



RUSH UNIVERSITY
COLLEGE OF HEALTH SCIENCES

**RUSH UNIVERSITY
COLLEGE OF HEALTH SCIENCES**

Department of Medical Imaging Sciences

*Bachelor of Science Degree
Imaging Sciences
Program Handbook*

2017-2018

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MISSION OF RUSH UNIVERSITY MEDICAL CENTER

The mission of Rush University Medical Center is *to provide the very best care for our patients*. 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.

RUSH UNIVERSITY MISSION

The mission of Rush University is to teach, study and provide the highest quality health care, using a unique and multidisciplinary practitioner-teacher model for health sciences education and research, while reflecting the diversity of our communities in its programs, faculty, students and service.

COLLEGE OF 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.

COLLEGE OF HEALTH SCIENCES 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.

BACHELOR OF SCIENCE IN IMAGING SCIENCES

The Profession

Radiologic imaging sciences, also known as radiologic technology or medical radiography, are the allied health profession responsible for diagnostic and interventional medical radiographic imaging. Imaging sciences personnel, under the supervision of physicians, provide medical imaging services to patients and attending health care professionals. The medical imaging sciences, to include medical radiography (radiologic technology), and nuclear medicine technology are in-demand allied health professions with current and projected shortages in Illinois and throughout the U.S. The career outlook for imaging sciences personnel is promising. Innovative technologies and the better use of diagnostic procedures have created many opportunities in this field. The need for advanced medical imaging technologists is expected to increase significantly due to increases in the population, aging of the population and changes in treatment, technology and prevalence of disease states or conditions requiring advanced diagnostic and interventional radiography. Career opportunities available to the advanced medical imaging sciences technologists includes: clinics, hospitals, research institutes, educational facilities, or equipment application and sales.

The career outlook for imaging sciences professionals who are specialized in multiple modalities

is excellent. According to the U.S. Bureau of Labor Statistics, the need for radiologic technologists will increase significantly over the next decade. According to the American Society of Radiologic Technologists (ASRT), salaries will also increase for technologists who possess an advanced educational degree, along with the knowledge and skills for advanced practice.

Bachelor of Science in Imaging Sciences Program

The purpose of the Bachelor of Science in Imaging Sciences Program is to provide advanced training and education to certified imaging technologists who have earned an 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).

Rush University's Imaging Sciences Program has been carefully designed to allow working imaging professionals the opportunity to complete advanced training in the areas of Computed Tomography (CT), Magnetic Resonance Imaging (MRI), and other advanced imaging modalities while completing their bachelor's degree. Students enrolled in the degree program will be taught and trained at one of the nation's most respected academic medical centers. Known for its teacher-practitioner model, Rush University faculty will provide a foundation for practicing radiologic technologists to assume leadership roles in the field, with a primary concentration in a clinical specialty area. In addition to choosing an MRI or CT specialty tract, radiologic technologists enrolled in the program will also complete leadership course work in management, education, research, statistics and health care systems. These courses will expose students to skills needed to translate learning into leadership.

The Bachelor of Science degree program in Imaging Sciences provides the opportunity for current Registered Radiologic Technologists to earn their degree while obtaining advanced skills that are significant to their profession. It is essential to fortify the future of our profession by encouraging the pursuit of baccalaureate degrees to prepare you to meet the upcoming expectations of CT and MRI registry requirements from some employers. While this advisory focuses on Medicare program policies, these policies may also be applicable to selected private payers throughout the country in addressing coding, coverage, and payment for diagnostic CT and MRI procedures. As a part of the program, graduates will complete the clinical training required to be eligible for the advanced registry certifications offered by the American Registry of Radiologic Technologists (ARRT).

The bachelor's degree program will provide graduates with the knowledge, skills and attitudes needed to perform as competent advanced-level imaging technologists. Program graduates, as advanced imaging professionals, are trained to deliver advanced imaging procedures including, computed tomography (CT) and magnetic resonance imaging (MRI), and is knowledgeable about the current and developing imaging and therapeutic technologies.

The program includes instruction in applied anatomy and physiology, patient positioning, radiographic technique, radiation biology, safety and emergency procedures, equipment operation and maintenance, quality assurance, patient education, and medical imaging/radiologic services management and advanced imaging techniques. The bachelor's degree graduates are also provided with a foundation for leadership in the areas of education, management and

supervision, and diagnostic and interventional imaging specialty areas.

This is a career ladder program for certified imaging technologists. Applicants to the program must be eligible for accreditation in the practice of medical radiation technology by the Illinois Emergency Management Agency (IEMA).

The Bachelor of Science in Imaging Sciences is a professional degree program. This is a career ladder program to provide advanced training and education for certified imaging technologists. For the bachelor's degree program, entering students must have completed an accredited associate's degree in an imaging science field and at least 60 semester credit hours at a regionally accredited college or university to include specific program pre-requisite course work in mathematics, communications, psychology, chemistry, anatomy and physiology, microbiology, and physics. Applicants to the program must be eligible for accreditation in the practice of medical radiation technology by the Illinois Emergency Management Agency.

In addition to the program pre-requisites, the Bachelor of Science in Imaging Sciences degree program requires a minimum of 74 semester credit hours taken at the upper division undergraduate level. The "professional phase" of the program, which consists of Imaging Sciences coursework and clinical fieldwork, is completed at Rush University and its affiliated clinical sites. The professional phase is approximately 24 months long when taken on a full-time basis. It 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, community education and management.

About The Program

The Imaging Sciences Program in the College of Health Sciences at Rush University in Chicago is dedicated to clinical and academic excellence in teaching, research, 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 to provide a foundation for leadership in management and supervision, education, and clinical specialization.

The Imaging Science Program is committed to providing a rigorous program to train advanced medical imaging professionals of the future. Through small class sizes and mentoring by faculty members, we provide a learning environment which is both challenging and nurturing. Our goal is to train knowledgeable healthcare professionals who possess critical thinking and leadership skills. The Imaging Sciences Program involves motivation, curiosity, professional fulfillment and personal satisfaction. The work is both hard and rewarding.

Interaction with faculty, therapists, technologists, physicians and nurses is essential and is the key to the program. Students engage in seminars, intensive classes, and clinical training in hospitals. The result is an outstanding education in Imaging Sciences, but it is more than that. There is a sense of personal growth and a real commitment to serving people.

The overall purpose of the program is to provide a high-quality 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 attitudes, skills and knowledge required to meet the changing needs in the community.

It will be necessary for the imaging sciences professional to cooperate with all members of the health care team in identifying and solving the problems that relate to the diagnosis and treatment of diseases and disorders that affect patients. The imaging sciences professional must be able to think critically, communicate effectively, demonstrate judgment and provide self-direction. It is a primary objective of the program to educate well-qualified, competent imaging sciences professionals who demonstrate leadership ability. The Imaging Sciences Program is dedicated to the mission, vision, and values of the College and University Medical Centers.

Statement of Educational Philosophy

The Bachelor of Science in Imaging Sciences Program faculty 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 Imaging Sciences Program is dedicated to the mission of the College of Health Sciences and Rush University in that it seeks to enroll a diverse student body in order to promote the values of diversity and inclusion of our program. 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.

Program Mission Statement

The mission of the Bachelor of Science in Imaging Sciences 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 in order to promote the values of diversity and inclusion in our program.

Program Vision Statement

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.

Student Learning Outcomes

At the end of this program, students/graduates will be able to:

1. Demonstrate a mastery of advanced medical imaging skills in either Magnetic Resonance Imaging (MRI), Computed Tomography (CT) or Cardiac or Interventional Radiography by producing diagnostic quality Computed Tomography (CT), Magnetic Resonance Imaging (MRI) or Interventional Angiographic procedures.
2. Apply proper positioning skills related to imaging procedures.
3. Select appropriate technical factors for imaging procedures.
4. Justify the appropriate use of magnetic fields and radio frequencies*
5. Select appropriate radiation protection practices on patients, self, and others**
6. Summarize patient history and interpret lab results pertinent to imaging procedures.
7. Evaluate image quality appropriately.
8. Modify standard procedures based on pathology, body habitus and non-routine situations.
9. Demonstrate effective use of oral and writing skills.
10. Create effective medical imaging case presentation studies.
11. Demonstrate critical thinking and problem-solving skills.
12. Demonstrate the value of professional development for patient care and medical imaging practices.
13. Demonstrate effective compassionate communication skills with diverse patient populations and support the core values of caring, integrity, and discovery.

*Magnetic Resonance Imaging (MRI) Students Only

**Computed Tomography (CT) and Cardiac-Interventional (CI) or Vascular-Interventional (VI) Radiography Students Only

The Bachelor of Science in Imaging Sciences degree program directly supports the mission of the college by providing a program to prepare advanced level imaging science professionals who will be equipped to provide high quality, accessible diagnostic and interventional imaging procedures to patients. The program will also seek to enroll a diverse student body in order to promote the values of diversity and inclusion in our educational programs.

As a university academic medical center program, the Department of Imaging Sciences must also make an appropriate contribution in the areas of research and scholarship, service and patient care. With respect to research and scholarship, the department conducts and publishes original papers, participates in the publication of textbooks and chapters, abstracts, and invited presentations. Service activities include participation on local, state and national professional boards and committees, community service, university service activities and continuing education. Patient care is integral to departmental teaching, research and service activities.

