

# RADIOLOGIC TECHNOLOGY, B.S.

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[www.mcla.edu/radt/](http://www.mcla.edu/radt/) (<http://www.mcla.edu/radt/>)

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The Radiologic Technology major is accredited by the Joint Review Committee on Education in Radiologic Technology (JRCERT). The program has a full 8-year accreditation, with the next review date in September 2024.

In the Radiologic Technology major, students prepare for a career in the field of diagnostic imaging. This specific advanced education degree meets the need for sophisticated imaging management and leadership that can respond to clinical, organizational, and fiscal demands facing the healthcare industry today. Students complete two years of preparatory and general core course work, earning placement into the concentration and clinical years in their third year.

Acceptance into RADT coursework takes place during the spring semester of a student's second year. Acceptance is limited with chances of acceptance increased by completing pre-requisite courses at MCLA and by earning grades higher than the minimum in these courses. Requirements include an overall GPA > 2.85; grades of C+ or higher in BIOL 150, BIOL 342, BIOL 343; HLTH 110 and HLTH 105; and minimum grades of C in MATH 150 or C+ in College Algebra. Additional details are provided at [mcla.edu/academics/academic-departments/health-sciences/radiologic-tech](http://mcla.edu/academics/academic-departments/health-sciences/radiologic-tech) (<https://www.mcla.edu/academics/academic-departments/health-sciences/radiologic-tech.php>).

*Please note that students are required to complete RADT 455: Clinical Radiography III in the summer. During this session, students are required to attend clinical sessions a minimum of 40 hours per week for a period of 11 weeks. Students are encouraged not to engage in activities that carry a significant time commitment during this session.*

*Biology, Health Science, Radiologic Technology, Public Health and Community Health transfer students who completed Anatomy & Physiology I and II from an institution with a course number less than 300 will be required to take either BIOL 343 Anatomy and Physiology II, or BIOL 404 Research Methods in Human Physiology.*

Code	Title	Hours
BIOL 101	Biology Seminar for Majors	1
BIOL 150	Introduction to Biology I: Cells	4
BIOL 342	Anatomy and Physiology I	4
BIOL 343	Anatomy and Physiology II	4
HLTH 105	Medical Terminology	1
HLTH 110	Introduction to Healthcare	3
HLTH 210	Human Growth and Development	3
or HLTH 210H	Honors: Human Growth and Development	
HLTH 300	Ethical Issues in Health Care	3
CHEM 150	Introduction to Chemistry I	4
CHEM 152	Introduction to Chemistry II	4

MATH 150	Precalculus	3
MATH 232	Introduction to Statistics	3
or MATH 232H	Honors: Introduction to Statistics	
PSYC 100	Introduction to Psychology	3
RADT 300	Introduction to Radiologic Technology	2
RADT 305	Radiographic Physics	3
RADT 310	Radiographic Positioning I	4
RADT 320	Radiographic Positioning II	4
RADT 330	Radiographic Exposures	3
RADT 340	Digital Imaging, Processing and Quality	3
RADT 350	Radiation Protection and Biology	3
RADT 355	Clinical Radiography I	2
RADT 365	Clinical Radiography II	3
RADT 370	Radiographic Pathology	3
RADT 420	Advanced Imaging and Pharmacology	3
Select one of the following courses		3
RADT 431	Principles of Computed Tomography I	
RADT 434	Principles of Mammography I	
RADT 496	Special Topics Radiography I	
Select one of the following courses		3
RADT 432	Principles of Computed Tomography II	
RADT 435	Principals of Mammography II	
RADT 497	Special Topics Radiography II	
RADT 440	Radiographic Critique and Analysis	3
RADT 455	Clinical Radiography III	6
RADT 465	Clinical Radiography IV	4
RADT 475	Clinical Radiography V	4
RADT 480	Senior Seminar	3
<b>Total Hours</b>		<b>99</b>

## **RADT 300 Introduction to Radiologic Technology** 2 cr

Emphasizes critical thinking and patient care principles needed for initial clinical experiences. Topics include physical and psychological needs of the patient and family, routine and emergency patient care procedures, infection control, communication, diversity, patient education, privacy, medico-legal issues, radiation protection, proper body mechanics, safe patient transfer, and contrast media's imaging applications and reactions. Successful completion requires a minimum grade of C+.

