Component

### **RC-592: Clinical Seminar III**

Case presentations are required to integrate clinical and theory. Review of respiratory care as it pertains to the credentialing examinations administered by the National Board for Respiratory Care (NBRC). Practice examinations will be used to prepare the students for these exams. Emphasis will be placed on decision-making and problem solving as they relate to clinical respiratory care. Current issues and trends relevant to the cardiopulmonary sciences and respiratory care will be explored. Successful completion of the NBRC registry examinations are required to meet course requirements. Prerequisite: second year status.  
3.00 Classroom | Web Component

### **RC-593: Research Project III**

Guided activities to develop an appropriate research question, research methodology, completion of data collection and analysis for completion of the required program research requirements. Prerequisite: second year status.  
2.00 Classroom | Web Component

### **RC-601: Issues & Trends in Respiratory Care**

Current issues relevant to the cardiopulmonary sciences and respiratory care will be explored. Health care delivery systems, new trends in education, organization and management, new

treatments and technologies, ethical issues in health care, as well as issues related to professional development and practice will be discussed.

3.00 Classroom

### **RC-602: Adv Critical Care Medicine**

Advanced topics in critical care medicine will be discussed using an evidence-based practice approach. Diagnostic techniques, patient assessment and monitoring, and special procedures in the ICU will be discussed. Readings, projects and writing assignments will cover advanced life support, protocol-based care, artificial ventilation and circulation, airway care, and recognition and treatment of cardiac, pulmonary, circulatory, renal, hepatic and neurological disorders in the critical care unit.

4.00 Classroom

### **RC-603: Adv Cardiopulmonary Diagnostics**

Advanced cardiopulmonary diagnostics and related technology will be discussed. The assessment skills needed to evaluate the patient's condition from clinical observations, laboratory tests and imaging studies will be reviewed. Advanced pulmonary function, stress and exercise testing, sleep laboratory, metabolic testing, advanced imaging techniques, and invasive and noninvasive cardiac testing will be described.

3.00 Classroom | Web Component

### **RC-604: Advanced Neonatal and Pediatric Respiratory Care**

Advanced topics in neonatal and pediatric respiratory care will be discussed using an evidence-based approach. Patient assessment, evaluation and treatment will be reviewed. Topics will include fetal assessment, neonatal assessment, neonatal respiratory care, neonatal pathology, pediatric pathology and pediatric respiratory care.  
3.00 Classroom

### **RC-605: Disease Management**

This course provides an in-depth discussion of the concepts, procedures and techniques used in the care of patients with acute and chronic cardiopulmonary disorders. The development and implementation of disease management programs for patients with asthma, COPD and other chronic conditions is presented. Pulmonary rehabilitation, patient education and smoking cessation programs are reviewed. Assessment and care plan development in the ambulatory and acute care settings, including diagnosis and treatment of common disorders, is described.

3.00 Classroom

### **RC-999: Continuous Enrollment**

The requirement for continuous enrollment applies to all students admitted or re-admitted for fall 2015 or later. Doctoral students should follow program requirements for continuous enrollment

and degree completion. Students who have not completed their degree requirements are required to maintain continuous enrollment through the college of their program until the degree is earned. Continuous enrollment courses are graduate level courses set up by departments at Rush University for students who need to remain actively enrolled in the University while they finish their graduate work.

1.00 Continuous Enrollment

### **RMC-516: Central Nervous System/Special**

This course integrates information and topics between anatomy, histology, neurology and neurobiology. Neurology and neurobiology topics will draw on knowledge in the traditional domains of physiology, biochemistry, pharmacology and clinical neurology. This block is a survey of the nervous system with highlights of the pertinent head and neck gross anatomy. The block integrates the structure, function and organization of nervous tissue from the cellular through gross anatomic aspects including central, peripheral and autonomic portions of the system. The lead cases for this block are headache and weakness. Beyond an understanding of the normal structure and function of these systems, students will study the development and growth of these components, as well as the changes noted in maturation and ageing processes within these systems. Control mechanisms will be considered as the study during this block moves into the specific clinical scenarios. The basic knowledge of the structure and function of the components of the nervous system will then be applied to the abnormal functions that are the basis for disorders and diseases of this system. The block objectives below were developed by the faculty and represent the content of this block. To successfully complete this block, students should be able to review aspects of neuronal structure and function presented in other blocks and describe aspects of PNS and CNS microstructure; explain basic cellular physiologic mechanisms of resting potential, nerve conduction, synaptic function and actions of the major neurotransmitters; describe the topographic anatomy of the brain and brainstem emphasizing regional functions and blood supply, including cranial nerve origin and peripheral distribution; describe the anatomy and function of the spinal cord and brainstem; describe the anatomy and function of each of the major neural systems as noted in the block guide; correlate the flow of information with the anatomical structure in each major neural system as noted in the block guide; explain the anatomical, electrophysiological and neurological basis for higher order neurobehavioral functions, noting how each of these might be evaluated in a clinical setting; correlate localization of focal, multifocal or disseminated lesions with the appropriate signs and symptoms and neurologic testing methods; describe the nature of pathophysiologic lesions in the peripheral and central nervous systems; correlate dysfunction

with a specific neural system and the lesion location; identify structures in the head and neck and correlate their function in normal and clinical scenarios as discussed in lecture and lab; describe diseases of the central nervous system that localize to the cortex, subcortical region, brainstem and spinal cord as discussed in lecture and workshops in this block.

1.00 Classroom

### **RMC-5EI: Basic Biomedical Research**

1.00 Classroom | Web Component

### **RMC-900: Independent Study**

Independent study courses give students a unique opportunity to pursue a course of study not commonly included in the curriculum. If you are interested in pursuing an independent study, meet with the faculty member you want to work with to define the course work and expectations.

1.00 Independent Study

### **RMC-M1: Preclinical Curriculum Enrollment**

This course acts as a place holder for billing purposes. Placeholder

### **RMC-M2: Preclinical Curriculum Enrollment**

This course acts as a place holder for billing purposes. Placeholder

### **RMC-M3: Clinical Curriculum Enrollment**

This course acts as place holder for billing purposes. 1.00 Placeholder | Web Component

### **RMC-M4: Clinical Curriculum Enrollment**

This course acts as a place holder for billing purposes. 1.00 Placeholder | Web Component

### **RMC-OMSP: OMSP Feedback**

Online Only

### **RMD-501E: Physicianship I-Exam Makeup**

Physicianship I exam makeup only. 1.00 RMC Exam Makeup

### **RMD-501R: Physicianship I-Remediation**

Physicianship I remediation only. 1.00 RMC Remediation

### **RMD-503: Physicianship Program III**

The two-year Physicianship Program is a patient-centered, integrated, multidisciplinary program designed to provide students with a foundation of clinical knowledge, skills, attitudes and behaviors so that they are prepared for full-time clinical duties

beginning with their third-year core clerkships where students practice physician skills in the context of patient care. The Physicianship Program is competence-based and aligned with national recommendations. M1 year.

1.00 Classroom | Web Component

#### **RMD-503E: Physicianship III-Exam Makeup**

Physicianship III exam makeup only.

1.00 RMC Exam Makeup

#### **RMD-503R: Physicianship III-Remediation**

Physicianship III remediation only.

1.00 RMC Remediation

#### **RMD-504: Physicianship Program IV**

The two-year Physicianship Program is a patient-centered, integrated and multidisciplinary program designed to provide students with a foundation of clinical knowledge, skills, attitudes and behaviors so that they are prepared for full-time clinical duties beginning with their third-year core clerkships where students practice physician skills in the context of patient care. The Physicianship Program is competence-based and aligned with national recommendations. M2 year.

1.00 Classroom | Web Component

#### **RMD-505: Physicianship Program V**

The two-year Physicianship Program is a patient-centered, integrated and multidisciplinary program designed to provide students with a foundation of clinical knowledge, skills, attitudes and behaviors so that they are prepared for full-time clinical duties beginning with their third-year core clerkships where students practice physician skills in the context of patient care. The Physicianship Program is competence-based and aligned with national recommendations. M2 year.

1.00 Classroom | Web Component

#### **RMD-506: Physicianship Program VI**

The two-year Physicianship Program is a patient-centered, integrated and multidisciplinary program designed to provide students with a foundation of clinical knowledge, skills, attitudes and behaviors so that they are prepared for full-time clinical duties beginning with their third-year core clerkships where students practice physician skills in the context of patient care. The Physicianship Program is competence-based and aligned with national recommendations. M2 year.

1.00 Classroom | Web Component

#### **RMD-506R: Physicianship VI-Remediation**

Physicianship VI remediation only.

1.00 RMC Remediation

#### **RMD-510: Cell and Molecular Biology Block**

This four-week course, entitled Cellular and Molecular Biology, introduces the student to the Rush Medical College Block Curriculum with material integrated between physiology, anatomy, histology and biochemistry. This block will focus on cellular organization and mechanisms by which cells regulate and balance their physiology through membrane transport, intracellular signal transduction and gene regulation. This basic knowledge of the cellular and molecular biology of normal cells will then be applied to the abnormal functions that are the basis of human diseases.

1.00 Classroom | Web Component

#### **RMD-510E: Cell & Molec Bio-Exam Makeup**

Cell & Molec Bio exam makeup only.

1.00 RMC Exam Makeup

#### **RMD-511: Immunology and Hematology Block**

This course is a survey of the cell and molecular mechanisms that comprise the function of the immune system, the structure of the immune system organs and tissues, the cellular and molecular components of blood and their functions. Topics will focus on hematopoiesis, specific and nonspecific defense mechanisms, inflammation, immunodeficiency, hypersensitivity, serology, tumor and transplantation immunology, vaccines, serum proteins and homeostasis.