Imaging Sciences' Definition of Excellence in Education

The definition of excellence in the Imaging Sciences Program embodies and exemplifies the practice of educational scholarship (studentship). Excellence in Education is the contribution of educators to the viability and growth of the imaging sciences profession. The development of advanced imaging specialist and documentation of educational activities are key elements in

achieving academic status for excellence. This includes the systematic documentation of teaching, learning, and assessment of learning outcomes, such as demonstrating: a mastery of advanced medical imaging skills in Magnetic Resonance Imaging (MRI), Computed Tomography (CT) or Interventional Radiography by producing diagnostic quality Computed Tomography (CT), Magnetic Resonance Imaging (MRI) and Interventional Angiographic procedures; critical thinking and problem-solving skills and the value of professional development for patient care and medical imaging practices.

Note: *The word “scholarship” in the sense that we are using it in this paragraph, signifies the goal to promote and enhance the concept and formal implementation of scholarship in the teaching and learning in the imaging sciences profession.*

Ways to Measure Excellence

Our accrediting body for the Imaging Sciences Program is the American Registry of Radiologic Technologists (ARRT). The benchmarks for outcomes measures are below.

1. IS Graduates will demonstrate American Registry of Radiologic Technologists (ARRT) credentialing pass rates of 85% or greater on the first attempt, within six months of graduation. The accrediting standard for this effectiveness measure is 75% pass rate on the first attempt, within six months of graduation. *As to date the Imaging Sciences Program has ARRT credentialing pass rates averaging 95% on the first attempt, within six months of graduation which is much higher than the national rate.*
2. IS Graduates actively seeking employment will demonstrate a job placement rate of 85% within 12 months of graduation. The accrediting standard for job placement rate is a five-year average of 75% within 12 months of graduation. *The Imaging Sciences Program has a five-year average of 96% job placement rate within 12 months of graduation.*
3. IS Program will demonstrate student course and clinical rotation satisfaction by results from the IDEA and clinical rotation site survey mean score of 4.0 or greater (5.0 scale). *As to date, the average IDEA and clinical rotation site survey mean score has been 4.4 (5.0 scale).*
4. IS Graduates will complete 1,000 hours of clinical specialty experience and will demonstrate a clinical competency performance mean score of 4.0 or greater (5.0 scale). *As to date, the average clinical competency performance mean score has been 4.4 (5.0 scale).*
5. Graduates’ program satisfaction surveys at 6 and 12 months of graduation will demonstrate a program satisfaction score of 4.2 or greater (5.0 scale). *As to date, the average graduate program satisfaction score has been 4.8 (5.0 scale) within 6 and 12 months of graduation.*

6. Graduates' employer satisfaction surveys at 6 and 12 months of graduation will demonstrate an employer satisfaction score of 4.2 or greater (5.0 scale). As to date, the average employer satisfaction score has been 4.5 (5.0 scale) within 6 and 12 months of graduation.
7. Overall Imaging Sciences Program completion rate will be greater than 85%. As to date, the IS Program has an average completion rate of 92% over the past 5 years.

ACCREDITATION

Rush University has been accredited by the North Central Association of Colleges and Schools, Commission on Institutions of Higher Education (now the Higher Learning Commission [HLC] of the North Central Association of Colleges and Schools) since 1974. The commission completed the most recent comprehensive accreditation review site visit April 28-30, 2008 and Rush was granted accreditation through 2018. The Assurance Section site visit report states that Rush University has appropriate organizational status, commitment to peer review, maintains compliance with Federal requirements, and fulfills the five Higher Learning Commission requirements. A Progress Report on University-wide Assessment and the University-wide Strategic Plan must be submitted by July 1, 2010. No Monitoring Reports, Contingency Reports or other visits were required. The next comprehensive HLC evaluation visit will occur in Academic Year 2017- 2018.

Specialized Accreditation

Because all entering students must have completed an imaging sciences educational 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) AND be eligible for licensure in Illinois as an medical imaging technologist, there are no additional accreditation requirements for this program. Rush is utilizing the curricular guides as published by the American Society of Radiologic Technologists (ASRT), Association of Educators in the Imaging and Radiation Sciences (AEIRS), Society of Nuclear Medicine (SNM), and other professional agencies, as appropriate.

Licensure and Certification.

As noted above, students entering this program must be graduates of an accredited imaging technology program and eligible for accreditation (licensure) in the practice of medical radiation technology by the Illinois Emergency Management Agency. The requirements for accreditation in medical radiation technology are may be viewed at:

<http://www.state.il.us/iema/radiation/radtech/radtechlogin.asp>

The American Registry of Radiologic Technologists for Imaging Sciences (ARRT) is the national testing agency for Imaging Sciences. According to the ARRT, most states (approximately two thirds) currently require medical imaging science specialists to hold a state license to practice based on successful completion of the entry level certification examination for medical imaging science specialists administered by the ARRT (see: <http://www.arrt.org/index.html>). The Imaging Sciences licensure in Illinois is administered by the Illinois Emergency Management Agency, and is based on

successful completion of the ARRT administered examinations (see: <http://www.iema.illinois.gov/>; and <http://www.rrt.org/index.html?content=licensing/certvslic.htm>).

TEACHING EXCELLENCE CRITERIA

The College of Health Sciences uses a Program Review and Outcomes Assessment System (PROAS) to assure that the quality of our academic programs is maintained. The following specific program measures assure that the quality of the program will be maintained:

Outcomes measures:

- graduate job placement in the field within six months
- graduates pursuing advanced education
- graduate performance on board examinations
 - number graduating eligible for exams by cohort
 - number taking exams
 - first time pass rate by cohort
 - overall pass rate by cohort
 - comparison to national means (first time and overall)
 - graduate satisfaction with the program (exit and follow-up surveys)
- employer satisfaction with the graduates (employer surveys)
- program rankings and reputation
- graduate success in achieving leadership positions in the health sciences (clinical leadership, professional leadership, community service, education, management, and continuing professional education)

Process measures:

- applicant pools (number/quality)
- students entering program (number/quality)
- program graduates (number/quality)
- student evaluations of faculty and courses
- resource assessments by students and faculty
- specialized accreditation reports and reviews
- community advisory committees
- curriculum elements
 - critical thinking, autonomous decision making, case-based learning and problem-based learning
 - interdisciplinary courses or units of instruction
 - interdisciplinary clinical activities
 - cultural competency
 - outcomes and evidence-based care
 - health promotion, disease prevention and disease management
 - genetics and genetic testing
 - disaster response
 - medical errors and patient safety
 - ethics
 - health care policy
 - health care systems

- leadership
- management and supervision
- education
- case presentations
- issues, trends and emerging practice
- teaching awards received
- scholarship of teaching
 - research abstracts, invited presentations and peer-reviewed papers related to education
 - textbooks and chapters (discipline content or educational topics)
 - review articles and systematic reviews (discipline specific content or educational topics)

Student activities

- student abstract and poster presentations (local, state, national)
- student publications (refereed, other)
- students awards and honors
- student service activities (department, college, university, community, professional)

Policies and procedures to assure consistency in student evaluation include use of student written evaluations of courses and instructors each quarter, student conferences to solicit feed back from students regarding courses and instructors as well as the quality of clinical rotations, and graduate exit surveys. In addition, students have a well-defined appeals process should they believe that they have received a grade or other evaluation which is improper or unfair.

IMAGING SCIENCES CURRICULUM

Bachelor of Science Imaging Sciences Program

Degree Offered: Bachelor of Science Degree in Imaging Sciences

THE PROGRAM

In addition to at least 60 semester hours (90 quarter hours) of general education and pre-professional pre-requisite course requirements, the Bachelor of Science degree in Imaging Sciences requires a minimum of 98 quarter hours of upper division credit for graduation. This program requires 26 semester hours of specific program pre-professional prerequisite or more semester credits of general education. The **pre-professional phase** requirements may be completed at any regionally accredited college or university. Dedicated to clinical and academic excellence, the professional phase includes over 800 hours of in-hospital clinical practice. Additional elective course work in management and education may be taken, for students interested in these areas.

PREPROFESSIONAL PHASE - PROGRAM PREREQUISITES

The pre-professional phase (lower-division college-level course work) requires a minimum of 60 semester hours (90 quarter hours) of prescribed study.

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
TOTAL	34	57

	Semester Credit Hours	Quarter Credit Hours
Professional Prerequisites		
Human Anatomy and Physiology (or 4 hrs. Anatomy and 4 hrs. Physiology)	8	10
Chemistry (with Lab)	4	5
Physics (with Lab)	4	5
Medical Terminology	4	5
Computer Science (includes computer literacy)	3	4
Statistics	3	4
TOTAL	26	33
TOTAL GENERAL EDUCATION AND PROFESSIONAL PREREQUISITES	60	90

Admission Factors

A maximum of 12 full-time students or an equivalent number of part time students will be admitted per year for the first two years the program is offered. Admission is on a competitive basis. The basis for inviting an applicant for an interview includes the applicant's academic performance represented by coursework grades, load, trends and degree of difficulty. In addition, the review includes consideration of the non-academic qualifications listed below in no particular order of preference or weight:

- employment history, especially as it occurred simultaneously with undergraduate academic preparation
- positions of leadership held
- community service/healthcare or “volunteer” related activities
- prior experience in providing health care related services
- communication skills – as demonstrated in the essay and personal interview
- reference letters or recommendations
- research accomplishments
- applicant’s future goals
- knowledge of, and preparation to enter, the profession of advanced-level imaging sciences in Computed Tomography (CT) or Magnetic Resonance Imaging (MRI) gained through experience or observation

ADMISSION REQUIREMENTS

Applicants must have completed 60 semester credit hours (90 quarter credit hours) of the Rush University College of Health Sciences core curriculum requirements to include 26 credit hours of program prerequisites (see note regarding pre-requisites below). These core curriculum requirements may be completed at any regionally accredited college or university. Admission requirements include:

- Associate’s degree in medical radiography or nuclear medicine technology (not applicable if applying to the entry-level MRI track) 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 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 (not applicable if applying to the entry-level MRI track).
- Completion of program general education course requirements. [Note: in some cases, students may receive permission to defer completion of general education course work and begin course work in the program. In all cases, however, the general education course requirements must be met prior to award of the bachelor’s degree. For more information on this option, contact the program offices.
- Completion of program pre-professional prerequisites with a grade of at least “C” in all courses prior to the start of professional course classes.
- Minimum overall grade point average of at least 2.5 in all college/university course work
- Sophomore standing or higher at the time of application
- Personal interview with program faculty
- Ability to meet the general technical requirements for the field and perform the essential functions of the job

* 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). Students entering the three-year track program may complete selected prerequisites during years one and two.

