

**RUSH UNIVERSITY
COLLEGE OF HEALTH SCIENCES**

Department of Undergraduate Studies

Bachelor of Science Degree in Imaging Sciences

Program Handbook



2024-2025

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OFFICE HOURS: The faculty does not hold official office hours, but are generally happy to meet with students either before or after class OR can be contacted between classes via the contact information provided according to the information provided in their respective syllabi.

RUSH University

Accreditation

Rush University is accredited by the Higher Learning Commission (HLC), a regional accrediting agency that accredits degree-granting post-secondary educational institutions in the North Central region, which includes 19 states. In its accreditation process, HLC assesses the academic quality and educational effectiveness of institutions and emphasizes institutional structures, processes and resources.

The U.S. Department of Education as certifying institutional eligibility for federal funding in a number of programs, including student access to federal financial aid, recognizes HLC. The Commission accredits institutions, not individual programs. Accreditation of the university's specialty programs is conferred by accrediting organizations specific to each discipline.

Mission

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

Vision

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

ICARE Values

Our core values — ICARE — (innovation, collaboration, accountability, respect and excellence) - translate into our work with all students, including those with disabilities. Rush actively collaborates with students to develop innovative ways to ensure accessibility and creates a respectful accountable culture through our confidential and specialized disability support. Rush is committed to excellence in accessibility; we encourage students with disabilities to disclose and seek accommodations.

Rush University is committed to diversity and to attracting and educating students who will make the population of health care professionals representative of the national population.

College of Health Sciences

Mission

The Mission of the College of Health Sciences is to advance the quality and availability of healthcare through excellence in education, research and scholarship, service and patient care. The college promotes the values of diversity, access and inclusion in all of its endeavors.

Vision

The College of Health Sciences at RUSH University will be a world-class school of allied health sciences whose programs are recognized as among the best in the United States.

Bachelor of Science in Imaging Sciences Program

Mission

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 to promote the values of diversity and inclusion in our program.

Vision

The vision of the Imaging Sciences Program is to be a premier educational program in Imaging Sciences by providing innovative curricular, clinical, and continuing education services to the diagnostic imaging community and the patients we serve. Our vision is to transform lives through academic excellence, innovation, and leadership.

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 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 Overview

The Imaging Sciences Program at Rush University's College of Health Sciences in Chicago is committed to clinical and academic excellence in teaching, research, service, and patient care. The program prepares students for advanced careers in Imaging Sciences, with a focus on leadership in management, supervision, education, and clinical specialization.

With small class sizes and dedicated faculty mentoring, the program fosters a learning environment that is both challenging and supportive. Students develop critical thinking and leadership skills essential for success in healthcare, gaining professional fulfillment and personal satisfaction through rigorous training.

Rush University's teacher-practitioner model empowers radiologic technologists to assume leadership roles in their specialties. The program offers comprehensive education in advanced imaging procedures, including Computed Tomography (CT) and Magnetic Resonance Imaging (VI) (MRI), Cardiac Interventional Radiography (CI), and Vascular Interventional Radiography,

addressing the evolving needs of healthcare. Students benefit from hands-on clinical training, intensive seminars, and collaboration with a multidisciplinary healthcare team, leading to both professional growth and a deep commitment to patient care.

The program serves as a postprimary career ladder pathway for technologists holding ARRT certification and registration or Nuclear Medicine Technology Certification Board certification, enabling them to pursue advanced training while completing a bachelor's degree. Graduates are trained to perform advanced procedures with current and emerging imaging and therapeutic technologies and are prepared for advanced registry certifications through ARRT or the Nuclear Medicine Certification Board. Additionally, the program accommodates individuals without an imaging background who are interested in entry-level MRI training and need preparation for certification and registration.

Rush is utilizing the curricular guides as recommended 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.

The curriculum covers applied anatomy, radiographic techniques, radiation safety, and advanced imaging techniques, alongside leadership courses in healthcare management, education, research, and statistics. Students complete approximately 1,000 hours of clinical practice over a 24-month professional phase at Rush University and its affiliated clinical sites, culminating in a Bachelor of Science in Imaging Sciences degree. This phase emphasizes both clinical and academic excellence.

To be eligible for the program, students must have an accredited associate degree in an imaging science field, 60 semester credit hours from a regionally accredited institution, and eligibility for accreditation by the Illinois Emergency Management Agency. The degree program requires an additional 74 upper-division semester credit hours, including Imaging Sciences coursework and clinical fieldwork.

Aligned with the mission of the college, the program prepares advanced-level imaging science professionals to provide high-quality, accessible diagnostic and interventional imaging services. It actively promotes diversity and inclusion, striving to enroll a diverse student body.

As part of a university academic medical center, the Department of Imaging Sciences contributes to research, scholarship, service, and patient care. The department publishes original research, participates in textbook and chapter publications, and engages in local, state, and national professional activities. Service efforts extend to community engagement, university service activities, and continuing education, all integrated with the department's commitment to patient care.

BS in Imaging Sciences Learning Outcomes

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

1. Demonstrate 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 the 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

Standard of Ethics

Rush Imaging Science students must maintain a professional attitude and behavior as outlined by the ARRT Standards of Ethics, which articulates the types of behavior we expect of R.T.s and describes the types of behavior we won't tolerate, and the ASRT Practice Standards for Medical Imaging and Radiation Therapy. Failure of the student to adhere to these standards will be reported to the ARRT. Unethical or dishonest behavior on the part of the student may cause ineligibility to sit for the national certification examination, obtain state licensure, and/or dismissal from the program in accordance with ARRT guidelines.

ARRT Standard of Ethics

A. Code of Ethics

The Code of Ethics forms the first part of the *Standards of Ethics*. The Code of Ethics shall serve as a guide by which Registered Technologists and Candidates may evaluate their professional conduct as it relates to patients, healthcare consumers, employers, colleagues and other members of the healthcare team. The Code of Ethics is intended to assist Registered Technologists and Candidates in maintaining a high level of ethical conduct and providing for patient protection, safety, and comfort. The Code of Ethics is aspirational. www.arrt.org

1. The radiologic technologist acts in a professional manner, responds to patient needs, and supports colleagues and associates in providing quality patient care.
2. The radiologic technologist acts to advance the principal objective of the profession to provide services to humanity with full respect for the dignity of mankind.
3. The radiologic technologist delivers patient care and service unrestricted by the concerns of personal attributes or the nature of the disease or illness, and without discrimination on the basis of race, color, creed, religion, national origin, sex, marital status, status with regard to public

assistance, familial status, disability, sexual orientation, gender identity, veteran status, age, or any other legally protected basis.

4. The radiologic technologist practices technology founded upon theoretical knowledge and concepts, uses equipment and accessories consistent with the purposes for which they were designed, and employs procedures and techniques appropriately.

5. The radiologic technologist assesses situations; exercises care, discretion, and judgment; assumes responsibility for professional decisions; and acts in the best interest of the patient.

6. The radiologic technologist acts as an agent through observation and communication to obtain pertinent information for the physician to aid in the diagnosis and treatment of the patient and recognizes that interpretation and diagnosis are outside the scope of practice for the profession.

7. The radiologic technologist uses equipment and accessories, employs techniques and procedures, performs services in accordance with an accepted standard of practice, and demonstrates expertise in minimizing radiation exposure to the patient, self, and other members of the healthcare team.

8. The radiologic technologist practices ethical conduct appropriate to the profession and protects the patient's right to quality radiologic technology care.