1.00 Classroom | Web Component

#### **RMD-511E: Imm & Hem Blk-Exam Makeup**

Imm & Hem Blk exam makeup only.

1.00 RMC Exam Makeup

#### **RMD-512: Musculoskeletal Block**

This course is a survey of the musculoskeletal system. The block integrates the structure, function and organization of muscle, bone and connective tissues with an emphasis on the spinal fracture case and the osteoarthritis case. Students will engage in thinking about the development of these systems as well as the changes noted in maturation and ageing processes. Control mechanisms (neural, humoral and mechanical) will be considered as the study during this block moves into the specific clinical scenarios.

1.00 Classroom | Web Component

#### **RMD-512E: Musculo Blk-Exam Makeup**

Musculo Blk exam makeup only.

1.00 RMC Exam Makeup

#### **RMD-513: Cardiovascular Respiratory Block**

This course is a survey of the normal development, structure and function of the cardiovascular system and respiratory system,

including the heart, blood vessels, lungs, trachea and larynx. In addition, the course will cover the organization and structure of the thoracic wall.

1.00 Classroom | Web Component

#### **RMD-513E: Cardiovas Resp Blk-Exam Makeup**

Cardiovas Resp Block exam makeup only.

1.00 RMC Exam Makeup

#### **RMD-514: Gastrointestinal and Metabolism Block**

This course is a survey of the normal gross and microscopic anatomy and physiology of the digestive system and also a survey of intermediary metabolism including basic carbohydrate, amino acid and lipid metabolism. This course material will be applied to the understanding of a limited number of disease states related to dysfunction of organs of the digestive system or digestive system function.

1.00 Classroom | Web Component

#### **RMD-514E: Gastro & Met Block-Exam Makeup**

Gastro & Met Block exam makeup only.

1.00 RMC Exam Makeup

#### **RMD-515: Genitourinary Block**

This course is a survey of the normal development, structure and function and regulation of the organs of the urinary system, female reproductive system and male reproductive system, including the anatomic organization of the structures that form the pelvis and pelvic floor.

1.00 Classroom | Web Component

#### **RMD-515E: Genitourinary Blk-Exam Makeup**

Genitourinary Blk exam makeup only.

1.00 RMC Exam Makeup

#### **RMD-516: Nervous System Head and Neck Block**

This course integrates information and topics between anatomy, histology and neurobiology. Neurobiology topics will draw on knowledge in the traditional domains of physiology, biochemistry, pharmacology, and neurology. Anatomy topics will cover details of head and neck anatomy including craniofacial anatomy, carotid circulation, the oral cavity, pharynx and larynx, with a particular focus on cranial nerves. This block is a survey of the nervous system. The block integrates the structure, function and organization of nervous tissue from the cellular through gross anatomic aspects including central, peripheral and autonomic portions of the system. The block will provide an emphasis on the headache case and the weakness case. Beyond an understanding of the normal structure and function of these systems, students will study the development and growth of

these components, as well as the changes noted in maturation and ageing processes within these systems. Control mechanisms will be considered as study during this block moves into the specific clinical scenarios. The basic knowledge of the structure and function of the components of the nervous system will then be applied to the abnormal functions that are the basis for disorders and diseases of this system.

1.00 Classroom | Web Component

#### **RMD-516E: Nervous Sys Block-Exam Makeup**

Nervous Sys Block exam makeup only.

1.00 RMC Exam Makeup

#### **RMD-517: Capstone I**

The Capstone Project is a self-directed, longitudinal activity that will commence during the M1 year and culminate in a presentation during the M4 year. During the M1 year, each medical student will identify a main theme that he or she is interested in investigating throughout medical school. Each student will be responsible for developing topics related to his or her theme. Each student will work with a faculty advisor and will submit documentation to the faculty member who will provide advice, feedback and mentoring. Themes can be re-shaped if the student's interests or career goals change. Students will identify learning objectives that correspond to current course work.

1.00 Online Only

#### **RMD-518: Capstone II**

Continuation of RMD-517. During the second term of the M1 year, each student will be responsible for identifying and completing learning objectives for each topic that was identified that relates to his or her theme.

1.00 Online (75% or Greater)

#### **RMD-519: Capstone III**

Continuation of RMD-518. The student will continue to develop topics related to his or her chosen theme. For each topic, the student will identify and complete learning objectives. The student will work with a faculty advisor who will monitor each student's portfolio and ensure that each student has completed required work.

1.00 Classroom | Web Component

#### **RMD-520: Capstone IV**

The Capstone Project is a self-directed, longitudinal activity that will commence during the M1 year and culminate in a presentation during the M4 year. At the conclusion of medical school, each student will be the expert on a specific topic. The Capstone Project will be an asset for residency applications. Rush will support a student who opts to publish his or



herproject with the faculty mentor. Potential publication types include case reports, book chapters, abstracts and research papers. Annually, Rush Medical College (RMC) will update the projects list and share with students and faculty. Completion of the Capstone Project will be a requirement for graduation from Rush Medical College. During the M1 year, each medical student will identify a main theme that he or she is interested in investigating throughout medical school. Each year, the student will be responsible for developing topics related to the theme. For each topic, the student will identify and complete learning objectives. The student will work with a faculty advisor and will submit documentation to the faculty member who will provide advice, feedback and mentoring. Themes can be re-shaped to correspond to current course work. If a student chooses, the project may mirror and enhance research interests or active research projects. Once the program is up and running, upper classmen will help advise their junior classmates.

1.00 Classroom

### **RMD-523: Mechanisms of Disease**

An overview of the basic mechanisms of the disease process and pharmacological principles.

1.00 Classroom | Web Component

### **RMD-523E: Mechan of Disease-Exam Makeup**

Mechanisms of Disease exam makeup only.

1.00 RMC Exam Makeup

### **RMD-524: Diseases Cardiovascular & Respiratory Systems**

An overview of the pathology, pathophysiology and microbiological aspects of diseases of the cardiovascular and respiratory system, and their diagnosis and treatment.

1.00 Classroom | Web Component

### **RMD-524E: Dis CV & Resp Sys-Exam Makeup**

Dis CV & Resp Sys exam makeup only.

1.00 RMC Exam Makeup

### **RMD-525: Diseases: Genitourinary Systems**

An overview of the pathology, pathophysiology and microbiological aspects of diseases of the genitourinary systems, and their diagnosis and treatment.

1.00 Classroom | Web Component

### **RMD-525E: Diseases: Genitourinary System-Exam Makeup**

Diseases: Genitourinary System makeup exam only.

1.00 RMC Exam Makeup

### **RMD-526: Diseases: Central Nervous Systems**

An overview of the pathology, pathophysiology and microbiological aspects of diseases of the central nervous system, and their diagnosis and treatment.

1.00 Classroom | Web Component

### **RMD-526E: Diseases: CNS-Exam Makeup**

Diseases: CNS exam makeup only.

1.00 RMC Exam Makeup

### **RMD-527: Gastrointestinal, Liver & Metabolic Disease**

This course is a survey of the pathology, pathophysiology and pharmacology that relates to diseases of the gastrointestinal system and liver, including identification of alterations in physiology of the gastrointestinal system and liver and how these manifest clinically; recognition of the significance of symptoms, signs and ancillary data in the evaluation of GI/metabolic disease; description of the pathology of the liver and gastrointestinal system; construction of differential diagnosis for common presenting symptoms and physical exam findings of GI, liver and metabolic disease.

1.00 Classroom | Web Component

### **RMD-527E: GI, Liver & Met Dis-Exam Makeup**

GI, Liver & Met Dis exam makeup only.

1.00 RMC Exam Makeup

### **RMD-528: Hematology, Dermatology & Musculoskeletal Disease**

This course is a survey of the pathology, pathophysiology and pharmacology that related to diseases of the skin, blood and musculoskeletal system, including identification of alterations in physiology of the skin, blood and musculoskeletal systems, and how these manifest clinically; recognition of the significance of symptoms, signs and ancillary data in the evaluation of skin, blood and musculoskeletal disease; description of the pathology of the skin, blood and musculoskeletal system; description of the mechanism of action of drugs used to treat disorders in the skin, blood and musculoskeletal systems; construction of differential diagnosis for common presenting symptoms and physical exam findings of diseases of the skin, blood and musculoskeletal systems.

1.00 Classroom | Web Component

### **RMD-528E: Hem/Derm/Musc Dis-Exam Makeup**

Hem/Derm/Musc Dis exam makeup only.

1.00 RMC Exam Makeup

### **RMD-529: Evidence-Based Medicine**

This course is designed to develop the skills to retrieve (from electronic databases and other resources), manage and utilize

biomedical information for solving problems and making decisions that are relevant to the care of individuals and populations. More specifically, the objectives of this course are to teach the construction of a structured clinical question to address a clinical problem, efficient and effective searching for information, critical appraisal of the evidence and a full understanding of the results (e.g., understanding the impact of a new therapy when expressed as an odds ratio for development of a negative outcome).

1.00 Classroom | Web Component

### **RMD-529A: Evidence-Based Medicine**

In this course, we aim for the students to be able to compare and contrast the methodologies used to establish the scientific basis for evidence-based practice (EBP). This foundation will allow them to achieve broader EBP objectives during their clinical years.

1.00 Classroom | Web Component

### **RMD-529B: Evidence-Based Medicine**

In this course, we aim for the students to be able to compare and contrast the methodologies used to establish the scientific basis for evidence-based practice (EBP). This foundation will allow them to achieve broader EBP objectives during their clinical years.