GENERAL TECHNICAL REQUIREMENTS

In order to graduate from the Imaging Sciences program, students must be able to meet certain technical requirements. Graduates of this program must be able to meet certain physical and mental requirements to ensure the safe performance of imaging procedures. Due to the nature of typical employment assignments, a graduate of this program must be able to:

1. Work in a clinical setting for eight (8) to ten (10) hours performing physical tasks requiring physical energy without jeopardizing patient safety. Examples of these tasks include but are not limited to: Pushing wheelchairs, stretchers, carts and mobile radiographic equipment; lifting and carrying imaging coils weighing up to twenty (20) pounds, wearing a five ten (5-10) pound, lead apron when needed; reaching, manipulating, and operating patient positioning tables, radiographic tables, stands, tubes, and other radiographic and imaging equipment to obtain the requested radiographic or diagnostic image; cleaning and preparing patient positioning tables, radiographic tables, stands, and other accessory equipment; moving and assisting patients on and off radiographic tables, carts and stretchers, or in and out of wheelchairs.
2. Interact with patients and other medical personnel in providing appropriate patient care and in performing imaging procedures. Examples of these interactions include but are not limited to: effectively communicating with patients and medical staff; providing patients with a clear and complete explanation of procedures; providing oral and written information, reading written information, and receiving oral and written information from patients and medical staff relevant to patient care; responding appropriately to unusual patient situations; making appropriate judgments in critical and non-critical patient care situations.

ESSENTIAL JOB FUNCTIONS

The following essential functions are required of all students enrolled in the Imaging Sciences Program. Medical imaging science specialists are responsible for the care of patients, some of whom are critically ill. They are often required to manage highly complex pieces of equipment, as well as interact with patients in order to make assessments. Medical imaging science specialists must also be able to communicate with other health care professionals. Therefore, in order to be successful in the Imaging Sciences Program, all applicants should be able to perform, or learn to perform, the following functions:

1. Spend much of the day traveling in between the Imaging Sciences Department and various nursing areas.
2. Move and position bedridden patients.
3. Perform physically demanding tasks such as lifting and positioning advanced imaging equipment.
4. Communicate effectively with patients and staff.
5. Respond to alarms.
6. Accurately measure contrast media, read patient records, evaluate information displayed on patient monitors, and make observations of patients as required for Imaging Sciences.

7. Manipulate equipment and perform such tasks as venipuncture and IV line management.
8. Apply sufficient intellectual and emotional skills in order to plan and exercise independent judgment, and to respond quickly to medical emergencies.

The program reserves the right to require applicants or students to demonstrate any of these essential functions.

OTHER PROGRAM REQUIREMENTS

Residency requirements (minimum number of credit hours that must be satisfied by courses offered by the institution)

Students must complete at least 45 quarter credit hours at Rush University.

- *Language requirements*

There is no language requirement for this program.

- *Research requirements (thesis, dissertation, research project)*

Students must complete a research course and a senior project as part of the requirements for this program.

- *Qualifying or comprehensive examination requirements*

Students must complete the Comprehensive End of Program Competency examination in order to meet program Standards of Progress and Graduation requirements. The requirement is described below:

Comprehensive end-of-Program Competency Assessment Examination:

At the end of the second year, the student will complete a comprehensive exit examination. A passing score is required to meet graduation and program completion requirements (see Graduation Requirements). Students who fail the examination may repeat the exam for a second time. Those failing the examination twice will be enrolled in a directed Independent Study 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).

- *Practicum, clinical, or field experience requirements*

Clinical courses which include rotations in the hospital and through other clinical agencies are an integrated part of this training program.

- *Time limit for completion of programs*

Students must complete all degree requirements within five years of initial enrollment into the program.

- *Other requirements unique to the institution or program*

The program has specific requirements for professional conduct, behavior in the clinical agency, attendance and make-up work, and attire. The requirements are described below.

APPLICATION PROCEDURE

Application for admission into the professional phase of the Imaging Sciences Program should be made through Rush University before July 1 for admission into the class entering in August. Prospective applicants may submit transcripts and a request for an unofficial evaluation

PROFESSIONAL PHASE - IMAGING SCIENCES PROFESSIONAL COURSES

Students accepted into the professional phase GENERALLY begin course work in the fall quarter of the first year of the program. Course work in the professional phase may be taken on a full-time or part-time basis. Required professional courses for the Bachelor of Science degree are listed below.

Imaging Sciences Program: Bachelor of Imaging Science Curriculum

Computerized Tomography (CT) Track

Fall 1 year

IS 310 Sectional Anatomy & Pathology 5 SH

IS 314 Pathophysiology 4 SH

IS 337 Computed Tomography (CT) Physics 3 SH

IS 453 Computed Tomography Positioning and Protocols 3 SH

Total= 15 SH

Spring 1

IS 318 Patient Assessment 3 SH

IS 458 Leadership 3 SH

IS 331 Education 3 SH

IS 338 Advanced Radiation Biology 3 SH

Total 12 SH

Summer 1

IS 447 P Clinical Practicum I 9 SH

IS 448 Clinical Seminar I 3 SH

IS 325 Pharmacology and Radiologic Contrast Agents 3 SH

Total 15 SH

Fall 2

CHS 364 Health Care Systems and Policies 1 SH

IS 457 P Clinical Practicum II 9 SH

IS 449 Clinical Seminar II 3 SH

IS 463 Research & Statistical Methods 3 SH

Total= 16 SH

Spring 2

IS 467 P Clinical Practicum III 9 SH

IS 468 Clinical Seminar III 3 SH

IS 454 Health Care Ethics and Cultural Competence 4 SH

Total= 16 SH

Total = 74 SH

*Regarding practicum courses, the RUCatalog specifies: **one hour of credit represents contact time of three clinical hours per week.**

Regarding seminar courses, the RUCatalog specifies: **one hour of credit represents contact time of two hours of small group discussion (seminar).

Magnetic Resource Imaging (MRI) Track

Fall 1 year Credit by ARRT RT Proficiency

IS 305 Introduction to Imaging Sciences 3 SH

IS 307 Introduction to Patient Care 3 SH

Total 6 SH

Fall 1 year

IS 310 Sectional Anatomy & Pathology 5 SH

IS 463 Research & Statistical Methods 3 SH

IS 314 Pathophysiology 4 SH

Total 12 SH

Spring 1

IS 336 MRI Physics 5 SH

IS 318 Patient Assessment 3 SH

IS 454 Health Care Ethics and Cultural Competence 4 SH

IS 444 MRI Positioning and Protocols 4 SH

Total 16 SH

Summer 1

IS 447 P Clinical Practicum I 9 SH

IS 448 Clinical Seminar I 3 SH

IS 325 Pharmacology and Radiologic Contrast Agents 3 SH

IS 340 MRI Safety 3 SH

Total 18 SH

Fall 2

CHS 364 Health Care Systems and Policies 1 SH

IS 457 P Clinical Practicum II 9 SH

IS 449 Clinical Seminar II 3 SH

Total 13 SH

Spring 2

IS 467 P Clinical Practicum III 9 SH

IS 468 Clinical Seminar III 3 SH

IS 331 Education 3 SH

IS 458 Leadership 3 SH
Total 18 SH

Total = 83 SH – 6 SH (credit by ARRT RT proficiency) = 77 SH

*Regarding practicum courses, the RUCatalog specifies: **one hour of credit represents contact time of three clinical hours per week.**

Regarding seminar courses, the RUCatalog specifies: **one hour of credit represents contact time of two hours of small group discussion (seminar).

Imaging Sciences Program: Bachelor of Imaging Science Curriculum

Interventional Radiography (IR) Track

Fall 1 year

IS 310 Sectional Anatomy & Pathology 5 SH

IS 314 Pathophysiology 4 SH

IS 328 Vascular Interventional Technology 6 SH

Total= 15 SH

Spring 1

IS 318 Patient Assessment 3 SH

IS 331 Education 3 SH

IS 458 Leadership 3 SH

IS 338 Advanced Radiation Biology 3 SH

Total = 12 SH

Summer 1

IS 447 P Clinical Practicum I 9 SH

IS 448 Clinical Seminar I 3 SH

IS 325 Pharmacology and Radiologic Contrast Agents 3 SH

Total = 15 SH

Fall 2

CHS 364 Health Care Systems and Policies 1 SH

IS 457 P Clinical Practicum II 9 SH

IS 449 Clinical Seminar II 3 SH

IS 463 Research & Statistical Methods 3 SH

Total = 16 SH

Spring 2

IS 467 P Clinical Practicum III 9 SH

IS 468 Clinical Seminar III 3 SH

IS 454 Health Care Ethics and Cultural Competence 4 SH

Total = 16 SH

Total = 74 SH

*Regarding practicum courses, the RUCatalog specifies: **one hour of credit represents contact time of three clinical hours per week.**

Regarding seminar courses, the RUCatalog specifies: **one hour of credit represents contact time of two hours of small group discussion (seminar).