9. The radiologic technologist respects confidences entrusted in the course of professional practice, respects the patient's right to privacy, and reveals confidential information only as required by law or to protect the welfare of the individual or the community.

10. The radiologic technologist continually strives to improve knowledge and skills by participating in continuing education and professional activities, sharing knowledge with colleagues, and investigating new aspects of professional practice.

11. The radiologic technologist refrains from the use of illegal drugs and/or any legally controlled substances which result in impairment of professional judgment and/or ability to practice radiologic technology with reasonable skill and safety to patients.

<https://www.arrt.org/pages/about/about-us/governance>

B. Rules of Ethics

Rules of Ethics form the second part of the Standards of Ethics. They are mandatory standards of minimally acceptable professional conduct for all Registered Technologists and Candidates. ARRT certification and registration demonstrates to the medical community and the public that an individual is qualified to practice within the profession. The Rules of Ethics are intended to promote the protection, safety, and comfort of patients. Accordingly, it is essential that Registered Technologists and Candidates act consistently with these Rules. The Rules of Ethics are enforceable. Registered Technologists are required to notify ARRT of any ethics violation, including state licensing issues and criminal charges and convictions, within 30 days of the occurrence or during their annual renewal of certification and registration, whichever comes first. Applicants for certification and registration are required to notify ARRT of any ethics violation, including state licensing issues and criminal charges and convictions, within 30 days of the occurrence. Registered Technologists and Candidates engaging in any of the following conduct or activities, or who permit the occurrence of the following conduct or activities with respect to them, have violated the Rules of Ethics and are subject to sanctions as described.

“Eligibility for Certification by the American Registry of Radiologic Technologists” or visit the ARRT website: www.arrt.org

Imaging Sciences (BS): Technical Standards

The following technical functions are required of all students enrolled in the Bachelor of Imaging Sciences Program:

Acquire information

- Acquire information from demonstrations and experiences in courses such as lecture, group, and physical demonstrations.
- Acquire information from written documents and computer systems (e.g., literature searches & data retrieval).
- Identify information presented in accessible images from paper, slides, videos with audio description, and transparencies.

Use and Interpret

- Use and interpret information from assessment techniques/maneuvers/procedures.
- Use and interpret information generated from diagnostic tools.

Motor

- Possess psychomotor skills necessary to perform or assist with day-to-day responsibilities commensurate with the student's discipline.
- Practice in a safe manner and perform universal precautions against contamination.

Communication

- Communicate effectively and sensitively with patients and families.
- Communicate effectively with faculty, preceptors, employees, other professionals and all members of the healthcare team during practicum, internship and/or other learning experiences.

Intellectual ability

- Measure, calculate, reason, analyze, and synthesize data related to diagnosis and treatment of patients and populations
- Exercise proper judgment and complete responsibilities in a timely and accurate manner according to the health sciences role.
- Synthesize information, problem solve, and think critically to judge the most appropriate theory, assessment, management or treatment strategy.

Behavioral

- Maintain mature, sensitive, effective relationships with clients/patients, families, students, faculty, staff, preceptors and other professionals under all circumstances
- Exercise skills of diplomacy to advocate for patients in need
- Possess emotional stability to function under stress and adapt to rapidly changing environments inherent to the classroom and practice settings

Character

- Demonstrate concern for others
- Integrity, accountability, interest, and motivation are necessary personal qualities
- Demonstrate intent and desire to follow the Rush University and Health Sciences code of ethics

The technical standards delineated above must be met with or without accommodation. Students who, after review of the technical standards, determine that they require reasonable accommodation to fully engage in the program, should contact the Office of Student Accessibility Services] to confidentially discuss their accommodations needs.

Given the clinical nature of our programs, time may be needed to implement accommodations. Accommodations are never retroactive; therefore, timely requests are essential and encouraged.

Contact the **Office of Student Accessibility Services** to learn more about accommodations at RUSH University (www.RUSHu.RUSH.edu/office-student-accessibility-services):

Marie Lusk, MBA, MSW, LSW
Director, Office of Student Accessibility Services
RUSH University
600 S. Paulina St., Suite 901
Chicago, IL 60612
(312) 942-5237
Marie_Lusk@RUSH.edu or StudentAccessibility@RUSH.edu

Note: These policies and procedures are subject to change and changes are effective immediately and apply to all students.

Counseling & Advising

The Center for Clinical Wellness (CCW) serves as a hub for all things wellness at Rush and is available to all current members of our community; including students, house-staff, clinicians, and non-clinical employees at Rush University Medical Center, Rush Oak Park Hospital, and Rush Copley Medical Center. In addition to a network of on-site and virtual tools, the CCW provides free counseling, coaching, and other services. For additional specifics, including scheduling, location, hours, and current program offerings, please visit the website.

All students, including distance learners, also have access to the Rush Wellness Assistance Program, 24/7 counseling support for all members of the Rush community and their families. Call 833-304-3627 to access this service.

All members of the Faculty participate in advising students regarding their progress in the program. Any student who finds him/herself in academic difficulty should seek help from a Faculty member as soon as possible.

Minimum Core General Education Requirements for Admission

All entering students must complete the following core general education requirements in order to be eligible for the Bachelor in Science degree awarded by Rush University.

Degree Offered: Bachelor of Science in Imaging Sciences

All entering students must complete core general education requirements to be eligible for the Bachelor of Science degree from R. In addition to a minimum of 60 semester hours (90 quarter hours) of general education and pre-professional prerequisite coursework, the degree requires at least 98 quarter hours of upper-division credits for graduation. This includes 26 semester hours of specific program pre-professional prerequisites, which may be completed at any regionally accredited college or university. The professional phase, which emphasizes clinical and academic excellence, includes approximately 1,000 hours of in-hospital clinical practice. Students interested in management or education may also take additional elective coursework in these areas.

Program Prerequisites

Program prerequisites require a minimum of 60 semester hours (90 quarter hours) of lower-division college-level coursework, including specific general education courses.

General education coursework must be successfully completed in the following areas:

	Semester CH	Quarter CH
Communications (English composition is required)	6	9
Mathematics (College Algebra or higher)	3	4
Humanities	3	4
Anatomy and Physiology	8	11
Physical Sciences	3	4
Behavioral Sciences	3	4
Social Sciences	3	4
Electives (Elective courses may be in communications, medical terminology, computer science, ethics, fine arts, humanities, life sciences, literature, philosophy, physical sciences or social sciences, foreign language, literature, music, history, religion, etc)	34	54

Admission Requirements

Applicants must meet the following criteria:

Completion of 60 semester credit hours (90 quarter credit hours), including 26 credit hours of program prerequisites. These credits can be earned at any regionally accredited college or university.

Completion of program general education course requirements. In some cases, students may receive permission to defer completion of these courses and begin program coursework, but all requirements must be fulfilled before the start of the second semester in the program. Contact the program office for more details.

Completion of pre-professional prerequisites with a grade of "C" or better in all courses before beginning professional coursework.

A minimum overall GPA of 2.5 in all college/university coursework.

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 essential job functions.

Note: The Rush Core Curriculum requires 60 semester credits (90 quarter credit hours). Courses listed above will fulfill core requirements.

Postprimary Track

An associate degree in medical radiography or nuclear medicine technology from a program accredited by the Joint Review Committee on Education in Radiologic Technology (JRCERT) or the Joint Review Committee on Educational Programs in Nuclear Medicine Technology (JRCNMT).

Applicants from accredited hospital-based programs may contact the program director to discuss admission eligibility.