1.00 Classroom | Web Component

### **RMD-531: Physicianship I**

The two-year Physicianship Program is a patient-centered, integrated and multidisciplinary program designed to provide students with a foundation of clinical knowledge, skills, attitudes and behaviors, and to prepare students for full-time clinical duties beginning with their third-year core clerkships. The Physicianship Program is competence-based and aligned with national recommendations.

1.00 Classroom | Web Component

### **RMD-532: Physicianship II**

The two-year Physicianship Program is a patient-centered, integrated and multidisciplinary program designed to provide students with a foundation of clinical knowledge, skills, attitudes and behaviors, and to prepare students for full-time clinical duties beginning with their third-year core clerkships. The Physicianship Program is competence-based and aligned with national recommendations.

1.00 Classroom | Web Component

### **RMD-532E: Physicianship II Exam Makeup**

Physicianship II exam Makeup inly.

1.00 Classroom

### **RMD-533: Physicianship III**

The two-year Physicianship Program is a patient-centered, integrated and multidisciplinary program designed to provide students with a foundation of clinical knowledge, skills, attitudes and behaviors, and to prepare students for full-time clinical duties beginning with their third-year core clerkships. The Physicianship Program is competence-based and aligned with national recommendations.

1.00 Classroom | Web Component

### **RMD-534: Physicianship IV**

The two-year Physicianship Program is a patient-centered, integrated and multidisciplinary program designed to provide students with a foundation of clinical knowledge, skills, attitudes and behaviors, and to prepare students for full-time clinical duties beginning with their third-year core clerkships. The Physicianship Program is competence-based and aligned with national recommendations.

1.00 Classroom | Web Component

### **RMD-540: Humanities in Medicine I**

This half of a two-term elective is an 18-session course that examines how empathy, observation and interpretation impact one's experience of literature and the arts. Particular attention will be paid to the ways in which observation and engagement with the arts parallels observation and engagement in patient care. Individual sessions will focus on the role of temporal and professional perspective in describing medical events, differences and similarities in observational skills in the arts and medicine, and the use of movement and drama exercises to examine how one experiences and is experienced by others. Course activities will include museum visits, movement activities, acting exercises, and reading and writing about selected works of literature.

1.00 Classroom | Web Component

### **RMD-541: Humanities in Medicine II**

This half of a two term elective is an 18 session course that examines how empathy, observation and interpretation impact one's experience of literature and the arts. Particular attention will be paid to the ways in which observation and engagement with the arts parallels observation and engagement in patient care. Individual sessions will focus on the role of temporal and professional perspective in describing medical events, differences and similarities in observational skills in the arts and medicine, and the use of movement and drama exercises to examine how one experiences and is experienced by others. Course activities will include museum visits, movement activities, acting exercises, and reading and writing about selected works of literature.

1.00 Classroom | Web Component

### **RMD-542: Spanish for Medical Professionals I**

The primary goal of this course is to make it possible for students to communicate in Spanish with patients whose dominant language is Spanish. The best way to learn a language is to practice as often as possible. From the onset of this course, students are encouraged to use their Spanish language skills in class and in situations similar to those that they may encounter in a medical environment with Spanish-speaking patients. There are in-class activities, such as role playing, brief conversations, interviewing and history taking. Students also expand their Spanish vocabulary with an emphasis on medical terminology. The students review the essentials of Spanish grammar to enhance their ability to communicate. Furthermore, the course includes informal presentations about different aspects of Hispanic culture to both enhance the quality of the relationship with Spanish-speaking patients and to avoid misunderstandings about certain cultural values and expectations. By familiarizing students with conversational Spanish and medical Spanish, this course will enable students to apply their learning to real-world situations, to assist with communications, and ultimately to break down the barriers between doctors and patients. This course also includes a series of cultural extracurricular activities and Spanish language websites for students to practice Spanish independently outside of the classroom. By visiting museums, restaurants and attending Hispanic movie sessions, students will be able to engage in Spanish learning activities between classroom sessions. Students will be able to utilize the Internet educational resources to fit their individual learning styles, and to complement their in-class instruction and their particular medical interests.

1.00 Classroom | Web Component

### **RMD-543: Spanish for Medical Professionals II**

The primary goal of this course is to make it possible for students to communicate in Spanish with patients whose dominant language is Spanish. The best way to learn a language is to practice as often as possible. From the onset of this course, students are encouraged to use their Spanish language skills in class and in situations similar to those that they may encounter in a medical environment with Spanish-speaking patients. There are in-class activities, such as role playing, brief conversations, interviewing and history taking. Students also expand their Spanish vocabulary with an emphasis on medical terminology. The students review the essentials of Spanish grammar to enhance their ability to communicate. Furthermore, the course includes informal presentations about different aspects of Hispanic culture to both enhance the quality of the relationship with Spanish-speaking patients and to avoid misunderstandings about certain cultural values and expectations. By familiarizing students with conversational Spanish and medical Spanish, this course will enable

students to apply their learning to real-world situations, to assist with communications, and ultimately to break down the barriers between doctors and patients. This course also includes a series of cultural extracurricular activities and Spanish language websites for students to practice Spanish independently outside of the classroom. By visiting museums, restaurants and attending Hispanic movie sessions, students will be able to engage in Spanish learning activities between classroom sessions. Students will be able to utilize the Internet educational resources to fit their individual learning styles, and to complement their in-class instruction and their particular medical interests.

1.00 Classroom | Web Component

### **RMD-545: Sonographic Anatomy I**

The course will enhance students' understanding of key preclinical anatomy and physiology concepts through introducing students to living normal sonographic anatomy and physiology, clinically relevant pathophysiologic conditions, and common ultrasound-guided clinical procedures. Topics will be presented in parallel with the Rush M1 anatomy curriculum. We will utilize a monthly to biweekly, interactive, hands-on workshop review of (1) normal anatomy and physiology: direct sonographic visualization of anatomic structures and real-time physiology on normal paid human models, (2) abnormal anatomy and pathophysiology: sonographic visualization of pathologic conditions through the use of a portable ultrasound simulator and review of actual clinical case images, (3) ultrasound guided clinical procedures: performance of common ultrasound-guided clinical procedures on cadaver and simulation models.

1.00 Laboratory | Web Component

### **RMD-546: Sonographic Anatomy II**

The course will enhance students' understanding of key preclinical anatomy and physiology concepts through introducing students to living normal sonographic anatomy and physiology, clinically relevant pathophysiologic conditions, and common ultrasound-guided clinical procedures. Topics will be presented in parallel with the Rush M1 anatomy curriculum. We will utilize a monthly to biweekly, interactive, hands-on workshop review of (1) normal anatomy and physiology: direct sonographic visualization of anatomic structures and real-time physiology on normal paid human models, (2) abnormal anatomy and pathophysiology: sonographic visualization of pathologic conditions through the use of a portable ultrasound simulator and review of actual clinical case images, (3) ultrasound-guided clinical procedures: performance of common ultrasound-guided clinical procedures on cadaver and simulation models.

1.00 Laboratory

**RMD-550: Capstone V**

The Capstone Project is a self-directed, longitudinal activity that will commence during the M1 year and culminate in a presentation during the M4 year. During the M1 year, each medical student will identify a main theme that he or she is interested in investigating throughout medical school. Each student will be responsible for developing topics related to his or her theme. The student will work with a faculty advisor and submit documentation to the faculty member who will provide advice, feedback and mentoring. Themes can be re-shaped if the student's interests or career goals change. Each student will identify topic-related learning objectives that correspond to current course work.

1.00 Online Only

**RMD-551: Capstone VI**

The Capstone Project is a self-directed, longitudinal activity that will commence during the M1 year and culminate in a presentation during the M4 year. During the M1 year, each medical student will identify a main theme that he or she is interested in investigating throughout medical school. Each student will be responsible for developing topics related to that theme. The student will work with a faculty advisor and submit documentation to the faculty member who will provide advice, feedback and mentoring. Themes can be re-shaped if the student's interests or career goals change. Each student will identify topic-related learning objectives that correspond to current course work.

1.00 Online Only

**RMD-552: Capstone VII**

The Capstone Project is a self-directed, longitudinal activity that will commence during the M1 year and culminate in a presentation during the M4 year. During the M1 year, each medical student will identify a main theme that he or she is interested in investigating throughout medical school. Each student will be responsible for developing topics related to that theme. The student will work with a faculty advisor and submit documentation to the faculty member who will provide advice, feedback and mentoring. Themes can be re-shaped if the student's interests or career goals change. Students will identify topic-related learning objectives that correspond to current course work.

1.00 Online Only

**RMD-553: Capstone VIII**

The Capstone Project is a self-directed, longitudinal activity that will commence during the M1 year and culminate in a presentation during the M4 year. During the M1 year, each medical student will identify a main theme that he or she is interested in investigating throughout medical school. Each student will be responsible for developing topics related to that theme. The

student will work with a faculty advisor and submit documentation to the faculty member who will provide advice, feedback and mentoring. Themes can be re-shaped if the student's interests or career goals change. Students will identify topic-related learning objectives that correspond to current course work.

1.00 Online Only

**RMD-701: Core Clerkship: Primary Care**

This is a required core clerkship for all third-year medical students. Students will be embedded in either a family medicine or internal medicine ambulatory office for four weeks. Students will independently evaluate, present and care for patients while working directly with attending preceptors. This will be a primarily outpatient experience and is meant to immerse students in the primary care of patients on all levels, including acute care, chronic illness care and preventive care. The curriculum will highlight the unique relationships and specialized patient care that occurs in this setting.

4.00 Clinical | Web Component

**RMD-710: Transition to Residency I**

In this year-long course, students will master the skills to make a successful transition from undergraduate to graduate medical education (residency). In the course's initial year, students will learn the elements involved in matching into a residency position. To maintain the flexibility and individuality of each student's fourth-year experience, many of the resources will be made available as online modules that students can take when it fits into their schedules. Fall term will include USMLE Step 2 preparation, creating professional documents in support of application to residency, and refining interviewing skills. Spring term will include creation of rank order lists, financial aid literacy, and will culminate in a two-week Clinical Bridge course.