**Prerequisite:** Program acceptance

## **RADT 305 Radiographic Physics** 3 cr

Introduces concepts of physics applied to x-ray generating equipment, including radiologic science, atomic structure, structure of matter, radiation quantities and units, fundamentals of electromagnetic radiation, electricity, magnetism, force and energy, electron interactions with matter, and the relationship between magnetism and electricity with focus on application to x-ray circuit components and generators. Successful completion requires a minimum grade of C+. Additional fee required.

**Prerequisite:** Minimum grade of C in MATH 150 and program acceptance

**Attributes:** Additional Fees Apply (FEE)

<p><b>RADT 310 Radiographic Positioning I</b> <span style="float: right;"><b>4 cr</b></span>  Provides knowledge required to perform radiographic procedures on the chest, abdomen, upper extremities, lower extremities, shoulder girdle, hip and pelvis, with application to human anatomy. Emphasizes concepts and criteria needed to produce and evaluate quality radiographs. Pathological disorders, classification of diseases, and additive and destructive conditions will also be discussed. Successful completion requires a minimum grade of C+. Additional fee required.  <b>Prerequisite:</b> BIOL 342 and BIOL 343 with a minimum grade of C+ and program acceptance  <b>Corequisite:</b> RADT 310L  <b>Attributes:</b> Additional Fees Apply (FEE)</p>	<p><b>RADT 355 Clinical Radiography I</b> <span style="float: right;"><b>2 cr</b></span>  Allows interaction with patients and health care team members in a health care imaging department. This first clinical experience of five, assists students in gaining mastery of techniques utilized in radiography, as assessed through competency examination of specific body areas. Students will practice patient care skills and radiation safety procedures under direct supervision of a registered radiologic technologist. Successful completion requires a minimum grade of C+. Additional fee required.  <b>Prerequisite:</b> RADT 300 with a minimum grade of C+  <b>Attributes:</b> Additional Fees Apply (FEE)</p>
<p><b>RADT 320 Radiographic Positioning II</b> <span style="float: right;"><b>4 cr</b></span>  Provides knowledge required to perform radiographic procedures on the vertebral column, bony thorax, skull, facial bones, and upper and lower gastrointestinal tract, with application to human anatomy. Emphasizes concepts and criteria needed to produce and evaluate quality radiographs. Pathological disorders, classification of diseases, and additive and destructive conditions will also be discussed. Successful completion requires a minimum grade of C+. Additional fee required.  <b>Prerequisite:</b> RADT 310 with a minimum grade of C+  <b>Corequisite:</b> RADT 320L  <b>Attributes:</b> Additional Fees Apply (FEE)</p>	<p><b>RADT 365 Clinical Radiography II</b> <span style="float: right;"><b>3 cr</b></span>  Allows interaction with patients and health care team members in a health care imaging department. This second clinical experience of five, assists students in gaining mastery of techniques utilized in radiography, as assessed through competency examination of specific body areas. Students will practice patient care skills and radiation safety procedures under direct supervision of a registered radiologic technologist. Successful completion requires a minimum grade of C+. Additional fee required.  <b>Prerequisite:</b> RADT 310 with a minimum grade of C+  <b>Attributes:</b> Additional Fees Apply (FEE)</p>
<p><b>RADT 330 Radiographic Exposures</b> <span style="float: right;"><b>3 cr</b></span>  Introduces the physical principles governing x-rays, x-ray production, and x-ray beam characteristics as they relate to quality, improved patient care and protection. Topics include image production factors, x-ray interactions with matter, fluoroscopic x-ray tubes and image intensifier, principles associated with dynamic imaging, radiographic technique includes x-ray beam filtration, beam restriction, and grid use. Successful completion requires a minimum grade of C+. Additional fee required.  <b>Prerequisite:</b> RADT 305 with a minimum grade of C+  <b>Attributes:</b> Additional Fees Apply (FEE)</p>	<p><b>RADT 370 Radiographic Pathology</b> <span style="float: right;"><b>3 cr</b></span>  Provides an understanding of the clinical manifestations of common pathological conditions as they appear on radiographs. Allows for identification of radiographic features as they relate to characteristics of the disease/disorder, and provides information about how technical values are affected by pathological conditions. Successful completion requires a minimum grade of C+.  <b>Prerequisite:</b> RADT 330 with a minimum grade of C+</p>
<p><b>RADT 340 Digital Imaging, Processing and Quality</b> <span style="float: right;"><b>3 cr</b></span>  Introduces components, principles, and operation of digital imaging systems and factors that impact image acquisition, display, and retrieval in radiology, as well as principles of digital system quality assurance and maintenance. Introduces quality assurance, quality control, and quality assessment necessary for the continued production of quality diagnostic radiographic images. Successful completion requires a minimum grade of C+. Additional fee required.  <b>Prerequisite:</b> A minimum C+ in RADT 305, and a minimum C in HLTH 300 or CCAP 300 Ethical Issues in Health Care  <b>Attributes:</b> Additional Fees Apply (FEE)</p>	<p><b>RADT 395 Special Topics in Radiologic Technology</b> <span style="float: right;"><b>1-4 cr</b></span>  Provides students with an opportunity to explore different topics in radiologic technology. Successful completion requires a minimum grade of C+.  <b>Prerequisite:</b> Varies by course  <b>Repeatable:</b> Unlimited Credits</p>
<p><b>RADT 350 Radiation Protection and Biology</b> <span style="float: right;"><b>3 cr</b></span>  Provides an advanced understanding and overview of the principles of radiation protection to allow protection from exposure to radioactivity. Introduces characteristics of radiation as they apply to impacts of radiation on cell biology. Requires application of standards and guidelines for radiation exposure. Successful completion requires a minimum grade of C+. Additional fee required.  <b>Prerequisite:</b> RADT 330 with a minimum grade of C+  <b>Attributes:</b> Additional Fees Apply (FEE)</p>	<p><b>RADT 420 Advanced Imaging and Pharmacology</b> <span style="float: right;"><b>3 cr</b></span>  Provides instruction in modalities, interventional radiography, pharmacology and drug administration as applied to advanced radiographic procedures. Utilizes radiographs for specialized study of cross-sectional anatomy relevant to imaging modalities such as CT and MRI. Introduces additional imaging modalities such as CT, MRI, mammography, ultrasound, bone densitometry, nuclear medicine, and PET. Successful completion requires a minimum grade of C+. Additional fee required.  <b>Prerequisite:</b> RADT 320 with a minimum grade of C+  <b>Attributes:</b> Additional Fees Apply (FEE)</p>
	<p><b>RADT 431 Principles of Computed Tomography I</b> <span style="float: right;"><b>3 cr</b></span>  Provides fundamentals of computed tomography (CT) including history, equipment and quality control; first of a two-course sequence. Addresses aspects of data acquisition, digital analysis and image processing. Includes 40 hr of clinical observation. Successful completion requires a minimum grade of C. Students may apply for the ARRT certification exam upon successful completion of RADT 431 &amp; RADT 432, plus documented completion of the ARRT Clinical Experience Requirements in Computed Tomography.  <b>Prerequisite:</b> RADT 340 with a minimum grade of C+</p>