Licensure or eligibility for accreditation in medical radiation technology by the Illinois Emergency Management Agency

Entry-level MRI track

Completion of minimum of 60 semester hours (90 quarter hours) of lower-division college-level coursework, including specific general education courses.

Academic Progression

High academic performance in all courses is expected. Students will be considered in good standing at Rush University unless placed on academic probation. A cumulative grade point average of at least 2.0 is required to be considered in good standing, and to be eligible to continue in the baccalaureate program. Cumulative grade point averages will be reviewed after each term.

The faculty reserves the right to request the withdrawal of a student whose conduct, health, or performance demonstrates lack of fitness for continuance in a health profession. Any such

student not voluntarily withdrawing will be dismissed from the University, regardless of grade point average.

Academic Probation

Academic probation is assigned to any student who receives a semester grade point average below 2.5, or whose cumulative grade point average falls below 2.5. Students placed on probation have two terms to regain the status of good standing as follows:

- The student must attain a grade point average of at least 2.5 in the term following the term when probation was assigned.
- Two semesters after being placed on probation, the student must have a cumulative grade point average above 2.5.

Failure to make the minimum term grade point average one term after probation regardless of the cumulative grade point average, or failure to make the minimum cumulative grade point average two terms after probation will result in dismissal from the University.

D, F or N Grades in the BS in Imaging Sciences Program

Undergraduate students who receive an F or N grade in any course may repeat that course with the F or N grade being replaced by the grade earned upon repeating the course. In the event that a student is required to repeat a course that is a prerequisite for an advanced course, the advanced course may not be taken until the student successfully passes the prerequisite course. Thus, the student's progression in the program may be affected. Students who receive a second D or F or N grade in the same academic year may be dismissed from the program, regardless of the cumulative grade point average.

Minimal Acceptable Grade Point for Graduation in the BS in Imaging Sciences Program

Candidates for the Bachelor of Science degree must earn a 2.5 cumulative grade point average in all computed upper division credits taken at Rush University. Participation in cap and gown at commencement exercises is expected of all graduates.

Final Grades Reported to the Registrar

Grades reported to the Registrar at the end of each semester are considered final except when an incomplete grade is assigned. Permission of the Department Chairman or Program Director is required for conferring "I" grades.

Final Grade Appeals

Students should be aware of the grade they are getting in a course as the course progresses; thus, the final grade should not be a surprise to the student. In the event that the student receives a final grade that is different from the grade that he/she expected, the student has five (5) working days after final grades are due to be posted to contact the instructor and determine how the final grade was calculated and resolve any discrepancy if present. Additional work cannot be submitted after

final grades are posted to increase the final grade and the grade will only be changed if a mistake was made on the part of the instructor. Grade appeals process is available on page 29 of this handbook.

Imaging Sciences (BS) Curriculum

Upper Division Course Work

RUSH University provides two years of upper-division coursework to complete the requirements for the Bachelor of Science in Imaging Sciences program. Upper-division coursework consists of core courses required of all students and elective courses offered.

Coursework may be taken on a full-time or part-time basis.

Core Courses Required of All Students

<u>Course #</u>	<u>Course Title</u>	<u>Credit Hours</u>
IS 310	Sectional Anatomy & Pathology	5
IS 314	Pathophysiology	4
IS 325	Pharmacology and Radiologic Contrast Agent	3
IS 447P	Clinical Practicum I	6
IS 448	Clinical Seminar I	3
IS 449	Clinical Seminar II	3
IS 454	Healthcare Ethics and Cultural Competence	4
IS 457P	Clinical Practicum II	6
IS 463	Research and Statistical Methods	3
IS 467P	Clinical Practicum III	6
IS 468	Clinical Seminar III	3
HSC 364	Healthcare Systems and Policies	1
IPE 502	Interprofessional Patient Centered Teams	0

Electives

The electives offered rotate and are based on the general population's needs.

Elective courses must be approved by the student's academic advisor and the program director and correspond with the student's career goals. Individualized plans of study are developed for each student based on their future academic goals with their advisor.

Elective Courses Offered

Course # **Course Title** **Credit Hours**

IS 331	Education	3
IS 458	Leadership	3
HSC 352	Professional Writing	3
HSC 425	Healthcare Informatics	3
HSC 460	Management Principles	3
HSC 467	Issues and Trends in Health Care	3
HSC 480	Principles of Health and Wellness	4
HSC 483	Community Health	6

Transfer of Credit

Students who desire to complete additional elective courses, either offered at Rush University or at another regionally accredited college or university, may request to do so, and these electives may be incorporated into the student's program plan with the approval of the program director.

Computerized Tomography (CT) Track Sample

Fall 1

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 6 SH

IS 448 Clinical Seminar I 3 SH

IS 325 Pharmacology and Radiologic Contrast Agents 3 SH

Total 12 SH

Fall 2

CHS 364 Health Care Systems and Policies 1 SH

IS 457 P Clinical Practicum II 6 SH

IS 449 Clinical Seminar II 3 SH

IS 463 Research & Statistical Methods 3 SH

Total 13 SH

Spring 2

IS 467 P Clinical Practicum III 6 SH

IS 468 Clinical Seminar III 3 SH

IS 454 Health Care Ethics and Cultural Competence 4 SH

Total 13 SH

Total 65 SH

Magnetic Resource Imaging (MRI) Track Sample

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 6 SH

IS 448 Clinical Seminar I 3 SH

IS 325 Pharmacology and Radiologic Contrast Agents 3 SH

IS 340 MRI Safety 3 SH

Total 15 SH

Fall 2

CHS 364 Health Care Systems and Policies 1 SH

IS 457 P Clinical Practicum II 6 SH

IS 449 Clinical Seminar II 3 SH

Total 10 SH

Spring 2

IS 467 P Clinical Practicum III 6 SH

IS 468 Clinical Seminar III 3 SH

IS 331 Education 3 SH

IS 458 Leadership 3 SH

Total 15 SH

Total = 74 SH – 6 SH (credit by ARRT RT proficiency) = 68 SH

Interventional Radiography (IR) Track Sample

Fall 1

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 6 SH

IS 448 Clinical Seminar I 3 SH

IS 325 Pharmacology and Radiologic Contrast Agents 3 SH

Total 12 SH

Fall 2

CHS 364 Health Care Systems and Policies 1 SH

IS 457 P Clinical Practicum II 6 SH

IS 449 Clinical Seminar II 3 SH

IS 463 Research & Statistical Methods 3 SH

Total 13 SH

Spring 2

IS 467 P Clinical Practicum III 6 SH

IS 468 Clinical Seminar III 3 SH

IS 454 Health Care Ethics and Cultural Competence 4 SH

Total 13 SH

Total 65 SH

Entry Level Magnetic Resource Imaging (MRI) Track Sample

Fall 1

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 6 SH

IS 446 Clinical Seminar I 3 SH

IS 340 MRI Safety 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 6 SH

IS 449 Clinical Seminar II 3 SH

IS 463 Research & Statistical Methods 3 SH

Total 13 SH

Spring 2

IS 467 P Clinical Practicum III 6 SH

IS 468 Clinical Seminar III 3 SH

IS 454 Health Care Ethics and Cultural Competence 4 SH

IS 331 Education 3 SH

Total 16 SH

Total = 74 SH

*Regarding practicum courses, the RUCatalog specifies: **one hour of credit represents a 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: To continue in the Imaging Sciences degree program, students must earn a grade of "C" or better in all courses. Failure to achieve this grade in any Imaging Sciences course will prompt a review by the Committee on Progress and Promotions, which could result in suspension or dismissal from the program. If a student is readmitted to the program outside of the fall semester of the second year, they will resume the course sequence as determined by the Committee on Progress and Promotions for Imaging Sciences.