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 and may result in the student being suspended or 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 on Progress and Promotions for Imaging Sciences.

Each student must develop an individualized program plan and this plan must be approved by the program director. Sample full-time course sequences for the CT and MRI track follow:

Entry Level Magnetic Resource Imaging (MRI) Track

Fall 1 year

IS 305 Introduction to Imaging Sciences 3 SH

IS 307 Introduction to Patient Care 3 SH

IS 310 Sectional Anatomy & Pathology 5 SH

IS 314 Pathophysiology 4 SH

Total 15 SH

Spring 1

IS 336 MRI Physics 5 SH

IS 318 Patient Assessment 3 SH

IS 458 Leadership 3 SH

IS 444 MRI Positioning and Protocols 4 SH

Total 15 SH

Summer 1

IS 448 P Clinical Practicum I 9 SH

IS 446 Clinical Seminar I 3 SH

IS 340 MRI Safety 3 SH

IS 325 Pharmacology and Radiologic Contrast Agents 3 SH

Total 18 SH

Fall 2

CHS 364 Health Care Systems and Policies 1 SH

IS 457 P Clinical Practicum II 9 SH

IS 449 Clinical Seminar II 3 SH

IS 463 Research & Statistical Methods 3 SH

Total 16 SH

Spring 2

IS 467 P Clinical Practicum III 9 SH

IS 468 Clinical Seminar III 3 SH
IS 454 Health Care Ethics and Cultural Competence 4 SH
IS 331 Education 3 SH
Total 19 SH

Total = 83 SH

*Regarding practicum courses, the RUCatalog specifies: **one hour of credit represents contact time of three clinical hours per week.**

Regarding seminar courses, the RUCatalog specifies: **one hour of credit represents contact time of two hours of small group discussion (seminar).

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 and may result in the student being suspended or 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 on Progress and Promotions for Imaging Sciences. **Each student must develop an individualized program plan and this plan must be approved by the program director. Sample full-time course sequences for the MRI track follow:**

IS PROGRAM COURSE DESCRIPTIONS- RUSH

IS 305 INTRODUCTION TO IMAGING SCIENCES (3 SEMESTER HOURS)

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 instruction in the Imaging Sciences Program curricula to meet the needs of students for entry level employment by providing an overview diagnostic imaging, the technological education and clinical practice. The student will be introduced to the basics of advanced imaging modalities used in the assessment of anatomy and diagnosis of disease processes.

Prerequisite: Admission to the Department. *Instructor L. Vasquez*

IS 307 INTRODUCTION TO PATIENT CARE (3 SEMESTER HOURS)

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 patient's right to privacy, confidentiality, documentation, team building, cultural issues, age related concerns, and death and dying. This course is intended to assist students in the understanding of the environment encountered in clinical agencies. This course infers from evidence-based medicine to promote the application of critical thinking skills and clinical judgment.

Prerequisite: Admission to the Department. *Instructor L. Vasquez*

IS 314 PATHOPHYSIOLOGY (4 SEMESTER HOURS)

This course provides an 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. This course investigates general pathology and organ system pathology. It includes a brief review of normal structure and function, followed by more in-depth descriptions of specific pathologic processes. Students will use textbooks and Internet resources to learn the basic characteristics, etiology, pathogenesis, clinical features, and diagnostic tools including medical imaging procedures, prognoses, and therapies for each of the specific pathologies. Students will participate in online discussions and create interactive pathology presentations in this course.

Prerequisite: Admission to the Department. *Instructor E. Perczynski*

IS 318 PATIENT ASSESSMENT (3 SEMESTER HOURS)

Patient evaluation and implementation of evidence-based care plans will be described. Evidence based practice and critical diagnostic thinking are reviewed and applied to the review of the medical record, patient interview, physical assessment, and evaluation of diagnostic studies.

Assessment of oxygenation, and arterial blood gases are reviewed. Laboratory studies, imaging studies, and ECG monitoring and interpretation are discussed. Pulmonary function testing, diagnostic bronchoscopy and other diagnostic studies are also described. The student will integrate assessment findings in the development and evaluation of care plans for specific disease states and conditions. Prerequisite: Admission to the Department. *Instructor L. Vasquez*

IS 325 PHARMACOLOGY AND RADIOLOGIC CONTRAST AGENTS (3 SH)

This course provides 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 the knowledge in all aspects of basic pharmacology. The purpose is to educate radiologic personnel in basic pharmacology principles, ensuring quality patient care. Contrast media is used by most modalities of Diagnostic Imaging. This course is designed to provide an in-depth understanding different Contrast medias used in Diagnostic Imaging. A brief historical development and evolution of contrast media is reviewed. Topics include uses, prevention of acute reactions, contrast induced nephropathy, renal adverse reaction and more. Students will follow weekly modules and or use textbook and Internet resources to learn more about Contrast Media use, safety issues and Guideline. Prerequisite: Admission to the Department. *Instructor V. Gorre*

IS 328 VASCULAR-INTERVENTIONAL TECHNOLOGY (6 SEMESTER HOURS)

This didactic course includes instruction over: procedural angiography including; imaging of the heart, pulmonary vascular system, thoracic aorta, central venous access procedures, cardiac-interventional, vascular-interventional, and nonvascular interventional procedures. Each student will be working in either Vascular-Interventional Radiology or Interventional Cardiology. 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. *Instructor TBD*

IS 331 EDUCATION (3 SEMESTER HOURS)

This course will provide students with an introduction to basic principles and techniques used in Imaging Sciences Professional education. This course will provide students with the knowledge needed by health professionals who interact with other health professionals and/or patients in educational settings including professional development, higher education, patient education or community education. Case studies will be presented. Topics include: IS professional's role in education, patient education, in-service education, course design, curriculum development and models, objectives and goals, lesson plan development, learning activities, use of media, teaching methods, development of presentations, testing and evaluation. Prerequisite: Admission to the Department. *Instructor L. Vasquez*

IS 334/453 COMPUTED TOMOGRAPHY POSITIONING & PROTOCOLS (3 SH)

Computed Tomography (CT) is a specialized imaging modality. This course is designed to provide an understanding of proper protocols and positioning utilized to acquire appropriate imaging with patient history in mind concepts of Computed Tomography. Anatomy and Pathophysiology is reviewed for appropriate protocol and contrast usage. Protocol and Positioning topics include basic overview of CT Physics, Patient communication and safety, Radiation dose, indications for procedure, preparation, orientation of CT room, positioning and landmarks, patient history and assessment, types of contrast media and their usage, scan parameters. Imaging protocols for Brain, Chest, abdomen, Spine and Musculo-skeletal imaging will be covered in this course. CT protocols vary from site to site and most often are dependent on radiologist's preference. Prerequisite: Admission to the Department. *Instructor V. Gorre*

IS 336 MRI PHYSICS (5 SEMESTER HOURS)

This course will provide the student with an introduction to the field of MRI. Topics will include an overview of MRI history and development, fundamental principles of Magnetism, Safety in MRI, equipment, terminology, and coils. This course will explain in depth concepts of MRI physics. Topics will include, Basic Principles of MRI, Image weighting and contrast, tissue characteristics, signal production, image formation, image acquisition & image production, pulse sequences, flow phenomena, artifacts in MRI, scanning parameters, Contrast media administration, along with Functional Imaging techniques. Prerequisite: Admission to the Department. *Instructor L. Vasquez*

IS 337 COMPUTED TOMOGRAPHY PHYSICS (3 SEMESTER HOURS)

This course will provide the student with an in-depth review of the fundamental physical principles of Computed Tomography (CT). CT is a specialized imaging modality. The historical development and evolution of CT will be reviewed. Physics topics include x-radiation in forming the CT image, CT beam attenuation, linear attenuation coefficients, tissue characteristics and Hounsfield number application. Data acquisition and manipulation techniques, image reconstruction algorithms will be also explained. This course will also provide students with knowledge of quality control, and instrumentational concepts. Prerequisite: Admission to the Department. *Instructor E. Perczynski*

IS 338 ADVANCED RADIATION BIOLOGY (3 SEMESTER HOURS)

This course is directed to Computed Tomography (CT) and Interventional Radiography students enrolled in the Imaging Sciences program. Content will include review and continuation of basic radiobiology involved with radiography and advanced modalities. It will address the radiobiological/biophysical events at the cellular and subcellular levels. Analysis of factors influencing radiation response of cells and tissues will be covered. Construction and evaluation of radiobiological data on graphs, charts, and survival curves will be included. Relationships of time, dose, fractionation, volume and site as they apply to tissue response will be evaluated. The principles of radiation response modifiers, hyperthermia, chemotherapy and their influence on

biologic effects in combination with radiation will be examined. Prerequisite: Admission to the Department. *Instructor Karen Jefferies*

IS 340 MRI SAFETY (3 SH)