1.00 Web Component

**RMD-711: Transition to Residency II**

In this year-long course, students will master the skills to make a successful transition from undergraduate to graduate medical education (residency). In the course's initial year, students will learn the elements involved in matching into a residency position. To maintain the flexibility and individuality of each student's fourth year experience, many of the resources will be made available as online modules that students can take when it fits into their schedules. Fall term will include USMLE Step 2 preparation, creating professional documents in support of application to residency, and refining interviewing skills. Spring term will include creation of rank order lists, financial aid literacy, and will culminate in a two-week Clinical Bridge course.

1.00 Web Component

**RMD-713: USMLE Step II Preparation**

USMLE Step certification is necessary for receiving licensure to practice medicine. The Step 2 portion is required for graduation from Rush Medical College. This exam assesses the ability of examinees to apply medical knowledge, skills, and understanding of clinical science essential for the provision of patient care under supervision, and includes emphasis on health promotion and disease prevention. The purpose of this course is to give students time, guidance and resources to prepare for successful completion of the Step 2 exam components: Clinical Knowledge (CK) and Clinical Skills (CS).

2.00-4.00 Online Only

**RMD-714: Residency Interviewing Preparation**

Residency interviews are an important opportunity for M4 students to visit residency programs and put their best face forward to secure PGY 1 residency positions. Interviewing skills are an important component of the selection process. This course will review basic interviewing techniques and enhance students' organization skills to optimize the interviewing process. They will create an effective strategy to research programs in advance of interviews, learn how best to answer difficult interview questions, create a tracking mechanism detailing program information and outcome, and develop a financial plan.

2.00-4.00 Online Only

**RMD-720: Careers in Medicine**

Students interested in this elective will identify one specialty to pursue for the two-week clerkship. Each student will be paired with one or two attendings for the two-week period. Students will be expected to spend 85% of their time with physicians participating in patient care to experience the daily life of a practitioner in both the inpatient and the outpatient settings as appropriate for the specialty. They will spend the remaining 15% of their time in independent study researching the specialty and completing exercises on the Careers in Medicine website. The specialties available will be those into which students can match upon graduation from medical school (either into a categorical or advanced program) including anesthesia, radiology, dermatology, pathology, physical medicine and rehabilitation, ophthalmology, cardiothoracic surgery, neurosurgery, orthopedic surgery, otolaryngology, radiation oncology, and urology. Specialties not eligible for this course include the core clerkships (psychiatry, neurology, family medicine, obstetrics and gynecology, pediatrics, surgery, internal medicine, and emergency medicine).

2.00 Clinical

**RMD-721: Ambulatory Medicine**

Third-year medical students will be placed in either a family medicine or internal medicine ambulatory office or clinic for two weeks. Students will independently evaluate, present and care for patients while working directly with attending preceptors. This will be a primarily outpatient experience, and it is meant to immerse students in the ambulatory care of patients.

2.00 Clinical

**RMD-722: Clinical Bridge Course**

This course bridges the gap between medical student knowledge and expectations of day-one interns. Through small group, case-based discussions, this elective will expose fourth-year medical students to common intern-level concepts with an emphasis on high yield information and the thought process that drives clinical reasoning.

2.00 Classroom

**RMD-723: Medical Informatics**

Students will be given an introduction to the field of clinical informatics and complete a research project in informatics. An overview of health care information technology will be provided, with an emphasis on elements relevant to clinical careers and informatics research. Students will complete a research project evaluating an informatics application for efficacy, usability or impact on clinical outcomes.

4.00 Clinical

**RMD-726: Mindfulness in Medicine**

Mindfulness Based Stress Reduction is a curriculum taught for more than 30 years that teaches skills, drawn largely from mindfulness (or insight) meditation traditions that promotes the capacity for holding experience in nonjudgmental awareness and cultivates patience, compassion (to self and other), clarity during moments of emotional distress, quicker resolution of stress reactivity, and creative responses to stressors.

1.00 Clinical

**RMD-730: Clinical Nutrition**

Students will determine what foods make up a healthy diet and make recommendations to change food intake to improve the diet. They will know what foods make up nutrition therapeutic diets to prevent or treat acute and chronic disease. This will be accomplished by projects, online course material to read or interact with, and collaborating with registered dietitians at RUMC for nutrition support recommendations.

2.00 Classroom

**RMD-780: Basic Biomedical Research I**

One of a two-course series, this course will introduce the student to various aspects of the theory and practice of biomedical research. It includes lectures, journal club, a written project proposal, practical experience and a written paper on a laboratory technique.

1.00 Classroom | Web Component

**RMD-781: Basic Biomedical Research II**

This is the second course of a two-term series that will introduce the students to various aspects of the theory and practice of biomedical research. It includes lectures, journal club, a written project proposal, practical experience and a written paper on a laboratory technique.

1.00 Classroom | Web Component

**RMD-999: Continuous Enrollment**

The requirement for continuous enrollment applies to all students admitted or re-admitted for fall 2015 or later. Doctoral students should follow program requirements for continuous enrollment and degree completion. Students who have not completed their degree requirements are required to maintain continuous enrollment through the college of their program until the degree is earned. Continuous enrollment courses are graduate level courses set up by departments at Rush University for students who need to remain actively enrolled in the University while they finish their graduate work.

1.00 Continuous Enrollment

**RMD-EXM: Primary Care Exam Remediation**

Remediation of core primary care examination only.

4.00 Clinical

**RMT-505E: Physicianship V-Exam Makeup**

Physicianship V exam makeup only.

1.00 RMC Exam Makeup

**RMT-505R: Physicianship V-Remediation**

Physicianship V remediation only.

1.00 RMC Remediation

**RSA-501: Mgt Principle/Organizational Theory**

This course is an introduction to principles and models of management, leadership and organization, and human behavior in the workplace. The course will also provide information on various organizational models for research administration, evaluation methods and change implementation with the goal of increasing management and organizational effectiveness. Organizational structure, hierarchy, decision-making, management of change

and evaluation paradigms will be discussed. The course will provide the student with a better understanding of how to be an effective manager in a variety of organizational settings and job positions in the research administration arena.

4.00 Online Only

**RSA-502: Theory: Grants/Contracts Administration**

This course will introduce students to the principles of grants and contracts management, including the lifecycle of a grant or contract, how grant proposals and contract bids are developed, what the essential difference is between a grant and contract, the contract negotiation process, the subcontracting process and the regulations that govern grants and contracts including the Federal Acquisition Regulations. Students will be introduced to all areas of research administration, including pre-award and post-award administration, responsible conduct of research, and technology transfer. Some of the basics that the student will learn are how a grant proposal is developed, the management of grants, contracts and subcontracts, what the essential difference is between a grant and a contract, how to respond to a request for application or request for proposal, the negotiation process, and the regulations that govern grants and contracts, including the Federal Acquisition Regulations. The course will provide the student with a better understanding of how to manage a sponsored projects pre-award office and what electronic systems are available to assist in applying for and managing grants and contracts.

4.00 Online Only

**RSA-510: Project Management**

This course will provide students with the knowledge to assume a leadership position in sponsored projects or clinical trials administration. The course will include grant development and application preparation, IRB review and informed consent, subject recruitment and retention, study budget preparation, and institutional training opportunities. The course will provide students with the knowledge to manage grant development and application, work with faculty researchers, and train departmental and college research administrators. This course will also provide students with the knowledge and skills to function as a clinical trials administrator through the management of the IRB approval process, subject recruitment and informed consent, multicenter clinical studies, data collection and progress reporting, study budget preparation and the financial management of clinical studies

4.00 Online Only

### **RSA-512: Budgeting & Fiscal Management**

This course provides an overview of the principles governing the fiscal management of grants and contracts. The requirements that sponsors have regarding sound fiscal management of sponsored awards: grant, cooperative agreements and contracts, will be presented. The student will learn how to develop a research business plan, how to prepare for an A-133 audit, what costs are allowable and allocable to a grant or contract, tracking awards, effort reporting, billing cost reimbursable contracts, managing accounts receivable, preparing and negotiating a facilities and administration costs rate proposal. The course will provide the student with a comprehensible understanding of the requirements to best manage funds received on sponsored awards and what electronic systems are available to facilitate the post-award management of grants and contracts.  
4.00 Online Only

### **RSA-513: Intro to Clinical Research Management**

This is an overview of clinical research management. Topics include financial management, regulatory management and operational management of clinical research. The course contains a mix of theory, basic tools and best practice to provide students with the background necessary to administer clinical studies in their practice.  
4.00 Online Only

### **RSA-514: Legal/Ethical/Regulatory Compliance**

This course introduces students to legal, ethical and regulatory issues encountered in monitoring, implementing and managing research projects. Students will learn to apply ethical principles and legal and regulatory requirements to develop compliance programs, monitor investigator and institutional compliance, and implement corrective action. Students will learn how to design and implement a compliance program, processes for monitoring compliance, and how to apply appropriate principles and processes to correcting noncompliance. The primary emphasis of the course will be on fundamental issues involved in structuring compliance programs that conform to legal requirements, as well as principles of scientific integrity.  
4.00 Online Only

### **RSA-516: Intellectual Property & Technology Transfer**

This course will introduce students to U.S. patent and contract laws, copyright and trademark laws and procedures, patent cooperation treaty laws and procedures, confidential disclosure agreements, licensing options and interinstitutional agreements to protect proprietary rights of institutions and inventors. The preparation of the patent applications, and the filing with, and examination by, the United States Patent and Trademark Office will also be taught. Students will learn how to apply the

relevant laws and procedures, how to properly prepare technology transfer documents and how to use effective, successful negotiation strategies.