BSIS Co-Curricular Activities

Professional Development (Participation required for graduation)

All students are expected to attend a series of sessions in Professional Development each semester. Referred to as “PRO” (Professional & Personal Roadmap to Opportunities) Series, the sessions are learning opportunities for students to develop professional behaviors and personal growth. Sessions are on-campus and online and are presented in a workshop and seminar format facilitated by the Student, Professional & Career Development Program Manager as well as designated faculty and staff. Professional mentoring panel discussions and guest presentations by community clinicians, educators, entrepreneurs and other health care providers are included in the series. In addition to being informative, the sessions are designed to be engaging, collaborative and elicit reflective learning. **Students must attend at least 70% of the scheduled sessions in addition completing activities assigned.**

Peer Mentoring

The “I CARE. Peer Mentoring Program” offers innovative approaches for practical application of networking skills, personal growth, support and service to others. Each approach incorporates the values of RUSH University including innovation, collaboration, accountability, respect and excellence; hence I CARE. The Peer Mentoring Program is required, co-curricular activity for incoming students. There is an application process for upperclassmen and graduate students interested in becoming a peer mentor in the program.

BS in Imaging Sciences Program Policies and Procedures

Grading System

The grading system is as follows:

GRADE	QUALITY	POINTS
A	Excellent	4
B	Good	3
C	Satisfactory	2
D	Minimal passing	1
F	Failure	0
I	Incomplete work	-
W	Withdrawal prior to midterm of semester	-
P	Passing	-
N	Not Passing	-

The program uses the following grade scale to assign letter grades:

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

It is the responsibility of the student to become familiar with all requirements as contained in the course syllabus given at the beginning of each course.

Comprehensive end-of-program cumulative exit examination

At the end of the program, students are required to complete a cumulative exit examination as part of IS 468, Clinical Practicum III, to successfully pass IS 468 and meet graduation and program completion requirements (see Graduation Requirements). Students who do not pass the examination will receive an Incomplete ("I") for IS 468 and must retake the exam before the start of the next semester. If a student fails the exam twice, they will be enrolled in IS 468 as a directed Independent Study for remediation in the following semester. Failing the examination on the third attempt may result in dismissal from the program. Students who are dismissed may reapply to the program (see Procedures for Readmission).

Protocol for Undergraduate Programs Student Academic Support Services

Students who receive less than 75% on assessments (examples: exams, projects/presentations) will be required to complete an academic enrichment form and/or meet with the Director of Student Professional & Career Development for academic and personal guidance and support. Failure to comply accordingly, including by not limited to incomplete form submissions and missed appointments, will result in documentation of the student's lack of professionalism and will be apart student's academic file. More than one occurrence of aforementioned unprofessional behavior and subsequent documentation will elicit follow up by the Program Director, who will determine the impact on your academic standing in the program. For more details regarding the protocol, contact the Director of Student Professional & Career Development.

Expectations for Communication

Whether your class is fully online or on campus, it is important to follow guidelines for effective and respectful communication between students, faculty and staff within RUSH University. Clear and consistent communication is essential for maintaining a positive and productive learning environment.

Students, faculty and staff will communicate through RUSH provided outlook email. All RUSH University students are assigned an email account through the University and the Department will use this account. It is expected that all parties maintain an active RUSH email account. RUSH email must be checked every day. It is the responsibility of the student to check their RUSH email regularly for Departmental communications. In many instances, the only notification sent to a student may be through email.

Course directors will communicate changes to class sessions, syllabus, and assessments through RUSH's learning management system or email. The syllabus for each course will outline the course director's expectations for course communication, preferred method of communication, availability, and response time. Students are expected to respond to emails from faculty or staff within 3 business days. Faculty and staff will also follow a similar timeframe for non-course-related inquiries.

In case of absence for class, lab, discussion, rotation or co-curricular activity, students are expected to communicate via preferred method of communication to each course director. In case of an extended absence, students are expected to communicate to both their course directors and program director. Please review **Attendance Expectations** below.

All communication, whether verbal, written, or electronic, must be conducted with respect and courtesy. Students, faculty, and staff members are expected to:

- Use appropriate language and tone in all interactions.
- Avoid offensive or disrespectful language, personal attacks or harassment.
- Show consideration for diverse perspectives and backgrounds.

Attendance Expectations for In-person and Synchronous, Online Courses

Students are expected to be on time and attend all scheduled classes, including lectures, discussions, lab, rotations and any other required activities as specified in the course syllabus and program handbook. Students should arrive on time for all classes and other scheduled academic or co-curricular activities. It is expected that for synchronous online courses and online co-curricular activities, students will also

1. Have video cameras on with full face in the video camera for the entirety of the session or class. We understand there may be times where you cannot have your camera on; it is expected that you communicate this to your course director/facilitator prior to the start of class or at a minimum in a private chat message to faculty at the time in which your camera needs to be turned off. It is your responsibility to return to camera.
2. Not be commuting via car, train, bus or air or working during session or class.

Please review individual course syllabus for the point deductions for not adhering to the attendance policy. Multiple (more than 2) incidences of not following attendance expectations will result in documentation of the student's lack of professionalism and will be apart student's academic file.

Excused absences can be given for significant life events that prevent you from attending in-person or online class. The following are not considered acceptable excuses for missing class or tardiness unless discussed 24 hours prior to class:

For example:

- scheduled flights or trips
- scheduled non-emergency doctor appointments
- job interviews
- traffic
- transportation

The following can be considered excused, with appropriate documentation as asked by the course director.

- Funeral with obituary
- Death in the family with medical note
- Emergency medical appointment with medical note
- Religious holiday

For an excused significant life event, an extension may be granted, for the assignment that is/was due during the life event. Granting of the extension and length of time for the extension is up to the discretion of the course director. If additional extensions for assignments or additional assignments are needed due to a significant life event or following the life event, you must contact The Office of Accessibility Services to put in place a temporary accommodation.

It is the student's responsibility to obtain the missed content from class for excused and unexcused absences. Course directors are not obligated to provide recorded materials for excused or unexcused absences.

Expectations for Online Assessments

Students are required to download Lockdown browser onto any computers that will be used for assessments. If student is unable to download the appropriate software, or it is not working properly, students should seek guidance from the course director and RUSH McCormick Educational Technology Center (METC, [McCormick Educational Technology Center | Student Affairs | RUSH University](#)).

If webcam needs to be activated, it is the students' responsibility to obtain a working camera. Webcams are available for students; please see your program director to receive a webcam. Students are responsible for ensuring they have reliable internet connection to complete the online assessment, if not taken on campus.

In addition to the academic honesty policy, when taking an online exam that requires Lockdown Browser and webcam (or the like), please follow the following guidelines:

1. Ensure you are in a quiet, well-lit, distraction-free environment. A well-lit room will ensure that your face can be detected by the webcam.
2. Ensure that your environment is private.
3. Turn off all other devices (e.g. tablets, phones, second computers) and place them outside of your reach.
4. Clear your desk or workspace of all external materials not permitted - books, papers, other devices, unless otherwise instructed.
5. Remain at your computer for the duration of the test.
6. The environmental check must be completed. During the environmental check, you must show the top of your desk, underneath your desk and the walls surrounding you.
7. Your entire face must be in the video screen for the duration of the test.
8. Do not wear hats or caps with brims.

