Emory University
RT to Bachelor of Medical Science Degree
Medical Imaging

Courses:
All RT-BMSc students must complete all of the program’s core courses and the courses specific to their selected minor track. All courses are listed below with a brief description and the course format.

Core Course Descriptions

MI 211C. Patient Care III
Spring. Credit, 3 hours. MI 211C focuses on advanced patient care techniques such as cardiac monitoring and trauma situations. Format: Hybrid

MI 221C. Anatomy and Physiology III
Summer. Credit, 3 hours. MI 21C focuses on human anatomy with emphasis on cross-sectional anatomy. Format: Hybrid

MI 323. Medical Imaging Safety
Summer. Credit, 2 hours. Radiation protection, personnel monitoring, radiation shielding, and patient protection are introduced in this course. Emphasis is placed on protection mechanisms utilized in diagnostic radiology. Safety issues related to CT and MRI are also presented. Format: On-line

MI 327. Computer Applications in Medical Imaging
Fall. Credit, 1 hour. This course introduces the student to the use of computers in radiology. Format: On-line

MI 390R. Medical Imaging Seminar
Fall and Spring. Credit, 2 hours total. These courses will explore a current topic in the radiologic sciences. Discussion of journal and textbook readings pertinent to the assigned topic will be required. Format: Hybrid

MI 411. Pharmacology
Fall. Credit, 2 hours. Prerequisites: MI 221C. This course is designed to provide basic concepts of pharmacology. The theory and practice of basic techniques of venipuncture and the
administration of diagnostic contrast agents and/or intravenous medications is included. The appropriate delivery of patient care during these procedures is emphasized. **Format: Hybrid**

**MI 421. Imaging Equipment**  
Summer. Credit, 3 hours. Prerequisites: none. This course introduces the student to the different types of imaging systems. The basic principles of digital imaging and PACS are presented. **Format: On-line**

**MI 427. Evaluation and Measurement**  
Spring. Credit, 3 hours. Prerequisites: All prior courses. This course utilizes various methods to determine achievement of cognitive competencies. Preparation for the ARRT national certifying examination is emphasized. **Format: On-line**

**MI 496R. Independent Study**  
Spring. Credit, 2 hours. Prerequisites: All prior courses. This course involves the completion of a research paper and project on a selected medical imaging topic. The findings must then be presented to the class in a formal presentation. **Format: Hybrid**

**MI 497R. Directed Study**  
Fall. Credit, 2 hours. This course involves the completion of a proposal and project plan on a pertinent topic in radiology. **Format: On-line**

**Management Track Course Descriptions**

**MI 430. Principles of Management**  
Summer. Credit, 3 hours. This course will explore management theory and practice and their impact on the development and performance of organizations. Through a critical assessment of the classical and alternative approaches to the discipline, the student will learn the essentials of leadership of contemporary organizations in a global environment. Related topics such as human resource management, organizational development and change, and their effect on productivity and performance will be examined. **Format: Hybrid**

**MI 431. Business Communication**  
Summer. Credit, 3 hours. This course is designed for the professional whose activities require communicative abilities in a variety of interpersonal group situations. This course will help students develop an understanding of the communication process and will allow students to critically evaluate their skills. Methods of effective oral and written presentation will be introduced. **Format: On-line**
MI 433. Organizational Behavior
Fall. Credit, 3 hours. This course will examine the theories and practice of organizational behavior. Individual and group behaviors in organization will be addressed. Organizational dynamics and the development of work environment that fosters successful team building will be studied. Case studies will also be used to enhance students’ experiences. **Format: Hybrid**

MI 435. Hospital Organization and Personnel Management
Fall. Credit, 3 hours. This course will explore health care systems and contemporary problems and issues in health care administration. Functional and structural aspects of the hospital organization will also be discussed-authority, responsibility and role relationship of the governing board, and administration and medical staff. The internal and external forces affecting the administrative process will be included. **Format: Hybrid**

MI 437. Health Care Finance
Spring. Credit, 3 hours. Decision-making processes as they relate to effective management of financial resources will be discussed. Students will acquire knowledge in interpreting health care institution financial reports and techniques of financial planning and control. Emerging trends in the system, the changing roles of government, and other private providers will be discussed. **Format: Hybrid**

MI 439. Principles of Marketing
Spring. Credit, 3 hours. This course provides students with an understanding of modern marketing practice, philosophy, marketing decisions, market segmentation, product positioning, buyer psychology and behavior, and new product development. Marketing represents both a key function and philosophy that provides a foundation for the successful operation of all business and nonprofit organizations today. Marketing executives perform the essential tasks of planning the firm’s competitive market position, product distribution, and advertising strategies. **Format: Hybrid**

MI 463A, B, C. Management Practicum I, II, and III
Summer, Fall, and Spring. Credit, 6 hours total. The practicum will involve an individually designed learning experience. It will be a field-based experience designed to reinforce classroom content and to help the student make a successful role transition into a health care setting. The student will be assigned to radiology departments for administrative practical experience. The course is designed to help the student identify a systematic approach to: work-flow analysis, organization, department budget, planning, record systems, job evaluations, quality assurance, and other problem-solving tasks. **Format: Hybrid**
Education Track Course Descriptions

MI 431. Business Communication
Summer. Credit, 3 hours. This course is designed for the professional whose activities require communicative abilities in a variety of interpersonal group situations. This course will help students develop an understanding of the communication process and will allow students to critically evaluate their skills. Methods of effective oral and written presentation will be introduced. Format: On-line

MI 435. Hospital Organization and Personnel Management
Fall. Credit, 3 hours. This course will explore health care systems and contemporary problems and issues in health care administration. Functional and structural aspects of the hospital organization will also be discussed-authority, responsibility, and role relationship of the governing board, administration, and medical staff. The internal and external forces affecting the administrative process will be included. Format: Hybrid