4.00 Online Only

### **RSA-518: Introduction to International Research Administration**

Various areas within research administration including pre-award, post award, contracting, and research compliance are covered in relation to their international counterparts. In addition, the relationship of grants offices to their international office counterparts, will also be covered. The course contains a mix of theory, practical tools and best practices.

4.00 Classroom

### **RSA-595: Special Topics in Research Administration**

Directed readings in an area of research administration. The student, in consultation with faculty and the program director, chooses the topic. The student finds relevant literature, refines the topic and integrates readings into a review of the literature. This is an elective course designed for the advanced student. It may be used as additional credit or when a required course was waived based on experience or prior course work. Requires permission of program director to register.

2.00-4.00 Classroom | Web Component

### **RSA-596A: Practicum I**

Introduces students to research administration policy, procedure and operations. Areas include grants administration, project management, budget and fiscal management, compliance and audit, intellectual property and technology transfer. Students will rotate through each administrative area.

4.00 Web Component

### **RSA-596B: Practicum II**

The overall aim of Practicum II is to allow students to gain additional practical experience in one of the following administrative areas of concentration that they select: sponsored projects, clinical trials management, research finance, research compliance, research integrity, and intellectual property and technology transfer.

4.00 Web Component

### **RSA-596PA: Practicum I**

Introduces students to research administration policy, procedure and operations. Areas include grants administration, project management, budget and fiscal management, compliance and audit, and intellectual property and technology transfer. Students will rotate through each administrative area. Prerequisite: satisfactory completion of first-year course work.

4.00 Practicum | Web Component

### **RSA-596PB: Practicum II**

The overall aim of Practicum II is to allow students to gain additional practical experience in one of the following administrative areas of concentration that they select: sponsored projects, clinical trials management, research finance, research compliance, research integrity, and intellectual property and technology transfer.

4.00 Practicum | Web Component

### **RSA-598A: Research Project I**

This is the first part in planning and conducting the required master's degree research project. It includes guided activities to develop an appropriate research question and research methodology for completion of the research requirements. Students are expected to begin formulation of their research questions and to complete their review of the literature. Students are required to formally present the results of their projects to the faculty and student body, and are encouraged to publish their results. The goal of conducting a research project is to prepare the students to become informed users of management literature and related research. Students will conduct research in areas of specialization chosen by the student or in an area of general research administration and practice. Through research, the student will increase knowledge within the discipline and promote interdisciplinary collaboration. The student will advance the science and practice of research administration by providing a link between basic science research, clinical research and management practice.

2.00 Classroom | Web Component

### **RSA-598B: Research Project II**

This is the continuation of Research Project I. It includes guided activities to develop an appropriate research question and research methodology and begin data collection for completion of the required program research requirements. At the completion of this course, the student should be ready to present a research proposal to the committee for the preliminary defense and to begin and complete the data collection phase of research. Students are required to formally present the results of their projects to the faculty and student body, and are encouraged to publish their results.

2.00 Online Only

### **RSA-598C: Research Project III**

This is the continuation of Research Project II. During this phase, the research report is completed and the final defense of the project takes place. Completion of data collection, analysis, results and discussion completes the required program research requirements. Students are required to formally present the results of their projects to the faculty and student body, and are encouraged to publish their results.

2.00 Classroom | Web Component

### **RSA-999: Continuous Enrollment**

The requirement for continuous enrollment applies to all students admitted or re-admitted for fall 2015 or later. Doctoral students should follow program requirements for continuous enrollment and degree completion. Students who have not completed their degree requirements are required to maintain continuous enrollment through the college of their program until the degree is earned. Continuous enrollment courses are graduate level courses set up by departments at Rush University for students who need to remain actively enrolled in the University while they finish their graduate work.

1.00 Continuous Enrollment

### **SBB-580: Human Blood Group Systems**

This course focuses on human blood group systems, biochemistry, inheritance, serologic activity, clinical significance and disease associations. Topics include fundamentals of immunology, molecular biology, red blood cell membrane structure, and genetics as they relate to blood group systems. This course is taught only online. Extensive computer use is required. Prerequisites: general knowledge of immunohematology and consent of the instructor.

4.00 Online Only

### **SBB-581: Principles & Methods of ABID**

Review of methods for the detection and identification of antibodies with specificity for human red cell antigens. Topics include history of transfusion medicine, serological systems, and direct and indirect antiglobulin tests. The course focuses on resolution of complex antibody problems. It is taught only online. Extensive computer use is required.

2.00 Online Only

### **SBB-582: Blood Procur/Blood Prod Manufa**

The focus of this course is on theoretical and practical concepts used in human blood procurement and blood product manufacturing. Topics include red blood cell and platelet preservation; the oxygen dissociation curve; basic coagulation; allogeneic and autologous blood donor selection; whole blood collection and component preparation labeling, storage, distribution and use; donor testing; transfusion infectious diseases; storage lesions; and hematopoietic progenitor cell collection and use. This course is taught only online. Extensive computer use is required.

3.00 Online Only

### **SBB-583: Blood Bank/Transfusion Service Operation**

This course reviews theoretical and practical concepts used in blood bank and transfusion service operation. Topics include safety and federal regulatory requirements, disaster management, administration of blood components process validation,



automation, human resources management, budgeting, and competency assessment. The course focuses on quality management systems and QC, QA, QM, blood utilization management, error management. It is taught only online. Extensive computer use is required.

3.00 Online Only

#### **SBB-584: Clin Immunohematology & Transfusion**

This course focuses on transfusion medicine practice and therapy. Topics include the human circulatory system; effects of shock; blood component therapy; special transfusion; perinatal, neonatal and pediatric transfusion practice; hemolytic disease of the newborn; transplantation; anemias; and infectious and noninfectious complications of blood transfusion. This course is taught only online. Extensive computer use is required.

Prerequisites: general knowledge of immunohematology and consent of the instructor.

4.00 Online Only

#### **SBB-585: Comprehensive Review**

This course is a comprehensive review in preparation for the certification exam. It is designed to help fulfill requirements for eligibility to take the Specialist in Blood Bank Technology (SBB) certification examination given by the American Society of Clinical Pathologists Board of Registry. This is a core course for the Specialist in Blood Banking Technology Certification Program (SBB). Therefore, students pursuing this certification should achieve a grade of B or better in this course. Due to prerequisites required to progress in the SBB program, students who receive a grade of incomplete or a grade below B for this course will not be allowed to register for subsequent SBB core courses. LT grade.

3.00 Online Only

#### **SBB-586: SBB Clinical Practicum**

Field experience under supervision of a professional expert in a blood center or hospital transfusion service setting. Students enrolled in the SBB traditional curriculum must participate in clinical site visits and serologic resolution of clinical specimens. Students must take a minimum of four quarter hours (QH) within four quarters. It is recommended that the student take no more than four QH within any given quarter. Clinical sites include apheresis centers, donor centers, stem cell processing centers and transfusion service centers.

1.00-6.00 Online Only

#### **SBB-587: Selected Topics & SBB Project**

This course consists of current topics in transfusion medicine, scientific and technical writing, and presentation skills. The selected topics include research; education; reading and

evaluating a research paper; parentage testing; medical, legal and ethical issues; and a review of laboratory math pertinent to the SBB candidate. This is a core course for the Specialist in Blood Banking Technology Certification Program (SBB). Therefore, students pursuing this certification should achieve a grade of B or better in this course. Due to prerequisites required to progress in the SBB program, students who receive a grade of incomplete or a grade below B for this course will not be allowed to register for subsequent SBB core courses. LT grade.

3.00 Online Only

#### **SBB-999: Continuous Enrollment**

The requirement for continuous enrollment applies to all students admitted or re-admitted for fall 2015 or later. Doctoral students should follow program requirements for continuous enrollment and degree completion. Students who have not completed their degree requirements are required to maintain continuous enrollment through the college of their program until the degree is earned. Continuous enrollment courses are graduate level courses set up by departments at Rush University for students who need to remain actively enrolled in the University while they finish their graduate work.

1.00 Continuous Enrollment

#### **SUR-701: Core Clerkship: Surgery**

The core clerkship in surgery will consist of an eight-week general surgery component in the M3 year. During surgery, the principles of preoperative and postoperative care, diagnosis of surgical disease, indications for surgery, recognition and response to surgical emergencies, and the physiological principles of surgery are stressed through the case study method. Students will be involved in the care of approximately three patients per week. Technical experience is provided in the operating rooms and clinical skills lab. Outpatient clinics, lectures and conferences provide additional direct contact with faculty.

8.00 Clinical | Web Component

#### **SUR-710: General Surgery Subinternship**

Under supervision, the student assumes many of the duties and responsibilities of a resident physician. This includes responsibility for preoperative and postoperative care, participation in surgery, and rotating on the night on-call schedule. On-call responsibilities for the surgical subintern are at the level of the first-year resident, namely, subinterns will be the first members of the surgical team to see in-hospital consults, emergency room patients, and answer calls from the nurses. They will be supervised by in-house residents. The work is primarily with hospitalized patients; however, there is an opportunity to work with ambulatory and elective surgical patients. Independent library investigative projects are assigned.

4.00 Clinical

**SUR-711: Cardiovascular Surgery**

This course emphasizes the clinical diagnosis and surgical management of adult and pediatric cardiac disorders. Preoperative evaluation, including review of cardiac catheterization data, intraoperative management and postoperative care, are discussed at conferences and in the operating room. Indications for surgery, preoperative evaluation and postoperative care are discussed at patient rounds, in conferences and on an individualized basis.