9. Ensure your computer or device is on a firm surface (a desk or table). Do NOT have the computer on your lap, a bed, or other surface where the device (or you) are likely to move and the webcam cannot detect your face.
10. If using a built-in webcam, avoid readjusting the tilt of the screen after the webcam setup is complete.
11. If you encounter a technical issue that prevents you from completing the assessment, notify the course director immediately.

Review the course syllabus for specific point or grade deductions on assessments if directions are not followed. If guidance for online testing is not followed, student will receive a warning (first offense). If guidance is not followed AND Lockdown Browser identified student with a high number of flags (first offense), at your expense, the program director will identify an approved test facility where you will be able to take the test or appropriate alternative. For a second offense and subsequent offense, student will receive a zero and activate RUSH's academic honesty policy.

[RUSH University Academic & University Policies - RUSH University - Acalog ACMS™](#)

Expectations of cell phone and pager use

Students are required to **place** all cellular phones and pagers on a **silent mode** while in lecture, seminars, and clinical laboratories. Students will not be excused from class to make phone calls or to return pagers unless it is an emergency. Students will **not** be allowed to use cellular phones or pagers during examinations.

Incomplete Grades

The grade of incomplete ("I") is given only when circumstances beyond the control of the student prevent completion of course requirements. Permission of the department chair or program director is required for conferring "I" grades. The Course Director determines what work will be required to remove the incomplete and establishes a specific timeframe within which the student must complete such work.

Students receiving a grade of "I" are responsible for obtaining from the Course Director the exact work required to remove the incomplete. The "I" grade must be removed within 1 year or it will revert to the earned grade unless otherwise approved by the Course Director and the Program Director.

If the student is not enrolled in other courses while resolving the incomplete, the continuous enrollment fee is imposed (refer to the Financial Affairs section in the RUSH University Catalog).

Proficiency in English

All applicants whose native language is not English must present evidence of proficiency in English by satisfactorily completing the Test of English as a Foreign Language examination (TOEFL).

A total TOEFL score of at least 88 on the Internet-based version, or 570 on the paper-based version, or 230 on the computer version, must be achieved. In addition, applicants must score no less than 55 on the paper version or, 20 on the computer version or, 18 on the Internet-based version on each of the three subtests of the TOEFL (listening, structure/writing, and reading).

The Admissions Office must receive an official report of these scores prior to the date(s) on which admission decisions are made for the program(s) to which the applicant has applied. To obtain information or to register to take the TOEFL, write directly to:

The Education Testing Service
P.O. Box 6151
Princeton, New Jersey 08541-6151, U.S.A.

You may also wish to visit the TOEFL Web site at <http://www.toefl.org>. The applicant should indicate on his/her application for the examination that results should be sent to institution code number 1676.

Applicants whose native language is not English and who have graduated from high school or successfully completed a higher education degree program (Associate degree or higher) in the United States or one of its English-speaking protectorates may petition for waiver of the TOEFL requirement to the College of Health Sciences' Dean's Office.

Waiver requests should include proof of receipt of a high school or college diploma from an accredited institution in the United States or one of its English-speaking protectorates. College or university degrees must be granted by a regionally accredited college or university to be considered for waiver of the TOEFL.

Textbooks

Listing of textbooks for each course will be posted in RUConnected at the time of registration and in the Rush bookstore at the beginning of each semester.

Professional Conduct

All students are expected to behave in a professional manner during lecture and laboratory sessions, as well as in the clinical laboratories and on campus. It is expected that the student will work cooperatively with course instructors, fellow students and laboratory personnel. Failure to maintain a professional demeanor and to comply with the Medical Center's Code of Conduct can lead to dismissal from the program.

The Code of Conduct can be accessed at:
<http://inside.RUSH.edu/Policies/Lists/Master%20Policy/DispForm.aspx?ID=1965> under Human Resources. Students who violate an established standard of professional conduct/judgment or moral/ethical behavior will be subject to investigation of the incident and disciplinary action.

Procedure for Unprofessional Conduct

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

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.
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.
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.
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 will be convened to review the allegations and recommend a course of action. Guidelines for the Committee on Progress and Promotions preliminary hearing are provided in the Student Handbook. The Department Chair/Program Director will inform the student and the Dean in writing of the Committee on Progress and Promotions 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 the University Catalog and the College of Health Sciences Rules for Governance. [RUSH University - Modern Campus Catalog™](#)

Graduation Requirements

Degree requirements that must be met include:

1. Satisfactory completion of all general education coursework 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. Successfully complete a comprehensive end-of-program comprehensive exam

College of Health Sciences Policies and Procedures

CastleBranch

CastleBranch is a secure platform that allows you to order your background check and medical document manager online. Once you have placed your order, you may use your login to access additional features of CB, including document storage, portfolio builders and reference tools. CB also allows you to upload any additional documents for immunizations and drug testing required by RUSH University.

Criminal Background Checks

All students are required to have a criminal background check prior to matriculation into the program. Procedures for obtaining a criminal background check are available from the Department Office. The cost for the background check is the responsibility of the student. Hospitals and other healthcare facilities often have policies requiring criminal background checks for employees, students, and volunteers. These facilities may refuse to accept individuals for clinical practicum, or other experiential rotations, based on past criminal convictions.

Students should be prepared to comply with the policies and procedures at any facility where they are assigned as part of their educational program and may not request facility assignments in an effort to avoid specific requirements. Students who have certain types of information in their criminal background checks may be ineligible to complete rotations in specific facilities. Students who are not allowed to participate at assigned facilities, or who are terminated from clinical practica based on the results of a criminal background check will be unable to complete the program requirements for graduation and will be subject to dismissal from the program, regardless of cumulative grade point average.

Persons with certain types of criminal convictions may not be eligible for state licensure and/or national registry or certification. In addition, many employers perform criminal background checks and may not hire individuals with certain types of criminal convictions. Students will have access to consult with an advisor to consider their options on an as-needed basis.

Drug Testing

Hospitals and other healthcare facilities often have policies requiring drug testing for employees, students, and volunteers. Students who test positive for drugs at most healthcare facilities are ineligible to complete clinical practicum or work assignments in that facility. Students must comply with the policies and procedures at any assigned facility and may not request facility assignments in an effort to avoid drug screening requirements. Students, who fail to report for clinical practicum assignments, or who are terminated from a clinical practicum because they violate the drug testing, or drug use policies of the facilities, will be subject to dismissal from the program, regardless of cumulative grade point average.

Immunizations

Proof of Immunity under Public Act 85-1315, Illinois College and University Immunity Requirement, stipulates that all students born after December 31, 1956 must show proof of

immunity. While documentation of this information for compliance with state regulations is not mandatory for students who were born before 1/1/57, most colleges and programs at RUSH have individual immunization requirements for their students. Program immunization requirements are mandatory for all students in those programs regardless of age.