MI 440. Introduction to Medical Imaging Education
Summer. Credit, 3 hours. This course provides an overview of radiologic science education. Professional organizations and accreditation requirements influencing the curriculum will be identified. The student will be introduced to effective lesson preparation and utilization of selected multimedia materials. Format: Hybrid

MI 441. Methods and Materials of Teaching Medical Imaging
Summer. Credit, 3 hours. This course involves the development of instructional materials for specific units in the radiography curriculum. Objectives, lesson plans, visual aids, and evaluation instruments will be developed. Emphasis will be placed on the organization and presentation of educational materials. Format: Hybrid

MI 443R. Practice Teaching (Didactic)
Fall and Spring. Credit, 5 hours total. These courses prepare the student for teaching basic radiologic science didactic material. The student will prepare lesson plans, present course material, and evaluate student progress in selected subject areas. Format: Hybrid

MI 445R. Practice Teaching (Clinical)
Fall and Spring. Credit, 5 hours total. These courses prepare the student for teaching in the clinical setting. Concepts related to clinical objectives, instructional methodologies, scheduling, and competency evaluation are introduced. Students will be assigned to work with students in the clinical education settings. Format: Hybrid
**MI 447. Administration of Medical Imaging Programs**  
Spring. Credit, 3 hours. This course will explore contemporary problems and issues in radiologic science program administration. Functional and structural aspects of the program organization will also be discussed. This course also involves the design of a radiologic science program according to the Joint Review Committee on Education in Radiologic Technology Standards or comparable guides for other imaging disciplines. Emphasis is placed on the determination program compliance with the JRCERT Standards. **Format: Hybrid**

**Computed Tomography Track Course Descriptions**

**MI 450: CT Physics and Instrumentation**  
Summer. Credit, three hours. Physics topics covered include the characteristics of radiation, CT beam attenuation, linear attenuation coefficients, tissue characteristics, and Hounsfield number application. Data acquisition and manipulation techniques and image reconstruction algorithms will be explained. CT systems and operations will be fully explained. **Format: On-line**

**MI 451a, b, c: CT Procedures I, II, and III**  
Summer, Fall, and Spring. Credit, six hours total. CT protocols will be taught for differentiation of specific structures and pathology. Patient history, education and preparation, contrast media type, amount and administration route, patient positioning and orientation, scan parameters, image display and common pathology will be covered. These courses complement Clinical Practicum I, II, and III. **Format: On-line**

**MI 465a, b, c: CT Practicum I, II, and III**  
Summer, Fall, and Spring. Credit, nine hours total. These courses involve the application of didactic information in the clinical setting. The student will observe, assist, and perform basic patient care and clinical procedures under direct supervision. The student will be required to complete specific repetitions in accordance with the ARRT requirements. **Format: Traditional**

**Magnetic Resonance Imaging Track Course Descriptions**

**MI 453a, b, c: MRI Physics and Instrumentation I, II, and III**  
Summer, Fall, and Spring. Credit, six hours total. These courses introduce the student to the concepts related to production of the MR image. MR basics, image weighting and contrast, encoding, parameters, pulse sequences, flow phenomena, artifacts, vascular and cardiac imaging, contrast agents, and functional MRI will be covered in these courses. **Format: On-line**

**MI 455a, b, c: MRI Procedures I, II, and III**  
Summer, Fall, and Spring. Credit, six hours total. MRI protocols will be taught for differentiation of specific structures and pathology. MRI safety, instrumentation and equipment, patient care and preparation, contrast media type, amount and administration route, patient
positioning and orientation, scan parameters, filming and common pathology will be covered. These courses complement Clinical Practicum I, II, and III.  **Format: On-line**

**MI 467a, b, c: MRI Practicum I, II, and III**  
Summer, Fall, and Spring. Credit, nine hours total. These courses involve the application of didactic information in the clinical setting. The student will observe, assist, and perform basic patient care and clinical procedures under direct supervision. The student will be required to complete specific repetitions in accordance with the ARRT requirements. **Format: Traditional**

### Interventional Radiology Track Course Descriptions

**MI 457a, b, c: Advanced Clinical Procedures**  
Summer, Fall, and Spring. Credit, seven hours total. IR protocols will be taught for differentiation of specific anatomic structures and pathology. Patient history, education and preparation, contrast media type, amount and administration route, patient positioning and orientation, imaging and common pathology will be covered. These courses complement Advanced Clinical Practicum I, II, and III. **Format: Hybrid**

**MI 465a, b, c: CT Practicum I, II, and III**  
Summer, Fall, and Spring. Credit, nine hours total. These courses involve the application of didactic information in the clinical setting. The student will observe, assist, and perform basic patient care and clinical procedures under direct supervision. The student will be required to complete specific exam repetitions in accordance with ARRT requirements. **Format: Traditional**

### Women’s Health Track Course Descriptions

**MI 457a, b, c: Advanced Clinical Procedures**  
Summer, Fall, and Spring. Credit, seven hours total. A series of advanced procedure courses designed for persons entering the field of Women’s Health to become familiar with the theories, principles, and practices of mammography and bone density. Fundamentals, equipment, quality control, image production, anatomy, pathology, and basic procedures will be covered. These courses complement Advanced Clinical Practicum I, II, and III. **Format: Hybrid**

**MI 465a, b, c: Advanced Clinical Practicum I, II, and III**  
Summer, Fall, and Spring. Credit, nine hours total. These courses involve the application of didactic information in the clinical setting. The student will observe, assist, and perform basic patient care and clinical procedures under direct supervision. The student will be required to complete specific repetitions in accordance with the ARRT requirements for both mammography and bone densitometry procedures. **Format: Traditional**