4.00 Clinical

**SUR-712: Surgical Intensive Care**

This rotation exposes the experienced student to comprehensive management of critically ill surgical patients. Application of advanced life support techniques including vaso-active drugs, mechanical aids to circulation, pacing and respiratory therapy are reviewed. Pathophysiologic discussion and integration with cardiopulmonary analysis of data obtained from invasive monitoring are emphasized. Radiologic, medical, and surgical aspects of critical care medicine are also incorporated. Students will attempt to function as subinterns with direct patient responsibilities.

4.00 Clinical

**SUR-713: Peripheral Vascular Surgery**

This course emphasizes the clinical noninvasive laboratory and radiologic diagnosis of peripheral vascular disorders considered for surgical management. Indications for surgery, preoperative evaluation and postoperative care are discussed at patient rounds, in conferences and in the operating room. This rotation allows extensive time in the operating room with open cases. The student will work closely with the vascular fellow and attendings.

4.00 Clinical

**SUR-716: Plastic & Reconstructive Surgery**

The primary goal of this clerkship is to provide an introduction to the surgical subspecialty of plastic and reconstructive surgery in as many of its various elements and diverse applications as possible. Plastic surgery covers a broad array of surgical/medical problems including wound healing; burns, both acute and long-term care; congenital anomalies, such as cleft lip and palate and other craniofacial defects; breast surgery, including breast reduction, augmentation and reconstruction following mastectomy; microsurgical procedures for a free flap transfer, nerve repair, and other means of tissue transposition; hand surgery, ranging from acute industrial accidents to long-term rehabilitation for neuromuscular problems; care of facial fractures, both acute and delayed repair; care for trunk and extremity problems, relating both to trauma and tumor extirpation; and aesthetic surgery of the face, extremities and trunk.

2.00-4.00 Clinical

**SUR-721: Pediatric Surgery**

The pediatric surgery elective is available to fourth-year medical students. The students that can benefit most from this rotation include students interested in general surgery and pediatrics. The elective will provide an opportunity to become familiar with the pathogenesis, diagnosis and management of common conditions requiring surgery in the neonatal and pediatric population.

4.00 Clinical

**SUR-726: Principles of Urology**

This clerkship provides further experience in the diagnosis and management of urological problems as a supplement to the basic clerkship in surgery.

4.00 Clinical

**SUR-727: Genitourinary Neoplasia**

This course presents the basic concepts of neoplasia, using the genitourinary neoplasms as models. The student actively participates in the management of both hospitalized and ambulatory patients. Multidisciplinary seminars and individual projects are available. Approval to take this course must be obtained from Christopher Coogan, MD, prior to registration.

4.00 Clinical

**SUR-731: Pain Management**

This rotation exposes the experienced student to the care and management of patients with low-back pain, postherpetic neuralgia, complex regional pain syndrome and other common pain problems. This is a busy office setting where students will see new and returning patients to take histories, perform physical exams and assist in various nerve block procedures. The student will function as a junior house officer.

2.00-4.00 Clinical

**SUR-751: Orthopedics**

This fourth-year elective rotation in orthopedic surgery is intended for students considering a career path requiring knowledge of musculoskeletal problems. Students are assigned to work with individual attendings on the adult reconstructive service, foot-ankle-hand service, sports medicine service, pediatric and tumor service, or the spine service. Students work with individual attendings in an office or clinic setting, assist in surgery, and round on inpatients. Students are required to attend the various clinical and resident education conferences. Educational goals include review of functional anatomy, understanding of injury triage, and concepts of treatment.

4.00 Clinical

**SUR-751X: Orthopedics-Away**

Intended for students considering a career path requiring a knowledge of musculoskeletal problems. Students work with individual attendings on either the joint reconstructive service, foot-ankle-hand service, sports medicine service, pediatric and tumor service, the spine service, or the Shriners' Hospital pediatric service. Students work with individual attendings in an office or clinic setting, assist in surgery, and round on inpatients. Students are required to attend various clinical and resident education conferences. All students meet weekly with the course director for a student-only education conference. Educational goals include review of functional anatomy, understanding of injury triage, and concepts of treatment. Night call is not required, but is encouraged. Prerequisites: SUR-701 and fourth-year standing.

2.00-4.00 Clinical

**SUR-752: Orthopedic Research**

Students may arrange research rotations individually with faculty at Rush. To receive credit for such a rotation, the person to whom the student will be responsible must write a letter describing the student's activities, responsibilities, amount of supervision, and the specific dates of the rotation. Each student must submit a proposal to the Office of Clinical Curriculum for approval at least eight weeks before the rotation and must have written approval from the Office of Clinical Curriculum before beginning the rotation. Research rotations are scheduled for a minimum of four weeks of credit with the expectation that the full project will extend beyond the formal course duration. Depending on the proposal, the weeks of credit may or may not apply to the rule of eight-weeks' maximum credit for course work in a single subspecialty. This decision is at the discretion of the Office of Medical Student Programs.

4.00 Clinical

**SUR-756: Neurosurgery**

This clinical clerkship expands upon and demonstrates the practical application of neurological sciences. The diagnosis and management of both simple and complex neurosurgically oriented disorders are addressed. Conferences with both the resident and attending staff are held weekly.

4.00 Clinical

**SUR-756X: Neurosurgery-Away**

This clinical clerkship expands upon and demonstrates the practical application of neurological sciences. The diagnosis and management of both simple and complex neurosurgically oriented disorders are addressed. Conferences with both the resident and attending staff are held weekly. Emphasis is placed

on the basic neurosciences especially neuroanatomy and pathophysiology. Prerequisite: SUR-701.

2.00-4.00 Clinical

**SUR-757: Principles of Ophthalmic Exam**

The purpose of this course is to acquaint students with the surgical specialty of ophthalmology. They will learn basic ophthalmic terminology, history and examination principles; attend daily rounds and other didactic sessions; and observe surgery. The students will not only learn techniques of examination that will be useful in their own medical practices, but they will also understand the capabilities and limitations of the ophthalmologist in order to make better use of ophthalmic consultations. This clerkship may also be taken as a four-week clerkship if prior approval is received from Jack A. Cohen, MD, the Associate Chairman for Education in the Department of Ophthalmology (jack\_a\_cohen@rush.edu). During the second two-week period, students will gain experience in performing history and physical examinations and will work up patients to present to resident and attending physicians. Students will learn to perform more sophisticated techniques of examination, including slit lamp funduscopic examination and indirect ophthalmoscopy. In general, the student will gain hands-on experience in ophthalmic examination, diagnosis and theory.

2.00-4.00 Clinical

**SUR-759: Otolaryngology**

Clinical experience is provided in the diagnosis and management of patients with diseases of the ear, nose, throat, head and neck. Office practice, in addition to the care of hospitalized patients, provides the basis for clinical instruction, with emphasis on case study and proper use of instruments. Departments of pathology, radiology and otology conferences and Journal Club are included.

2.00-4.00 Clinical

**SUR-761: Surgical Oncology**

Concentrated experience in the surgical diagnosis and management of patients with tumors is provided. Correlation of surgical problems with anatomic and pathological physiology is stressed, including examination of gross and microscopic tissue. Attendance at the tumor clinic and tumor conference is required. Students may also enroll in this clerkship for six weeks by contacting the Office of Medical Student Programs.

4.00-6.00 Clinical

**SUR-761X: Surgical Oncology-Away**

Concentrated experience in the surgical diagnosis and management of patients with tumors is provided. Correlation of surgical problems with anatomic and pathological physiology is stressed, including examination of gross and microscopic tissue. Attendance

at the tumor clinic, tumor conference, and head and neck tumor conference is required. Prerequisite: SUR-701.

4.00-6.00 Clinical

### **SUR-765: Colon and Rectal Surgery**

Close one-on-one instruction between the student and physician in an apprentice-teacher relationship. The student accompanies the physician in all outpatient clinic office hours, as well as surgical procedures and hospital rounds. This involves spending approximately 15 hours per week in a clinic environment, assisting in approximately 50 surgical and endoscopic procedures over the month and daily in-hospital rounds. No night call required. The grade will be determined by an essay exam, course clinical evaluations, submitted history and physical exams, and classroom participation.

4.00 Clinical

### **SUR-771: Thoracic Surgery**

The diagnosis, operative and postoperative care of patients with pulmonary and esophageal disorders are studied in both hospitalized and ambulatory patients. In addition, students assist in patient care, and topics are assigned for discussion.

2.00-4.00 Clinical

### **SUR-771X: Thoracic Surgery-Away**

The diagnosis, and operative and postoperative care of patients with pulmonary and esophageal disorders are studied in both hospitalized and ambulatory patients. In addition, students assist in patient care, and topics are assigned for discussion. Prerequisite: SUR-701

4.00 Clinical

### **SUR-781: Research in Surgery**

Students may arrange research rotations individually with faculty at Rush. To receive credit for such a rotation, the person to whom the student will be responsible must write a letter describing the student's activities, responsibilities, amount of supervision, and the specific dates of the rotation. Credit toward graduation is granted assuming that the research project is ongoing throughout the academic year. Each student must submit a proposal to the Office of Clinical Curriculum for approval at least eight weeks before the rotation and must have written approval from the Office of Clinical Curriculum before beginning the rotation. Research rotations are scheduled for a minimum of four weeks of credit with the expectation that the full project will extend beyond the formal course duration. Depending on the proposal, the weeks of credit may or may not apply to the rule of eight-weeks' maximum credit for course work in a single subspecialty. This decision is at the discretion of the Office of Medical Student Programs.