- **Measles (Rubeola), Mumps, Rubella** – positive titers
- **Varicella** – positive titers
- **Hepatitis B** – immunization record and positive titers
- **Tetanus/Diphtheria** – booster within the last 10 years
- **Tuberculosis** – two-step PPD Mantoux Skin Test or the Quantiferon-TB Gold test with negative results
- **Meningococcal** – immunization record of one dose of meningococcal conjugate on or after the age of 16
- **Flu Vaccination**

Student Academic Appeal and Grievance Procedures

The College of Health Sciences' student appeals and grievance procedures provide a mechanism whereby any student may obtain a review of a complaint of unfair treatment. The student appeals procedure is not used to question a rule, procedure or policy established by an authorized faculty or administrative body, but used to provide due process for those who believe that a rule, procedure or policy has been applied in an unfair or inequitable manner, or that there has been unfair or improper treatment by a person or persons. Students who are appealing an academic decision that could result in a dismissal from the university may be allowed to continue to progress in the program until the issue is resolved. A student wishing to appeal an academic decision should follow the process found here: [College of Health Sciences - RUSH University - Modern Campus Catalog™](#)

RUSH University Policies and Procedures

Lockers and Mailboxes

All students are assigned lockers and mailboxes by the Office of Student Affairs. All personal items must be stored in the assigned locker. **Coats and book bags are not allowed in the student or clinical laboratories.**

Health Insurance

Students must either purchase university-provided student health insurance or provide documentation that they have current health insurance. Documentation must be on file with Academic Health Plans (AHP) by required due date to be allowed to register for courses and must be done every year. Students who do not provide evidence of current health insurance will be automatically charged for the Student Health Insurance Plan offered by AHP.

Required RUSH University Medical Center OSHA, HIPPA, and Safety Training

Students may be required to take Medical Center Training courses that apply to clinicians prior to their practicum rotations. These courses must be taken annually. Students failing to remain current in these training areas may not be allowed in the clinical setting.

Change of Address Responsibility

Any student enrolled in the Program is responsible for informing both the Office of the Registrar and the department of any change of address or phone number.

Withdrawal from Courses

Withdrawal from a course requires approval from the Course Director and the Program Director. Students should note that some courses in the BS in Imaging Sciences program are sequential and are taught once a year.

Continuous Enrollment

RUSH University requires continuous enrollment in almost all of its programs from the time a student matriculates through a student's graduation. Any degree/certificate student not taking courses but needing to replace an outstanding incomplete grade must register for Continuous Enrollment until the grade is satisfied. Registration for Continuous Enrollment requires the approval and signature of the Department Chairman. BS in Imaging Sciences students who enroll in Continuous Enrollment must submit a progress report to the Department Chairman at the end of the semester in which the Continuous Enrollment is taken. This report must contain an acceptable plan for completion of incomplete work and must be approved by the Department Progress and Promotions Committee before the student will be allowed to register for an additional semester of Continuous Enrollment. In cases where a student does not show progress towards completing an incomplete grade, the incomplete grade will revert to a grade of "F" or "N" which may result in the student being dismissed from the program.

Continuous Enrollment appears on the student's transcript with the course prefix that the student is majoring in followed by 999 (i.e. IS 999). Information about the fee charged for the Continuous Enrollment course is available under "Tuition and Financial Aid" in the University catalog.

Leave of Absence

A student, who must interrupt his or her studies for reasons of sustained ill health or compelling personal situations, may apply for a leave of absence for a stated period of time, not to exceed four semesters. A Petition for Withdrawal / Leave of Absence must be completed and signed by the Department Chairman and other specific University offices (available from the Office of the Registrar or from the web site: (<http://www.RUSHu.RUSH.edu/registrar/forms.html>)). If approved by the Department Chairman, the student must satisfy the conditions of the leave before reentering, and must comply with all policies, requirements and course sequences in effect at the

time of reentry. The student will pay tuition and fees at the rates in effect at the time of reenrollment. Only one leave will be granted per academic year.

Withdrawal from the Program

Withdrawal implies the permanent departure from the University without the immediate expectation of return. Undergraduate and graduate students withdrawing from the University must give formal notification by completing a Petition for Withdrawal / Leave of Absence form, which requires them to obtain the signatures of specific University offices. Students may obtain the form from the Office of the Registrar or from the web site:

<http://www.RUSHu.RUSH.edu/registrar/forms.html>. This form requires the signature of the Department Chairman. Withdrawals are not allowed after the last class day of the semester, or during the final examination period. Refunds are made only during the limits for refunds. (See Financial Affairs Policy section of the RUSH University Catalog).

Readmission to the Program

Any student who has withdrawn from the program, or has not been enrolled for one or more semesters, or any dismissed student, may apply for readmission to their program of study by submitting an admissions application for this purpose. They must follow all admission procedures and will be placed into the pool of applicants for the year in which they are requesting readmission. An interview may be required. Preference will not be given to students seeking readmission into the program. Readmitted students will pay tuition and fees at the rates in effect at the time of reenrollment and will be subject to all current policies and procedures of the program, college and university at the time of their readmission.

A request for accommodation or modification is not cause for withdrawal of the offer of acceptance. If an accommodation is requested, the department may require additional documentation and information and will follow up with the student to discuss the specifics of the request and the appropriate plan of action.

Any student can request accommodations once enrolled in the program. If you are unable to perform any of the above, please contact the department chair or program director for further discussion. See the following RUSH University Policies and Procedures for Students with Disabilities for additional information.

Correspondence between Students and Faculty

1. A schedule of office hours will be noted in each faculty member's course syllabus.
2. Students will be assigned to a faculty advisor in the initial semester of their first year. Students will be notified via email of times for student conferences.
3. Each student must have a conference with his/her advisor at least once per semester during the first academic year
4. A student conference record will be completed and signed by both the faculty member and student following a formal conference.

General Clinical Information

The clinical aspect of the program is structured to integrate online classroom learning with hands-on experience, making attendance mandatory. Outside appointments should be avoided during clinical hours. Be prepared to:

Attend IS-447P Clinical Practicum I for 24 hours per week over 15 weeks, totaling approximately 333.33 hours for the semester.

Attend IS-457P Clinical Practicum II for 24 hours per week over 15 weeks, totaling approximately 333.33 hours for the semester.

Attend IS-467P Clinical Practicum III for 24 hours per week over 15 weeks, totaling approximately 333.33 hours

Accumulate a minimum of 1,000 total hours to complete IS program.

Stay engaged throughout the clinical practicum.

Follow a schedule based on the site's availability and patient needs.

Document and track clinical requirements

To promote success and timely completion of the IS program, a strict clinical practicum completion policy is enforced to ensure all students meet program requirements by the designated graduation date.

Trajecsys Recordkeeping Requirement Statement

Recording hours and procedures in Trajecsys is mandatory. Failure to document in a timely manner will result in a failing grade, as it directly impacts your professionalism evaluation. Trajecsys provides Centralized Clinical Recordkeeping® for tracking clinical activities, and it is essential that students log their arrivals, departures, and procedures consistently. Accurate and timely documentation is a critical component of your overall performance and professionalism within the program.

Required Evaluation Paperwork

It is the student's responsibility to familiarize themselves with the required paperwork, including the monthly performance evaluation and procedure competency evaluation forms for each completed procedure. These forms are available through Canvas within each practicum course. Submission of these forms will be expected through Canvas in the designated grade areas, and timely submission is essential for successful course completion.

Magnetic Resonance Imaging (MRI) Certification and Registration Competency Requirements

Entry-track procedure competency requirements:

Candidates must demonstrate competence in the 17 mandatory procedures listed on the following pages. These mandatory procedures must be completed by scanning actual patients.

Additionally, candidates are required to demonstrate competence in 12 of the 32 elective procedures. Although elective procedures should ideally be performed on actual patients, up to 5 elective procedures may be simulated.