This course provides an in-depth application of the health and safety concerns of MRI technology. Both theoretical and practical information will be covered. MRI physics bioeffects of static, gradient, and radiofrequency electromagnetic fields will be covered as well as the risks associated with acoustic noise. Use of MRI during pregnancy, the design of an MRI facility to support safety, the procedures to screen patients and other individuals, and the management of patients with claustrophobia, anxiety, or emotional distress will be addressed. Review of the safety of MRI contrast agents, use of ferromagnetic detection systems, techniques for physiological monitoring, unique safety needs of interventional MRI centers, and administration of sedation and anesthesia during MRI will be covered. Proper management of patients with metallic implants and complex electronically activated devices, such as cardiac pacemakers and neuromodulation systems will be covered. MRI safety policies and procedures will be reviewed for hospitals/medical centers, outpatient facilities, children's hospitals, and research facilities. Finally, MRI standards and guidelines will be addressed for the United States. Prerequisite: Admission to the Department. *Instructor L. Vasquez*

IS 444 MRI POSITIONING AND PROTOCOLS (4 SEMESTER HOURS)

Magnetic Resonance Imaging (MRI) is a specialized imaging modality. This course is designed to provide an understanding of proper protocols and positioning utilized to acquire appropriate imaging with patient history in mind concepts of Magnetic Resonance Imaging. Anatomy and Pathophysiology is reviewed for appropriate protocol and contrast usage. Protocol and Positioning topics include basic overview of MRI Physics, indications for procedure, preparation, orientation of MRI room, positioning and landmarks, patient history and assessment, types of contrast media and their usage, scan parameters for brain, spine, , upper and lower extremity imaging, Female and Male pelvis, Abdominal imaging, Cardiac and Breast imaging. MRI protocols vary from site to site and most often are dependent on radiologist's preference. Students will follow weekly modules and or use textbook and Internet resources to learn MRI protocols and positioning. Prerequisite: Admission to the Department. *Instructor L. Vasquez*

IS 454 HEALTH CARE ETHICS AND CULTURAL COMPETENCE (4 SH)

This course covers ethical issues that Allied Health professionals can expect to encounter during their education and career. It covers such areas of concern as professionalism, cultural differences, confidentiality, informed consent, responsible practice, handling mistakes, difficult cases, and key legal aspects of these issues. The course will begin by helping the student understand the value of diversity in our society and allow the student to make self-examination of their own beliefs, values and biases. This will be followed by 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 Culturally and Linguistically Appropriate Services [CLAS] standards and cultural competency information available to healthcare organizations.

Prerequisite: Admission to the Department. *Instructor L. Vasquez*

IS 458 LEADERSHIP 3 SEMESTER HOURS

This special topic course is designed to provide a basic introduction to leadership by focusing on what it means *to be a good leader*. Emphasis in the course is on the *practice of leadership*. The course will examine topics such as: the nature of leadership, recognizing leadership traits, developing leadership skills, creating a vision, setting the tone, listening to out-group members, handling conflict, overcoming obstacles, and addressing ethics in leadership. Attention will be given to helping students to understand and improve their own leadership performance.

Prerequisite: Admission to the Department. *Instructor V. Gorre*

IS 463 RESEARCH & STATISTICAL METHODS (3 SEMESTER HOURS)

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 the Department. *Instructor B. Jegier*

IS 447 P – CLINICAL PRACTICUM I (9 SEMESTER HOURS)

Supervised clinical experience in the imaging track selected. This course is designed so the students gains the clinical experience needed to function in an active imaging sciences department and to document the needed clinical procedures. Each of the three clinical practicum will consist of 333.33 hours (total of 1000 hours) in an assigned facility for supervised practice of acquired knowledge and skills. Review of medical imaging with an emphasis on problem solving and critical thinking in imaging track selected. *Admission to the Program. Successful completion of a “C” or better in all imaging modality track courses. Instructor L. Vasquez*

IS 457 P – CLINICAL PRACTICUM II (9 SEMESTER HOURS)

Supervised clinical experience in the imaging track selected. This course is designed so the student gains the clinical experience needed to function in an active imaging sciences department and to document the needed clinical procedures. Each clinical practicum requires 333.33 hours in an assigned facility for supervised practice of acquired knowledge and skills. This course will offer a review of medical imaging with an emphasis on problem solving and critical thinking in imaging track selected. *Admission to the Program. Successful completion of a “C” or better in all imaging modality track courses including IS 445 P-Clinical Practicum I. Instr. L. Vasquez*

IS 467 P – CLINICAL PRACTICUM III (9 SEMESTER HOURS)

Supervised clinical experience in the imaging track selected. This course is designed so the students gains the clinical experience needed to function in an active imaging sciences department and to document the needed clinical procedures. Each of the three clinical practicums will consist of 333.33 hours (total of 1000 hours) in an assigned facility for supervised practice of acquired knowledge and skills. Review of medical imaging with an emphasis on problem solving and critical thinking in the imaging track selected. ***Admission to the Program. Successful completion of a “C” or better in all imaging modality track courses including IS 445 P Clinical Practicum I and IS 455 P Clinical Practicum II. Instructor L. Vasquez***

IS-481P CLINICAL SPECIALTY PRACTICUM (9 SEMESTER HOURS)

Supervised clinical experience in the imaging track selected. This course is designed so 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. ***Admission to the Program. Successful completion of a “C” or better in all imaging modality track courses including IS 445 P Clinical Practicum I, IS 455 P Clinical Practicum II and IS-467P- Clinical Practicum III. Instructor L. Vasquez***

IS 446 – CLINICAL SEMINAR I (3 SEMESTER HOURS)

COURSE DESCRIPTION

This course builds on the previous learning related to imaging sciences. This course will allow the students to engage in self-directed study to prepare for the American Registry of Radiologic Technologist (ARRT) by completing registry review board modules. This course will provide the students the opportunity to integrate the theory and clinical practice in order to meet the complex needs of patients. ARRT registry review modules and case presentations will be completed. This course will provide a review of medical imaging with an emphasis on problem solving and critical thinking in the imaging track selected. The course is intended for senior students to prepare for the ARRT's credentialing exam. ***Admission to the Program. Successful completion of a “C” or better in all imaging modality track courses. Instructor L. Vasquez***

IS 456 – CLINICAL SEMINAR II (3 SEMESTER HOURS)

COURSE DESCRIPTION

This course builds on the previous learning related to imaging sciences. This course will allow the students to engage in self-directed study to prepare for the American Registry of Radiologic Technologist (ARRT) by completing registry review board modules. This course will provide the

students the opportunity to integrate the theory and clinical practice in order to meet the complex needs of patients. ARRT registry review modules and case presentations will be completed. This course will provide a review of medical imaging with an emphasis on problem solving and critical thinking in the imaging track selected. The course is intended for senior students to prepare for the ARRT's credentialing exam. ***Admission to the Program. Successful completion of a "C" or better in all imaging modality track courses and IS 446 Clinical Seminar I.***
Instructor L. Vasquez

IS 466 – CLINICAL SEMINAR III (3 SEMESTER HOURS)

COURSE DESCRIPTION

This course builds on the previous learning related to imaging sciences. This course will allow the students to engage in self-directed study to prepare for the American Registry of Radiologic Technologist (ARRT) by completing registry review board modules. This course will provide the students the opportunity to integrate the theory and clinical practice in order to meet the complex needs of patients. ARRT registry review modules and case presentations will be completed. This course will provide a review of medical imaging with an emphasis on problem solving and critical thinking in the imaging track selected. The course is intended for senior students to prepare for the ARRT's credentialing exam. ***Admission to the Program. Successful completion of a "C" or better in all imaging modality track courses and IS 456 Clinical Seminar II***
Instructor L. Vasquez

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.

CLINICAL COMPETENCIES

CT
<u>IS 445 – Clinical Practicum I</u>
1.01 Brain scans
1.02 Abdomen scans
1.03 Stroke studies
1.04 Sedation policy
1.05 Pregnancy policy
1.06 Contrast media preparation/dosage/times
1.07 Equipment troubleshooting

<p>1.08 Patient scheduling 1.09 First shift 1.10 Stock room and get procedure room ready to receive patient 1.11 Safety procedures</p>
<p><u>IS 455 – Clinical Practicum II</u> 2.01 Abdominal CTA 2.02 PE studies 2.03 Extremity studies 2.04 Brain perfusion studies 2.05 First and second shifts 2.06 NFS Policy Lab values (dehydration/diabetes) 2.07 Communicate with nursing staff (patient prep/IV access) 2.08 Read and interpret protocols</p>
<p><u>IS 465 – Clinical Practicum III</u> 3.01 Biopsies 3.02 Drainages 3.03 Research [protocols] 3.04 Management skills (JC, HIPAA, IDPH) 3.05 Second and third shifts (after biopsies and drainages) 3.06 Patient communication (pediatric, geriatric, adolescent) 3.07 OMNI CELL for biopsy and drainage (know differences/stocked) 3.08 Triage STAT patients (neuro or ER) 3.09 EPIC, PACS, RADIANT</p>
<p><u>IS 471 – Clinical Practicum IV</u> 4.01 QC checks 4.02 Maintenance/equipment checks/cleaning 4.03 PACS (exam sent/archiving/accession number) 4.04 Meeting attendance 4.05 Sales representatives interaction 4.06 First shift</p>
<p>MRI</p>
<p><u>IS 445 – Clinical Practicum I</u> 1.01 Brain scans 1.02 *Spine exams (cervical/thoracic/lumbar/entire spine & combo spine exams) 1.03 *Daily QC checks 1.04 Anesthesia assistance 1.05 MRA (head & neck) 1.06 MRCP & liver 1.07 Gadolinium dosages 1.08 Sedation policy 1.09 Pregnancy policy 1.10 NFS policy 1.11 Equipment troubleshooting 1.12 First shift</p>