4.00 Clinical

### **SUR-782: Research in Anesthesiology**

[4 weeks]

4.00 Clinical

### **SUR-794: Advanced Surgery**

Advanced Surgery offers an opportunity for Rush students and especially outside students to become familiar with the Department of General Surgery at Rush University Medical Center. The student will participate in the rotation in a manner similar to the third-year students and may assume some of the duties and responsibilities of the junior residents, depending upon their familiarity with the task involved. Students will become involved in preoperative and postoperative care, they will participate in surgery, and fourth-year students rotating in advanced surgery will take part in the in-house call schedule on a shared rotating basis with third-year students. The work is primarily with hospitalized patients, however, there is an opportunity for ambulatory and elective surgery.

4.00 Clinical

### **SUR-795: Anesthesiology**

The program enables medical students to learn airway management; recognize circulatory inadequacy and initiate support of the failing circulation; induce topical and infiltrative anesthesia safely; understand the actions and interactions of depressant and stimulant drugs commonly encountered or used by anesthesiologists; and participate in preoperative evaluation preparations of surgical and obstetric patients. Prerequisites: MED-701, OBG-701 and SUR-701.

4.00 Clinical

### **SUR-796: Transplantation**

The clinical aspects of transplantation, including donor and recipient surgery, and preoperative and postoperative care are studied. The student participates in organ preservation care as well. Seminars on the fundamental and clinical aspects of transplant immunology are held.

4.00 Clinical

### **SUR-7E1: Surgery Elective**

A student may receive credit for an individually arranged elective with a Rush faculty member. To receive credit for such a rotation, the person to whom the student will be responsible must write a letter stating the student's activities, responsibilities, amount of supervision, and specific dates of the rotation. The sponsoring faculty member must complete an evaluation of the student's performance at the conclusion of the elective. The student must submit a proposal to the Office of Clinical Curriculum for approval at least eight weeks before the rotation and must have written approval from the Assistant Dean of Clinical Curriculum

before beginning the rotation. A student may receive four weeks of credit for an individually arranged elective. Credit for only one individually arranged elective will count toward graduation requirements.

4.00 Clinical

### **SUR-808: Trauma/Critical Care Surgery**

The Cook County Trauma Unit is one of the busiest urban trauma centers in the nation and offers an exceptional clinical experience for both medical students and residents. The trauma surgery rotation provides the senior-level medical student with an in-depth clinical experience in caring for the severely injured patient. The clerkship focuses on the initial management and associated decision-making, the necessary procedures and operative interventions, and the critical care necessary for survival of the trauma patient. The student is expected to take an assertive role in patient care from the initial encounter with EMS until the patient is discharged from the hospital. Multilevel supervision and guidance is provided by the attending physicians and residents as well as the clinical support staff.

4.00-8.00 Clinical

### **SUR-808X: Trauma/Critical Care Surgery-Away**

This rotation provides the fourth-year medical student with an in-depth clinical experience in the care of injured patients. Critical decision-making and surgical training are the key elements taught during resuscitation, operative management and the critical care phase. The student will follow patients from the ambulance to their discharge home. Multilevel supervision and teaching is available from attending physicians and residents.

Prerequisites: SUR-701 and fourth-year standing.

4.00-8.00 Clinical

### **SUR-EXM: Surgery Exam Remediation**

Remediation of the core surgery mini-board only.

2.00-8.00 Clinical

### **SUR-REM: Surgery Clinical Remediation**

Core surgery clinical remediation only. The student is not required to retake the examination.

4.00 Clinical

### **VAS-301: Vascular Anatomy, Physiology and Pathophysiology**

This course is a detailed survey of the large, small and microscopic vascular anatomy of the human body, including variations. Surrounding structures are also studied in their relationship to the vasculature. The purpose and normal mechanism of arterial and venous systems are studied. The disease

mechanisms of a wide variety of disorders of arteries and veins will be presented, with emphasis on those diseases that can be assessed by noninvasive vascular studies. The risk factors, patient symptoms, and treatment of these vascular pathophysiologic processes will also be presented.

3.00 Classroom | Web Component

### **VAS-304: Vascular Terminology**

Medical terminology will be presented with emphasis on terminology that is specific to vascular patients and terms that the vascular sonographer is likely to encounter in practice.

1.00 Classroom | Web Component

### **VAS-310A: General Pathophysiology I**

Pathologic processes for general and organ system pathology in the human body are covered in this and the sequential course, including the manifestations of disease, etiology, pathogenesis, clinical features, diagnostic tools, prognoses and therapeutic options.

2.00 Online Only

### **VAS-310B: General Pathophysiology II**

This course is a continuation of VAS-310A, General Pathophysiology I. Pathologic processes for general and organ system pathology in the human body are covered in this course, including the manifestations of disease, etiology, pathogenesis, clinical features, diagnostic tools, prognoses and therapeutic options.

3.00 Online Only

### **VAS-311: Ultrasound Physics and Physical Principles I**

The basic principles of sound and ultrasound are presented, including the important math concepts needed to use and understand these concepts. The emphasis in this course is on the theories behind ultrasound, including the basic parameters of sound, the creation of the B-mode image, the Doppler effect, continuous wave Doppler, pulsed wave Doppler and color flow imaging. Some basic hemodynamic principles are also introduced.

2.00-3.00 Classroom | Web Component

### **VAS-311A: Physics Topics in Doppler & Color**

This course is open to Advanced Placement students in the vascular ultrasound program. The principles of Doppler and color ultrasound techniques and instrumentation will be covered including the Doppler effect, Doppler equation, angle steering, angle correct, sample volume, spectral analysis, velocity measurement, color display, and color direction, among other related topics.

2.00 Classroom | Web Component

**VAS-311L: Ultrasound Physics and Physical Principles I Lab**

Students will perform activities to demonstrate physical and ultrasound principles under a variety of conditions. Duplex equipment controls and equipment problem solving will be emphasized in this course.

1.00 Laboratory | Web Component

**VAS-312: Ultrasound Physics Doppler/Clr**

This course is open to Advanced Placement students in the vascular ultrasound program and covers selected principles of ultrasound physics. The principles of Doppler and color ultrasound techniques and instrumentation, including Doppler effect, Doppler equation, angle steering, angle correct, sample volume, spectral analysis, velocity measurement, color display, and color direction will be covered, along with other related topics.

2.00 Classroom | Web Component

**VAS-313: Ultrasound Physics and Physical Principles II**

In this course, a continuation of the basic principles of B-mode, pulsed wave, and color Doppler are discussed, emphasizing the components of the duplex scanner. The interaction of ultrasound and tissue, including ultrasound artifacts and bioeffects are also examined.

3.00 Classroom | Web Component

**VAS-321: Patient Care Practices**

Vascular technologists interact with patients continually through the workday and have responsibilities for their care. This course prepares the technologist to offer patients safe examinations and transport, basic care of intravenous lines, oxygen, etc., and basic physical and emotional comfort during and around the time of testing. It offers the student information about general patient communication, and how to obtain patient history and symptoms of vascular disease while respecting the dignity and privacy of the patient. Patient attitudes in both health and disease are also reviewed to make the sonographer more conscious of these attitudes and processes in a diverse world.

2.00 Classroom | Web Component

**VAS-321L: Patient Care Practices Lab**

Basic care of the vascular laboratory patient is presented in the didactic course and practiced in this laboratory course. Activities are provided to practice skills in providing basic physical comfort and care of the patient, transportation, and practice in communication skills. The student will also be introduced to other medical devices that they may encounter during patient testing, such as catheters, drains and respirators, and they will learn how to test and manage care around these devices within the scope of practice for a vascular sonographer.

1.00 Laboratory | Web Component

**VAS-331: Venous Ultrasound Procedures**

The theories and processes for performing a duplex ultrasound scan to identify, locate and assess venous thrombosis of the lower extremity veins is the primary focus of this course. Indications, mechanism of disease, data analysis, reporting, patient cases, and problem-solving procedures for testing patients with venous disease are covered. Upper-extremity venous testing, vein mapping, and chronic venous insufficiency tests are introduced, and secondary tests, such as venous plethysmographic techniques, are also covered.

2.00 Classroom | Web Component

**VAS-331L: Venous Ultrasound Procedure Lab**

The venous ultrasound techniques, procedures, data analysis, reporting and problem solving will be practiced on models in the student laboratory. Students will observe actual patient exams in the hospital.

1.00 Laboratory | Web Component

**VAS-341: Arterial Physiologic Procedure**

The theories, techniques and processes of performing noninvasive physiologic arterial examinations of the lower and upper extremities is presented, including segmental pressures, continuous wave Doppler waveforms, and plethysmography. Indications, data analysis, reporting, patient cases, and problem-solving procedures are presented, along with a segment describing the use of other imaging modalities to evaluate arteries, such as CTA and MRA.

3.00 Classroom | Web Component

**VAS-341L: Arterial Physiologic Procedures Lab**

The noninvasive physiologic arterial procedures, data analysis, reporting and problem solving will be practiced on models in the laboratory, including segmental pressures, continuous wave Doppler, and plethysmography. Students will observe actual patient exams in the hospital.

1.00 Laboratory | Web Component

**VAS-351: Cerebrovascular Ultrasound Procedures**

The theories, techniques and processes of performing an extracranial cerebrovascular study using duplex ultrasound is presented, including indications, data analysis, reporting, patient cases, and problem-solving procedures.

2.00 Classroom | Web Component

**VAS-351L: Cerebrovascular Ultrasound Procedures Lab**

The extracranial cerebrovascular techniques, procedures, data analysis, reporting, and problem solving will be practiced on models in the laboratory using duplex ultrasound. Students will observe actual patient exams in the hospital.

1.00 Laboratory | Web Component

**VAS-354: Transcranial Doppler (TCD)**

The intracerebral anatomy and hemodynamics in health and disease will be presented in conjunction with the transcranial Doppler procedures. Students will learn theory, technique, data analysis, reporting, and problem solving, as well as practice TCD testing on models in the student laboratory in this course.