Recommended distribution of competencies across semesters:

IS-447P Clinical Practicum I:

- Complete 6 of the mandatory procedures.
- Demonstrate competence in 4 elective procedures.

IS-457P Clinical Practicum II:

- Complete 6 of the mandatory procedures.
- Demonstrate competence in 4 additional elective procedures.

IS-467P Clinical Practicum III:

- Complete the remaining 5 mandatory procedures.
- Demonstrate competence in the final 4 elective procedures, with the option to simulate up to 5 elective procedures if necessary.

Postprimary procedure competency requirements:

The clinical experience for MRI involves 47 procedures across six categories. These categories are:

- **A. Head and Neck**
- **B. Spine**
- **C. Thorax**
- **D. Abdomen and Pelvis**
- **E. Musculoskeletal**
- **F. Additional Imaging Procedures**

Candidates must document their performance of complete, diagnostic-quality procedures according to the following guidelines:

- Select a minimum of 21 different procedures from the 47 listed.
- Perform and document a minimum of three, and up to six, repetitions of each chosen procedure (fewer than three will not count).
- Complete a total of 125 repetitions across all procedures.

- Only one procedure can be documented per patient. For instance, if an order includes an MRA of the head and neck, only one of these (including post-processing) may be documented for clinical experience.
- MRI procedures done alongside a PET scan, Radiation Therapy planning, or LINAC procedures are not eligible for MRI clinical experience documentation.

Recommended distribution of competencies across semesters:

Semester 1:

- Select and document 7-10 different procedures from the available categories.
- Complete 40 repetitions across these procedures, ensuring each procedure has at least 3 repetitions.

Semester 2:

- Select and document 7-10 additional procedures.
- Complete another 40 repetitions, maintaining the minimum of 3 repetitions per procedure.

Semester 3:

- Select and document the remaining procedures to reach a total of 21 procedures.
- Complete the final 45 repetitions to reach the total of 125 repetitions required for all procedures.

Examples:

The hypothetical scenarios below illustrate two ways of satisfying the clinical experience requirements. Numerous other combinations are possible.

Candidate A: This person who works in a specialized setting wanted to complete the minimum number of procedures. This person chose 21 different procedures and performed six repetitions of each procedure, for a total of 126 repetitions.

Candidate B: This person works in a facility that does most types of MRI scans, so completing a wide variety of procedures was quite feasible. This candidate completed a total of 42 procedures. Although most of these procedures were performed three times (the minimum), a few of them were performed four or five times each until the candidate reached at least 125 procedures.

Computed Tomography (CT) Certification and Registration Competency Requirements

Candidates for CT certification and registration must document the performance of at least 125 computed tomography procedures, following the criteria outlined below. These procedures must be documented, verified, and submitted using the online tool accessible through your account on arrt.org. ARRT recommends that individuals seek additional education and experience beyond these minimum requirements.

Please note that remote scanning does not fulfill ARRT Clinical Requirements. Candidates must complete the procedures at the facility where the patient and equipment are located, and must be physically present during the examination or procedure.

Each completed procedure must be verified by an ARRT-certified and registered technologist (postprimary certification is not required) or an interpreting physician. The verification process is described within the online tool.

Specific Procedural Requirements

The clinical experience requirements for CT include 62 procedures across six categories:

- **A. Head, Spine, and Musculoskeletal**
- **B. Neck and Chest**
- **C. Abdomen and Pelvis**
- **D. Additional Procedures**
- **E. Image Display and Post-Processing**
- **F. Quality Assurance**

Candidates must complete diagnostic-quality procedures according to the following guidelines:

- Choose a minimum of 25 different procedures from the 62 available.
- Perform and document at least three, but no more than five, repetitions of each selected procedure (fewer than three repetitions will not count).
- A minimum total of 125 repetitions is required.
- At least 30 of the total repetitions must involve the use of iodinated IV contrast.
- A maximum of 9 repetitions can be documented per day.
- Only one procedure may be documented for a single patient per day. For example, if a patient is scheduled for chest, abdomen, and pelvis scans, only one of these can be documented for clinical experience.
- CT procedures performed solely for PET or SPECT attenuation correction, or for radiation therapy planning, do not count towards ARRT's clinical experience requirements.
- Any non-cone beam CT scanner can be used to fulfill ARRT's clinical experience requirements (e.g., hybrid scanners, therapy planning scanners).

Recommended distribution of competency requirements across 3 Semesters:

Semester 1:

- Select and document 8-10 procedures.
- Complete 40 repetitions, ensuring each procedure is repeated at least three times and no more than five times.
- Include at least 10 repetitions with iodinated IV contrast.

Semester 2:

- Select and document 8-10 additional procedures.
- Complete another 40 repetitions, maintaining the same repetition requirements.
- Ensure at least 10 repetitions involve iodinated IV contrast.

Semester 3:

- Select and document the remaining procedures to reach a total of at least 25 procedures.
- Complete the final 45 repetitions, achieving the total requirement of 125 repetitions, with at least 10 more involving iodinated IV contrast.

Examples

Candidate A: This person works in a specialized setting and completes 25 different procedures (the minimum). To complete 125 repetitions, each of the 25 procedures was performed five times. Candidate B: This person works in a facility that does most types of CT scans, so completing a wide variety of procedures was quite feasible. A total of 35 different procedures were completed and documented. Although most of these procedures were performed three times (the minimum), some of them were performed four or five times each until the candidate reached at least 125 procedures.

For Cardiac Interventional Radiography (CI) Certification and Registration Competency Requirements, visit <https://www.arrt.org>

For Vascular Interventional Radiography (VI) Certification and Registration Competency Requirements, visit <https://www.arrt.org>

Indirect Supervision

Once a student has demonstrated competence in a specific IS procedure, they may be allowed to perform the procedure under indirect supervision. Indirect supervision means that a qualified technologist reviews, evaluates, and approves the procedure beforehand and is readily available to assist the student if needed, regardless of the student's skill level. "Readily available" means that a qualified radiographer must be nearby, either adjacent to the room or in close proximity to where the procedure is taking place.

Clinical Practicum Completion

Students must finish each clinical practicum semester within the designated timeframe. If students do not complete their clinical practicum by the end of Semester III, they will receive an I (Incomplete) and have 14 days to complete the remaining hours. Failure to do so will result in a FAIL for the course.

Clinical Practicum Placement

The process of securing clinical practicum placements is complex, and flexibility in scheduling cannot be guaranteed. While efforts will be made to accommodate student needs, students must be available during the clinical site's business hours and should expect to commute as necessary. Transportation costs are the responsibility of the student. Passing the clinical practicum requires fulfilling both the clinical hour and competency requirements.

While every attempt will be made to place students at clinical sites within 50 miles of the College Campus, this cannot be guaranteed. Clinical assignments prioritize providing a comprehensive clinical experience to prepare students as entry-level MRI Technologists. Students may need to change clinical sites or visit additional sites to complete competencies. All travel, meals, and related expenses are the student's responsibility.

Clinical Practicum Site Unavailability

In the rare event that a clinical site cannot be secured for a student, efforts will continue for up to 14 days after the semester ends. If no placement is found by that time, the student will be withdrawn from the course.

When a site becomes available, the student will reenroll under the following conditions:

Clinical Practicum and Employment

Students must ensure that clinical hours remain separate from employment hours. Any work undertaken must be outside regular educational/clinical hours and cannot count toward the required clinical hours. Students are also not permitted to accept monetary gifts from staff or patients. Concerns regarding clinical requirements should be directed Program Director.