IS 455 – Clinical Practicum II

- 2.01 Spectroscopy
- 2.02 Perfusion scans
- 2.03 Extremity scans
- 2.04 Fetal imaging
- 2.05 Cardiac imaging
- 2.06 First shift
- 2.07 Read and interpret protocols

IS 465 – Clinical Practicum III

- 3.01 Research protocols
- 3.02 Advanced perfusion scans
- 3.03 Advanced spectroscopy
- 3.04 Localization of tumor versus lesion
- 3.05 Managerial skills
- 3.06 First and second shift
- 3.07 EPIC, PACS, RADIANT
- 3.08 Triage patients, understand hierarchy of procedures (pathology vs. routine)

PET
<p><u>IS 445 – Clinical Practicum I</u></p> <p>1.01 Orientation to facility 1.02 HIPAA for PET 1.03 Transportation of PET patients 1.04 Monitor PET patient urine output 1.05 PET shielding practices 1.06 PET procedural safety principles 1.07 Use of radioactivity</p>
<p><u>IS 455 – Clinical Practicum II</u></p> <p>2.01 Total body PET procedures 2.02 Brain PET procedures 2.03 Venipuncture 2.04 Ordering and scheduling of imaging procedures with PET 2.05 Performance hierarchy of imaging procedures with PET 2.06 Computer manipulation of patient procedure to CD</p>
<p><u>IS 465 – Clinical Practicum III</u></p> <p>3.01 Perform all total body and brain PET scanning procedures 3.02 Perform all PET injections 3.03 Perform cardiac PET procedures 3.04 Perform glucose manipulations 3.05 Perform computer backups of patient data 3.06 Physician interactions 3.07 Insurance/financial interactions 3.08 Research protocols</p>
<p><u>IS 471 – Clinical Practicum IV</u></p> <p>4.01 Scheduling of PET patients 4.02 Medicare/Medicaid/private insurance issues 4.03 Perform all PET injections 4.04 Diabetic patient interventions 4.05 Advanced post-processing protocols 4.06 Physician interactions 4.07 Research protocols 4.08 Ancillary ordering in the computer 4.09 Financial/insurance clearance 4.10 Monitor patient glucose 4.11 Perform delete/transfer/recover patient data</p>

Interventional Radiology
<u>IS 445 – Clinical Practicum I</u> 1.01 Sterile technique, patient prep 1.02 PICC lines 1.03 Temporary lines 1.04 Venography 1.05 Tube checks 1.06 Drainage studies 1.07 Thoracentesis 1.08 Paracentesis 1.09 Biopsy (liver, kidney) 1.10 Dialysis grafts
<u>IS 455 – Clinical Practicum II</u> 2.01 Percutaneous transhepatic cholangiography 2.02 TIPS 2.03 Biopsies 2.04 Pulmonary angiography 2.05 Run-offs 2.06 IR venography
<u>IS 465 – Clinical Practicum III</u> 3.01 Neuroradiology 3.02 Stroke studies 3.03 Lumbar puncture 3.04 Cerebral angiography 3.05 Neuro IR 3.06 Call back service
<u>IS 471 – Clinical Practicum IV</u> 4.01 Audit reports 4.02 Billing/coding 4.03 QA/QC 4.04 Vendor interaction 4.05 Price negotiations 4.06 ICD9 4.07 PACS 4.08 IVUS 4.09 Call back service

Cardiac Catherization Laboratory
<p><u>IS 445 – Clinical Practicum I</u></p> <p>1.01 Observe procedures 1.02 Simple right heart procedures 1.03 Sterile technique 1.04 Anatomy recognition 1.05 Patient centered care 1.06 Physiologic monitoring</p>
<p><u>IS 455 – Clinical Practicum II</u></p> <p>2.01 Left heart procedures 2.02 Advanced hemodynamics 2.03 Valve cases 2.04 Waveform recognition 2.05 Pulmonary angiography 2.06 Pre- and post-drug studies 2.07 QC equipment</p>
<p><u>IS 465 – Clinical Practicum III</u></p> <p>3.01 Valve areas 3.02 IA balloon pump 3.03 Angio JET 3.04 Homeostasis 3.05 Carotid procedures 3.06 EPIC, HIS 3.07 Mange images (post-processing, retrieval, archiving)</p>
<p><u>IS 471 – Clinical Practicum IV</u></p> <p>4.01 Suggest protocols 4.02 Enforce protocols 4.03 IR (angioplasty, stent placement, balloons) 4.04 Research protocols 4.05 IVUS 4.06 Interpret and manage images 4.07 Call back service</p>

PROFESSIONAL IMAGING SCIENCES COURSE SEQUENCING

Withdrawing or failure to successfully complete a professional course with a letter grade of "C" or better may result in the student being suspended or dismissed from the program.

Students who are readmitted to the program at times other than the fall quarter will pick up the sequence from the point of exit.

STANDARDS OF PERFORMANCE FOR IMAGING SCIENCES AND MAJOR FIELD RELATED COURSES

The grading scale used in the program is as follows:

90 - 100 = A
80 - 89 = B
75 - 79 = C
70 - 74 = D
below 70 = F

If a student earns grades lower than “C” or their average GPA falls below a 2.5 the student may not be permitted to register for subsequent courses or semesters, and the student may be subject to dismissal from the program.

Students who withdraw or have been dismissed from the program must re-apply and will be considered on the same basis as a new applicant. Students requesting re-admission must submit a letter to the College of Admissions.

Students Must Maintain an Overall GPA in The Program of at Least 2.5

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 continue in the program.

During the program, if a student's performance is unsatisfactory (GPA less than 2.5 or a letter grade of less than "C"), he/she may not be permitted to register for subsequent classes or quarters. The student will be subject to dismissal from the program. If the student wishes to reenter the program, he/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.

**COMPREHENSIVE END-OF-PROGRAM COMPETENCY ASSESSMENT
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 (“I”) 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).

CONDUCT AND ETHICS

Each student is expected to conduct oneself at all times in a dignified manner which conforms to the ethics of the profession and which instills patient confidence in ones abilities as a health care practitioner. Each student is expected to conform to the professional code of ethics as outlined in this handbook.

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.

SCHOLASTIC DISHONESTY AND CHEATING

The Department will not condone cheating in any form. Any allegations of cheating will be reviewed by the Committee on Progress and Promotions for Imaging Sciences and if merited, dealt with in a strict manner, including immediate dismissal from the program.

Any student found to be cheating on an examination will automatically receive a "0" for the exam and, at the discretion of the Committee on Progress and Promotions for Imaging Sciences, will be subject to dismissal from the program. 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/or 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 review and possible disciplinary action.

CLASS AND CLINICAL HOURS

The program provides classroom study, laboratory study and observation, clinical experience, independent study, and seminars. Face to face classes may meet on a regular basis from 8:00 a.m. to 5:00 p.m. or during the evenings or weekends, depending on availability and student need. Courses are arranged on a face to face schedule and sequence. Clinical classes in area hospitals meet from 6:45 a.m. until either 3:15 p.m. or 7:15 p.m. or from 3:00 p.m. to 11:00 p.m. depending on the corresponding shift assignment, or as specified for specialty rotations. Students are expected to provide their own transportation to clinical training sites. When necessary, the Department reserves the right to adjust class schedules, times and program sequencing, to include the possibility of evening classes and clinicals, as well as clinical rotations outside of the Chicago metropolitan area.

CONDUCT IN CLINICAL FACILITIES

In the event of a student disciplinary problem in a clinical facility, such as unprofessional conduct, the following procedure will be adhered to:

1. The student will be dismissed from the clinical facility by the instructor, and the time will be recorded as an unexcused absence.
2. The student will be scheduled for a formal counseling session conducted by the instructor and the director of clinical education, at which time his/her clinical status will be reviewed and appropriate action taken. The student must complete this counseling session in order to be readmitted to the clinical rotation.
3. The program attendance policy remains applicable.

HIPAA AND PATIENT PRIVACY

As a student at Rush University, you 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 - oral, 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 program.

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 exam 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 utmost confidentiality, the same as for any patient contact. Failure to protect the confidentiality of any information related to the activities of this course may result in disciplinary action, up to and including dismissal from the program.

GUIDE TO PROFESSIONAL CONDUCT

Professionalism relates to the intellectual, ethical, behavioral and attitudinal attributes necessary to perform as a health care provider. The student will be expected to:

Attention

1. Demonstrate awareness of the importance of learning by asking pertinent questions, identifying areas of importance in clinical practice and reporting and recording those areas.
2. Disruptive behavior in class, lab and clinicals, such as talking or other activity interferes with effective teaching and learning and should be avoided.

Participation

1. Complete assigned work and prepare for class, laboratory, and clinical 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, nursing staff and physician.

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.

Communication

1. Demonstrate a pleasant and positive attitude when dealing with patients and co-workers 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 therapy.
4. Communicate clearly to nursing 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 co-workers, instructors, faculty, nurses and physicians.

Organization

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 Imaging Sciences to overall patient condition.
6. Adapt Imaging Sciences techniques to overcome difficulties.
7. Devise or suggest new techniques welfare or patient or unit efficiency.

