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 readings pertinent to the assigned topic will be required. Format: Hybrid

MI 411. Pharmacology
Fall. Credit, 2 hours. Prerequisites: MI 221A, B, MI 211A-C. 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: MI 321A, B, MI 325A, B. 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 preliminary preparation for the national certifying examination, as well as 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, 3 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, 6 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, and filming 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, 9 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 demonstrate competency in numerous CT procedures. Format: Traditional

Magnetic Resonance Imaging Track Course Descriptions

MI 453A, B, C. MRI Physics and Instrumentation I, II, and III
Summer and Fall. Credit, 6 hours total. These courses introduce the student to the concepts related to production of the MR image. Pulse sequences, parameters and tissue characteristics, types of magnets, gradient fields, and spectroscopy will be covered in these courses. Format: On-line

MI 455A, B, C. MRI Procedures I, II, and III
Summer, Fall, and Spring. Credit, 6 hours total. MRI 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, and filming 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, 9 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 demonstrate competency in numerous MRI procedures. Format: Traditional
Interventional Radiology Track Course Descriptions

MI 457a, b, c: Advanced Clinical Procedures
Summer, Fall, and Spring. Credit, nine hours total. IR 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, filming 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, seven 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 demonstrate competency in numerous IR procedures. Format: Traditional

Women’s Health Track Course Descriptions

MI 457a, b, c: Advanced Clinical Procedures
Summer, Fall, and Spring. Credit, seven hours total. Mammography and bone densitometry 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, filming and common pathology 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 demonstrate competency in mammography and bone densitometry procedures. Format: Traditional