Student Work and Educational Schedule

The IS program is demanding, and balancing full-time work with the coursework is not recommended. Conflicts between work schedules and class or clinical rotations are common. Any activities that hinder a student's ability to fully participate in class or clinical sessions, or to meet course requirements, must be avoided.

Blood Borne Pathogen and Communicable Disease Policy

If a student is exposed to a blood-borne pathogen or communicable disease he/she should report to the emergency room for care.

Uniform Policy for Clinical Practice

The following guidelines are used to assist the student in adjusting 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.

Hospital Identification Badges

Students must wear ID badges at all times in the clinical area.

Uniform/Patches

Students must purchase a prescribed uniform to be worn in the clinical area. Students must wear patches sewn to the left upper arm of the uniform and lab coat. Patches will identify students by discipline and/or program. There are NO exceptions to this rule.

Professional Attitude/Conduct during Clinical Practicum

Students must maintain a professional attitude and behavior as outlined by the “Code of Ethics” of the American Society of Radiologic Technologists and the American Registry of Radiologists. Students must comply with the Rules and Regulations of the hospital and the program.

- Students shall not eat, drink or smoke while on duty except in assigned areas.
- Excessive talking, laughing and other unprofessional behavior will not be tolerated in the hallways or around patients.
- Any student having a problem with an instructor, supervisor, or technologist may request conference time. A conference date will be arranged with the student, instructor, technologist or supervisor and the Program Director.
- Personal telephone calls are not allowed (only emergency calls can be received by students).
- Use of cell phones is prohibited while on duty. Cell phones should be used only during breaks and/or lunch

Attendance Regulations

There are no excused absences from clinical practicum. Each clinical practicum 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 practicum. 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" may be given at the discretion of the faculty.

Clinical practicum, 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 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 Manager of Clinical Education.
6. If the Manager of Clinical Education does not answer, call the Rush University Department of Imaging Sciences and leave /Program Director message about your absence.

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 a grade reduction. In certain instances, the student may be subject to administrative withdrawal from the course and/or program.

Incomplete Assignments and Make-Up Examination

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 semester. 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 semester 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 the application will be dependent upon clinical skills and -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.

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

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

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 students are highly encouraged 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** and membership in the **Illinois Society for Imaging Sciences** are highly encouraged.

State and National Credentialing

Graduates of the Imaging Sciences program are eligible for registration by examination in the advanced modality of Computed Tomography, Magnetic Resonance Imaging, Cardiac Interventional Radiology, and Vascular Interventional Radiology 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 R.T. (R), (CT), (ARRT), R.T. (R), (MR) (ARRT), R.T. (MR) (ARRT), R.T. (R), (CI) (ARRT), R.T. (R), (VI) (ARRT), after their name.

Change 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.

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 36 semester 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 examination in order to meet program Standards of Progress and Graduation requirements.

- ***Practicum, clinical, or field experience requirements***

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

- ***The 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.

Graduation Requirements

Degree requirements that must be met include:

1. Satisfactory completion of all general education coursework as listed.
2. Dialectic Competency- Satisfactory completion of each required Imaging Sciences professional course with a grade of “C” or better.
3. Satisfactory completion of clinical competency requirements
4. Cumulative grade point average (GPA) of 2.5 or better.
5. Successfully complete a comprehensive end-of-program comprehensive exam

Appendix A: 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 imaging science professionals must have 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 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 36 semester 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 semester 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 transferred instead 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 in 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 coursework 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

Appendix B: Course Descriptions

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 of diagnostic imaging, 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.

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

Prerequisite: Admission to the Department.

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.

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.

IS 325 PHARMACOLOGY AND RADIOLOGIC CONTRAST AGENTS (3 SH)

This course provides a study of pharmacodynamics, pharmacokinetics, medication administration, drug categories, and implications of inpatient 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 of different Contrast media used in Diagnostic Imaging. Brief historical development and evolution of contrast media are 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 guidelines. Prerequisite: Admission to the Department.

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.

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.

IS 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 are reviewed for appropriate protocol and contrast usage. Protocol and Positioning topics include a basic overview of CT Physics, Patient communication, and safety, Radiation dose, indications for the 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 Musculoskeletal imaging will be covered in this course. CT protocols vary from site to site and most often are dependent on the radiologist's preference. Prerequisite: Admission to the Department.

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.

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.

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 the 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 biological effects in combination with radiation will be examined.

Prerequisite: Admission to the Department.

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. The 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.

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 are reviewed for appropriate protocol and contrast usage. Protocol and Positioning topics include a basic overview of MRI Physics, indications for the 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 the 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.

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 a 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.

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*. The 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 leadership performance. Prerequisite: Admission to the Department.

IS 463 RESEARCH & STATISTICAL METHODS (3 SEMESTER HOURS)

An introduction to the methods of scientific research to include research design and statistical analysis. A critical review of the components of research reports will be performed to include a definition of the problem, review of the literature, research design, data analysis, and results. Prerequisite: Admission to the Department.

IS 447P – CLINICAL PRACTICUM I (6 SEMESTER HOURS)

Supervised clinical experience in the imaging track selected. This course is designed so the students gain 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.*

IS 457P – CLINICAL PRACTICUM II (6 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 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.***

IS 467P – CLINICAL PRACTICUM III (3 SEMESTER HOURS)

Supervised clinical experience in the imaging track selected. This course is designed so the students gain 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.***

IS-481P CLINICAL SPECIALTY PRACTICUM (6 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.***

IS 448 – 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 theory and clinical practice 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.***

IS 449 – 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 theory and clinical practice 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.*

IS 468 – 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 theory and clinical practice 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*

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.

Appendix C: Clinical Affiliates

Advocate Christ Medical Center

4440 95th St,
Oak Lawn, IL 60453
708-684-8000

Advocate Illinois Masonic Medical Center

836 W. Wellington Avenue
Chicago, Illinois 60657
(773) 975-1600

Advocate Trinity Hospital

2320 E 93rd St
Chicago, IL 60617
(773) 967-2000

Advocate Sherman Hospital

1425 N Randall Rd,
Elgin, IL 60123
(847) 742-9800

Ann & Robert H. Lurie Children's Hospital of Chicago

225 E. Chicago Avenue
Chicago, IL 60611
(312) 227-3395

Circle Imaging Center (RUMC)

Radiology Department (Suite 456)
1725 W. Harrison Street
Chicago, IL 60612
(312) 563-2694

Loyola University Health System

2160 South First Avenue
Maywood, IL 60153
(708) 216-9000

Northwestern Medicine Huntley Hospital

10400 Haligus Rd,
Huntley, IL 60142
(224) 654-0000

Northwestern Medicine Lake Forest Hospital

1000 N Westmoreland Rd,
Lake Forest, IL 60045
847-535-6362

Rush Midwest Orthopedics

1611 W. Harrison
Chicago, IL 60612
(312) 942-5052

Rush University Medical Center:

Imaging Sciences Services
Senn 303
Rush University Medical Center
1756 West Harrison Street
Chicago, IL 60612
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This page must be turned in to the Imaging Sciences program Office. Your signed form will be kept in your departmental student folder.

I, _____, (Print your name here)

I have received a copy of the **Bachelor of Science in Imaging Sciences Student Handbook**. I have read and understand the content of this document. I understand that it is my responsibility to comply with all policies and procedures of the Health Sciences Program, as well as all policies and procedures contained in the Rush University Catalog and those of Rush University Medical Center.

(Signature)

(Date)