Safety

1. Verify identity of patients before initiating therapeutic action.
2. Interpret written information and verbal directions correctly.
3. Observe and report significant changes in patient's condition promptly to appropriate person(s).
4. Act to prevent accidents and injury to patients, personnel and self.
5. Transfer previously learned theory and skills to new/different patient situations.
6. Request help from faculty/staff when unsure.
7. Comply with hospital and university guidelines for performance.

Examples of critical errors in professional conduct and judgment include:

1. Failure to place the patient's welfare as first priority.
2. Failure to maintain physical, mental, and emotional composure in all situations.
3. Consistent ineffective, inefficient use of time in clinical setting.
4. Failure to be honest with patients, faculty, and colleagues.
5. Scholastic dishonesty in any form.

PROCEDURE FOR UNPROFESSIONAL CONDUCT

The procedure to be followed for unprofessional conduct is as follows:

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/Program Director will have been notified.

Step 2. The Department Chair/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/Program Director, student, and faculty advisor, whenever possible, will meet as promptly as possible after the alleged incident. The Department Chair/Program Director 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 Committee on Progress and Promotions for Imaging Sciences (CPPRC) will be convened to review the allegations and recommend a course of action. Guidelines for the CPPRC preliminary hearing are provided in the Student Guide. The Department Chair/Program Director will inform the student and the Dean in writing of the CPPRC preliminary hearing and the following:

- a. Date
- b. Name of student
- c. Nature of the allegations
- d. Date of alleged incident/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 current University Catalog and the College of Health Sciences Rules for Governance.

INCIDENTS IN THE CLINICAL AGENCY

An incident occurring which affects patient or staff well being or the patient's prescribed care will be reported to the clinical instructor immediately. A hospital incident report will then be completed following the policy of that institution. A duplicate of the hospital incident report as well as a memorandum of explanation from the clinical instructor will be placed in the student's clinical file and the department chair/program director or director of clinical education 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.

PROCEDURE FOR READMISSION TO THE IMAGING SCIENCES PROGRAM

A student who fails an Imaging Sciences course, drops an Imaging Sciences course during a session, or does not proceed to the next Imaging Sciences course may be eligible for readmission at the first available opportunity and must petition the Committee on Progress and Promotion to reenter the program. The following procedure is required:

1. At the time the student fails, drops, or decides not to proceed in sequence, the department chair or student's advisor will complete a special student counseling form giving the reasons for the failure or reasons for the student dropping the course. The form will be signed by the student. One copy will be given to the student and one copy will be placed in the student's record.
2. An exit interview with the department chair is encouraged as part of the official procedure for exiting the program.
3. At least two months prior to the beginning of the quarter in which the student wishes to reenter, he/she must submit a letter of intent to the Committee on Progress and Promotions for Imaging Sciences. Requests for readmission should be submitted to the Office of College Admission Services.

4. If remedial work was requested in guided studies of general courses, results of such classes must be included in the request for readmission. If medical conditions were involved, written verification of good health and ability to function safely in a clinical crisis situation is required.
5. The decision regarding reentry will be subject to the policy on reinstatement to the Imaging Sciences sequence and approval of the Committee on Progress and Promotions for Imaging Sciences.
6. The student will be informed in writing of the decision.

GRIEVANCE POLICY - STUDENT APPEALS - CHAIN OF COMMAND

Normal communication regarding course or program policy should be first directed to the instructor or professor assigned to the course or clinical section involved. In the event that the student is unable to satisfy his/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.

CHANGE OF ADDRESS RESPONSIBILITY

It is the responsibility of any student enrolled in the Imaging Sciences Program to inform both the Registrar's Office and the department of any change of address or phone number within one week. The information should be given to the administrative assistant of the Imaging Sciences Program in writing (form attached; additional forms are available in the department).

CORRESPONDENCE BETWEEN STUDENTS AND FACULTY

1. A schedule of office hours will be noted in each faculty member's course syllabus.
2. Students are responsible for checking the program bulletin board for current notices at least once per week located in the reception area of the department.
3. Students will be assigned to a faculty advisor in the fall quarter of their first year. Times for student conferences will be posted.
4. Each student must meet with his advisor formally at least once per quarter during the academic year. One advisement session will be held during each summer session.
5. A student conference record will be completed and signed by both the faculty member and student following a formal conference.

RELEASE OF STUDENT INFORMATION

Students must sign a Rush University Request for Letter of Recommendation. Forms are available in the Registrar's Office.

Student grades cannot be given out over the telephone.

UNIFORM POLICY FOR CLINICAL PRACTICE

The following guidelines are used to assist the student in adjustments to various hospitals and other health agencies. The policies vary, but in general the rules established by the program will cover the student's responsibility when entering such health agencies. Rush University wishes to have its students represent the University in a manner that reflects its goal of high standards of professionalism.

Uniform regulations are needed to assure standard, identifying attire and a well groomed personal appearance. The ultimate goal is to protect the patient and self from cross-contamination and to reflect confidence and assurance in patient contact and hospital staff personnel relationships.

1. A white, buttoned (no zipper), long sleeve laboratory coat approximately knee length must be worn at all times in the clinical agency. A program patch will be permanently affixed to the left front pocket.
2. Name tags and University I.D. cards specified by the program must be visibly worn at all times.
3. Males: Shirts and ties will be worn. Dress pants are preferred, but neat dress casual pants or cords are acceptable. Females: Dresses, skirt and blouse, or slacks and blouse are acceptable. Scrubs as prescribed by the department are acceptable for critical care, surgical or emergency room rotations.

NO blue jeans, sandals, high heels or tennis shoes (except with scrubs) are permitted.

4. A watch with a second indicator is required.
5. Stethoscopes, bandage scissors, and hemostats are mandatory beginning in the spring quarter of the first year. A small pocket notebook should be purchased for clinical.

Failure to comply with the above regulations regarding uniform policy will result in the student being dismissed from clinical practice until such time as the deficiencies are corrected.

ATTENDANCE REGULATIONS

CLINICAL PRACTICE

There are no excused absences from clinical practice. Each clinical practice has a requisite number of mandatory clinical hours. Any student not completing the required clinical hours

during a given session will not receive a passing grade for that clinical practice. Time for any excused absence must be made up at the discretion of the clinical instructor. Clinical instructors are not required to allow a student to make up missed days. If clinical absences are not made up, a letter grade of "F", "I" or "IP" may be given at the discretion of the faculty.

Clinical practice, unless otherwise announced, begins at the start of the affiliate shift. (6:45 a.m., 2:30 p.m., 6:30 p.m., etc.) Students are expected to be prompt and prepared to begin clinical rotations. Tardiness delays and hampers all student assignments made for that clinical day. If assignments cannot be arranged because of tardiness the student may be required to make-up that day of tardiness as a full clinical day.

Any student exceeding four (4) tardies or four (4) clinical absences may be subject to dismissal from the program.

For those times when students may be in clinical affiliates outside of regular school or clinical times, a special request form needs to be submitted for approval to the Director of Clinical Education.

PROCEDURE FOR NOTIFICATION OF ILLNESS OR LATENESS

1. First, call the hospital at least 30 minutes before your assigned shift begins if possible.
2. Speak with the clinical instructor or shift supervisor.
3. Identify yourself and tell the shift supervisor that you are a Rush University student.
4. Inform the shift supervisor that you will be late or absent.
5. Next, call the Director of Clinical Education.
6. If the Director of Clinical Education does not answer, call the Rush University Department of Imaging Sciences and leave a message about your absence.

CLASS

Class attendance regulations allow the student to be absent no more than 10% of the scheduled lectures. Students absent more than 10% of the scheduled classes may be dropped from the course.

For example: if a class meets 30 times during a quarter, then a student will be allowed a maximum of three (3) classes missed. The student may be dropped on the fourth class missed.

ILLNESS

In the event of a "lengthy" illness, each case will be reviewed individually in regards to time lost, time available for completion and content of objectives to be covered. Any such absence may require documentation by a physician in writing.

TARDINESS (Class and/or Clinical)

The student should be in the appointed place at the appropriate time; disregard for this demonstrates irresponsibility and is unacceptable professional behavior. This cannot be tolerated and action may be taken at the discretion of the instructor. Excess tardiness may result in grade reduction. In certain instances, the student may be subject to administrative withdrawal from the course and/or program.

INCOMPLETE ASSIGNMENTS AND MAKE-UP EXAMINATIONS

All assignments are to be turned in as specified on the course syllabus. Assignments not turned in to the instructor when due will result in a "0" for that assignment. Students given an incomplete in a course must have the mechanism for resolving the incomplete agreed upon with the course instructor by the first week of classes in the subsequent quarter. The agreement must be in writing and must include the signature of the student and the instructor.

As a general policy, make-up exams will not be given for missed exams. A request for a make-up exam should be directed to the individual course instructor. In cases of serious illness or accident, a make-up exam may be considered.

PROFESSIONAL CONTINUING EDUCATION AND SERVICE

As a part of each clinical course in the curricula, students will be required to attend at least eight hours per quarter of approved professional continuing education and/or service activities. Seminars, lectures, workshops and related activities may be submitted to meet this requirement.

ALTERNATIVE CLINICAL ACTIVITIES (CLINICAL PASS)

Students may apply for attendance to additional seminars, workshops and lectures to acquire clinical release time. Approval of application will be dependent upon clinical skills and in-curriculum grade point average (GPA). Each function will be evaluated independently as to its educational value in terms of how much time will be awarded.

The use of this pass is limited. It cannot be used unless appropriate approval is awarded prior to the projected day of use and does NOT include specialty rotations or case studies.