1.00 Classroom | Laboratory | Web Component

**VAS-361: Abdominal Vascular Procedures**

Duplex ultrasound procedures used to assess the aorta, iliac, renal, mesenteric, inferior vena cava, and hepatoportal vessels will be addressed in this course. Theory, indications, data analysis, reporting, patient cases, and problem-solving procedures for testing patients with abdominal vascular disease are also covered.

2.00 Classroom | Web Component

**VAS-361L: Abdominal Vascular Procedures Lab**

The abdominal vascular procedures, data analysis, and problem solving will be practiced on models in the laboratory using duplex equipment. Students will observe actual patient exams in the hospital.

1.00 Classroom | Laboratory | Web Component

**VAS-371: Advanced Vascular Testing and Topics**

More advanced examinations will be presented in this course, including duplex scanning of the upper extremity veins, chronic venous insufficiency, vein mapping, duplex scanning of the native arteries (upper and lower extremities), bypass grafts, extremity pseudoaneurysms and aneurysms, dialysis access grafts and arteriovenous fistulas. Indications, data analysis, reporting, patient cases, and problem-solving procedures for testing patients with complications or diseases are also covered, including segments on arterial and venous hemodynamics. Prerequisite courses include venous, arterial physiologic, and cerebrovascular procedures, as well as Ultrasound Physics I and II.

3.00 Classroom | Web Component

**VAS-371L: Advanced Vascular Testing Lab**

Advanced vascular procedures, data analysis, and problem solving will be practiced on models in the laboratory using duplex equipment and case studies. Students will observe actual patient exams in the hospital.

1.00 Laboratory | Web Component

**VAS-381: Introduction to Research**

This course is an introduction to test validation studies, statistics and research processes, including a hands-on approach to performing the methods introduced on small-scale projects in class and in the research laboratory course.

2.00 Classroom | Web Component

**VAS-381L: Introduction to Research Lab**

Students will perform basic research studies related to vascular technology.

1.00 Laboratory | Web Component

**VAS-401: Professional Practice in Ultrasound**

This course prepares the student for a career in vascular ultrasound by presenting topics such as professional resources of information and continuing education, certification, laboratory accreditation, reimbursement processes and current issues, scope of practice, legal and ethical issues, and managed care. Stress and time management, laboratory communication, and body mechanics are also covered for the technologist to care for himself in an intellectually, emotionally and physically demanding profession.

3.00 Classroom | Web Component

**VAS-405: Laboratory Management**

This course gives a broad overview of management tasks, such as laboratory organization, quality processes, teamwork, leadership, managing change, preparing a budget, purchasing equipment, decision-making processes, and human resource issues.

2.00 Classroom | Web Component

**VAS-415A: Clinical Skills in Vascular Ultrasound I**

During the first clinical rotation at an accredited vascular lab, the student and the clinical instructor will prepare a plan of study for the first quarter. It will entail the practice of three to four vascular exams from a list of 16 possible procedures. The plan is approved by the clinical coordinator. The student will first observe, then perform sections of vascular exams on patients, and go on to performing complete exams under the direct supervision of the clinical instructor. Indirect supervision will be allowed only with clinical instructor approval. Prerequisites: students must have completed all junior level courses with a minimum passing grade of C in each and achieved a cumulative GPA of at least 2.5.

4.00  
10.00 Clinical | Web Component

**VAS-415B: Clinical Skills Vascular Ultrasound II**

During these three quarters, students will rotate through one to three other clinical sites. The student and the clinical instructor will create a plan of study for each quarter, which will entail learning at least four new clinical skills. The plan will be approved by the clinical coordinator. Students will continue to observe, then perform sections, and finally perform complete vascular exams as their skills improve. After passing a test on a particular exam with a minimum grade of C, students will be allowed to perform that exam on patients with indirect supervision of the clinical instructor. Prerequisite: students must pass the VAS-415A through D courses in order.

3.00-6.00 Clinical | Web Component

**VAS-415C: Clinical Skills-Vascular Ultrasound III**

During these three quarters, students will rotate through one to three other clinical sites. The student and the clinical instructor will create a plan of study for each quarter, which will entail learning at least four new clinical skills. The plan will be approved by the clinical coordinator. Students will continue to observe, then perform sections, and finally perform complete vascular exams as their skills improve. After passing a test on a particular exam with a minimum grade of C, students will be allowed to perform that exam on patients with indirect supervision of the clinical instructor. Prerequisite: students must pass the VAS-415A through D courses in order.

3.00-6.00 Clinical | Web Component

**VAS-415D: Clinical Skills in Vascular Ultrasound IV**

During these three quarters, students will rotate through one to three other clinical sites. The student and the clinical instructor will create a plan of study for each quarter, which will entail learning at least four new clinical skills. The plan will be approved by the clinical coordinator. Students will continue to observe, then perform sections, and finally perform complete vascular exams as their skills improve. Indirect supervision of the student on a particular exam will only be allowed after approval of the clinical instructor. Prerequisite: students must pass the VAS-415A through D courses in order.

3.00-6.00 Clinical | Web Component

**VAS-420A: Professional Skills I**

Students will practice professional skills during each quarter of the senior year and be evaluated on particular characteristics in following laboratory protocol, safety and environment, patient communication, patient management, professional development, time management, and teamwork. These skills were taught during the junior year, particularly in the professional practices and patient care classes, and are practiced in a clinical setting.

1.00 Clinical | Web Component

**VAS-420B: Professional Skills II**

Students will practice professional skills during each quarter of the senior year and be evaluated on particular characteristics in following laboratory protocol, safety and environment, patient communication, patient management, professional development, time management, and teamwork. These skills were taught during the junior year, particularly in the professional practices and patient care classes, and are practiced in a clinical setting.

1.00 Clinical | Web Component

**VAS-420C: Professional Skills III**

Students will practice professional skills during each quarter of the senior year and be evaluated on particular characteristics in following laboratory protocol, safety and environment, patient communication, patient management, professional development, time management, and teamwork. These skills were taught during the junior year, particularly in the professional practices and patient care classes, and are practiced in a clinical setting.

1.00 Clinical | Web Component

**VAS-420D: Professional Skills IV**

Students will practice professional skills during each quarter of the senior year and be evaluated on particular characteristics in following laboratory protocol, safety and environment, patient communication, patient management, professional development, time management, and teamwork. These skills were taught during the junior year, particularly in the professional practices and patient care classes, and are practiced in a clinical setting.

1.00 Clinical | Web Component

**VAS-425A: Cumulative Clinical Skills in Vascular Ultrasound I**

After students master new clinical skills with a passing grade, they must continue to practice and demonstrate consistent performance at an appropriate skill level in these vascular examinations. During this course, students will practice learned clinical skills at new clinical sites and be evaluated in an existing or new clinical setting.

1.00-4.00 Clinical | Web Component

**VAS-425B: Cumulative Clinical Skills in Vascular Ultrasound II**

After students master new clinical skills with a passing grade, they must continue to practice and demonstrate consistent performance at an appropriate skill level in these vascular examinations. During this course, students will practice learned clinical skills at new clinical sites and be evaluated in an existing or new clinical setting.

1.00-4.00 Clinical | Web Component

**VAS-425C: Cumulative Clinical Skills in Vascular Ultrasound III**

After students master new clinical skills with a passing grade, they must continue to demonstrate consistent performance at an appropriate skill level. During this course, students will continue to perform previously learned clinical skills at new or current clinical sites, demonstrating their ability to adjust to new



protocols and clinical settings, and be evaluated for consistent high quality in these skills each quarter.

1.00-4.00 Clinical | Web Component

#### **VAS-431: Senior Case Presentations I**

Students will attend lectures on a variety of advanced topics and participate in vascular conferences. Students will also prepare, write and present case studies from the patient exams they have performed at their clinical sites.

1.00 Classroom | Web Component

#### **VAS-432: Senior Lectures/Case Presentations II**

Students will attend lectures on a variety of advanced topics and participate in vascular conferences. Students will also prepare and present or write case studies from the patient exams they have performed at their clinical sites.

1.00 Classroom | Web Component

#### **VAS-433: Senior Lecture/Case Presentations III**

Students will attend lectures on a variety of advanced topics and participate in vascular lab conferences. Students will also prepare, write and present case studies from the patient exams they have performed at their clinical sites.

1.00 Classroom | Web Component

#### **VAS-480: Vascular Ultrasound Comprehensive Review**

This course is a comprehensive review to prepare the students to take the ARDMS certification examination to earn the RVT credential. The ARDMS examination content outline will be covered in vascular technology and ultrasound physics and followed by a comprehensive exam on the last day of class. Prerequisites: venous, arterial, cerebrovascular, transcranial Doppler, and abdominal procedures with the respective laboratory courses, clinical course instruction for three quarters, and physics I and II.

2.00 Classroom | Web Component

#### **VAS-900: Independent Study**

Independent study courses give students a unique opportunity to pursue a course of study not commonly included in the curriculum. If you are interested in pursuing an independent study, meet with the faculty member you want to work with to define the course work and expectations.

1.00-12.00 Independent Study

#### **VAS-999: Continuous Enrollment**

The requirement for continuous enrollment applies to all students admitted or re-admitted for fall 2015 or later. Doctoral students should follow program requirements for continuous enrollment and degree completion. Students who have not completed their degree requirements are required to maintain continuous enrollment through the college of their program until the degree is earned. Continuous enrollment courses are graduate level courses set up by departments at Rush University for students who need to remain actively enrolled in the University while they finish their graduate work.

1.00 Continuous Enrollment







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