OUTSIDE EMPLOYMENT

The faculty realizes that it may be necessary for some students to work part-time while attending school. This should not be done at the expense of the Imaging Sciences Program. It is the student's responsibility to fulfill all school obligations.

If a student appears too fatigued to perform safely in the clinical laboratory, the instructor may dismiss the student from the clinical agency.

It is not advisable for a student to work from 11:00 p.m. to 7:00 a.m. and then come to the university as fatigue frequently is a cause for accidents or poor clinical judgment.

IMMUNIZATIONS AND TUBERCULOSIS TESTING

Proof of immunization for tetanus and diphtheria within the last ten years as well as immunizations against measles, mumps and rubella is required of all entering students prior to registration. All students must provide proof of two immunizations against Hepatitis B before the end of the first quarter of the program. All students are required to have PPD testing using the two-step procedure done within one year prior to initial registration as a student at Rush University.

PROFESSIONAL LIABILITY INSURANCE COVERAGE

All entering students are required to maintain professional liability insurance. Insurance coverage can be purchased through Rush University at registration.

ILLNESS OR INJURY OF STUDENT WHILE ATTENDING CLASSES

Illness or injury while in the classroom or clinical area must be reported to the professor present. Students who are pregnant should inform the clinical director who will inform the instructor so that no assignment will be made involving exposure to radiation or other hazards.

USE OF HOSPITAL LIBRARIES

Use of hospital libraries varies according to agency policy. Check with current clinical instructor about the procedure needed.

Refund Policy

Official withdrawal from a course or from the university entitles a student to a tuition refund according to the schedule below. No other fees are refundable. Official paperwork (i.e. drop form or withdrawal/leave of absence form) must be fully completed and submitted to the Office of the Registrar by Friday at 4:30 p.m. CST to be considered valid for that week's tuition refund.

Week 1	100%
Week 2	80%
Week 3	60%
Week 4	40%
Week 5	20%

No refund after the fifth week.

The Office of Student Financial Affairs manages tuition refunds. The refund will be credited to the student's account (less any amount still owed for other charges) unless the student requests a check for the refund. Students are notified via Rush e-mail when overpayment checks are available in the Office of Student Financial Affairs.

FINANCIAL AID AND SCHOLARSHIPS

Specific Imaging Sciences scholarships are available to students enrolled in the program. For more information contact the departmental office. Other financial aid information and requests should be handled through the Financial Aid Office located in Student Services.

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

One key attribute of a professional is participation in associations and societies which influence the direction, education and practice of the members of a profession. In order to develop this aspect of professionalism, the student will be expected to maintain active student membership in an appropriate professional association or society during the clinical phase of the curriculum.

Membership in the American Association for Imaging Sciences is mandatory. Membership in the Illinois Society for Imaging Sciences is also encouraged.

STATE AND NATIONAL CREDENTIALING

Graduates of Imaging Sciences program are eligible for registration by examination in the advanced modality of Computed Tomography or Magnetic Resonance Imaging sponsored by the American Registry of Radiologic Technologists upon completion of the didactic and clinical requirements of the program. The successful passing of the ARRT examination allows the graduate to place the initials RT (R), (CT), (ARRT) or RT (R), (MR) (ARRT) after his/her name.

CHANGES IN POLICY

Additional policies and regulations may be established by the department or by the instructor for a course or any portion of a course. After due and proper notification, students will be expected to comply fully with all regulations.

ADVANCED STANDING IN THE IMAGING SCIENCES PROGRAM

INTRODUCTION

Individuals may have acquired academic credit in Imaging Sciences 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 and/or successful completion of the certification and registry examinations.

All students graduating from the Imaging Sciences 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 an imaging sciences professional 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 non-academic 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 and/or ability gained through previous training or experience.

METHODS OF GRANTING ADVANCED STANDING

1. Advanced standing can be awarded through transfer credit.
2. 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 Imaging Sciences 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.)
3. Advanced standing can be awarded as credit for successful completion of national certification or registry examinations.

WHO IS ELIGIBLE FOR ADVANCED STANDING?

1. Transfer students (who have been accepted into the Rush University Imaging Sciences Program) may receive a transfer credit for equivalent courses within the Imaging Sciences Program curriculum.
2. Credentialed students in an imaging specialty area who have been accepted into the Rush University Imaging Sciences Program may receive credit and/or be eligible to take equivalency examinations in certain courses. Specifically, individuals holding an advanced certification in CT, MRI, interventional studies, cardiac studies, or PET awarded by the American Registry of Radiologic Technologists (ARRT) or other acceptable credentialing agency may be eligible to receive credit based on the advanced certification credential. Such individuals must enroll in and complete a minimum of 45 quarter credit hours of coursework at Rush University. Individuals holding the ARRT credential must apply for admission to the program at least 60 days prior to the first day of the quarter in which they wish to begin coursework at Rush. General education prerequisites may be waived for these individuals for

admission to the program. All general education requirements must be completed prior to graduation and all other program requirements apply.

POLICY FOR TRANSFER STUDENTS

Students who have completed course work at other approved Imaging Sciences programs may petition to have these courses transfer in lieu of specific course work in the Rush University program. Students must submit a transcript 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: 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 Imaging Sciences programs and the right to disallow such transfer credit in such course work in cases which the student cannot demonstrate acceptable proficiency. All transfer credit is subject to the approval of the Committee on Progress and Promotions for Imaging Sciences. 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 Imaging Sciences course work if he/she left the previous program due to academic probation, suspension, or exclusion. All University policies regarding transfer credit must be satisfied. Forms are available in the Registrar's Office.

GRADUATION REQUIREMENTS

Degree requirements that must be met include:

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. Advanced Life Support (ACLS), Pediatric Life Support (PALS) and Neonatal Resuscitation Provider (NRP) course completion.
5. Successfully complete a comprehensive end-of-program competency assessment

STATEMENT OF ETHICS AND PROFESSIONAL CONDUCT

In the conduct of their professional activities, the Imaging Sciences Practitioner shall be bound by the following ethical and professional principles. Imaging Sciences Practitioners shall:

- ❖ Demonstrate behavior that reflects integrity, supports objectivity, and fosters trust in the profession and its professionals.
- ❖ Actively maintain and continually improve their professional competence, and represent it accurately.
- ❖ Perform only those procedures or functions in which they are individually competent and which are within the scope of accepted and responsible practice.
- ❖ Respect and protect the legal and personal rights of patients they treat, including the right to informed consent and refusal of treatment.
- ❖ Divulge no confidential information regarding any patient or family unless disclosure is required for responsible performance of duty or required by law.
- ❖ Provide care without discrimination on any basis, with respect for the rights and dignity of all individuals.
- ❖ Promote disease prevention and wellness.
- ❖ Refuse to participate in illegal or unethical acts, and refuse to conceal illegal, unethical, or incompetent acts of others.
- ❖ Follow sound scientific procedures and ethical principles in research.
- ❖ Comply with state or federal laws which govern and relate to their practice.
- ❖ Avoid any form of conduct that creates a conflict of interest, and follow the principles of ethical business behavior.
- ❖ Promote the positive evolution of the profession, and health care in general, through improvement of the access, efficacy, and cost of patient care.
- ❖ Refrain from indiscriminate and unnecessary use of resources, both economic and natural, in their practice.

ROLE MODEL STATEMENT FOR IMAGING SCIENCES PRACTITIONERS

- ❖ As health care professionals engaged in the performance of care, the practitioners of this profession must strive to maintain the highest personal and professional standards. A most important standard in the profession is for that practitioner to serve as a role model in matters concerning health.
- ❖ In addition to upholding the code of ethics of this profession by continually striving to render the highest quality of patient care possible, the Imaging Sciences practitioner shall serve as a leader and advocate of public health.
- ❖ The Imaging Sciences practitioner shall participate in activities leading to awareness of the causes and prevention of disease.
- ❖ The Imaging Sciences practitioner shall support the development and promotion of health disease awareness programs.
- ❖ The Imaging Sciences practitioner shall support research in all areas where efforts could promote improved health and could prevent disease.
- ❖ The Imaging Sciences practitioner shall provide leadership in determining health promotion and disease prevention activities for students, faculty, practitioners, patients, and the general public.
- ❖ The Imaging Sciences practitioner shall serve as a physical example of good health by abstaining from tobacco use and shall make a special personal effort to eliminate smoking and the use of other tobacco products from the home and work environment.
- ❖ The Imaging Sciences practitioner shall strive to be a model for all members of the health care team by demonstrating responsibility and cooperating with other health care professionals to meet the health needs of the public.

PLEDGE OF RESPONSIBILITY

I have received and read the copy of Rush University, Imaging Sciences Program Student Catalog and Handbook. I am responsible for reading and understanding all the details and following all the guidelines listed. In addition, I have reviewed and am responsible for understanding the Imaging Sciences, Rush University College of Health Sciences' policies and procedures found in the Rush University Catalog.

Student's Signature

Date

Student's Printed Name

Date

Prepared by the Department of Medical Physics and Advanced Imaging

Imaging Sciences Program, Rush University



Rush University Honor Code

In the accordance with the Department of Imaging Sciences 2017-2018 Handbook, 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 (hereafter 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 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 healthcare 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, and 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 themselves as a member of the University.

Commitment

By signing below, 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 this signed document becomes part of my permanent record, and I must uphold the letter and spirit of this Code throughout my Rush education. I verify receipt of the program handbook and pledge to refer to this handbook for program policies and procedures.

Student Signature

Date

Printed Name