<p><b>RADT 432 Principles of Computed Tomography II</b> 3 cr</p> <p>Focuses on computed tomography (CT) exam procedures, cross-sectional anatomy, pathology and radiation protection; second of a two-course sequence. Addresses aspects of patient care and contrast agents. Includes 40 hrs of clinical observation. Successful completion requires a minimum grade of C. Students may apply for the ARRT certification exam upon successful completion of RADT 431 and RADT 432, plus documented completion of the ARRT Clinical Experience Requirements in Computed Tomography.</p> <p><b>Prerequisite:</b> RADT 431 with a minimum grade of C</p>	<p><b>RADT 465 Clinical Radiography IV</b> 4 cr</p> <p>Allows interaction with patients and health care team members in a health care imaging department. This fourth clinical experience of five, assists students in gaining mastery of techniques utilized in radiography, as assessed through competency examination of specific body areas. Students will practice patient care skills and radiation safety procedures under direct supervision of a registered radiologic technologist. Successful completion requires a minimum grade of C+. Additional fee required.</p> <p><b>Prerequisite:</b> RADT 455 with minimum grade of C+</p> <p><b>Attributes:</b> Additional Fees Apply (FEE)</p>
<p><b>RADT 434 Principles of Mammography I</b> 3 cr</p> <p>Provides fundamentals of mammography including history, equipment and quality control; first of a two-course sequence. Addresses in-depth anatomy, physiology and pathology of the breast. Includes 40 hrs of clinical observation. Successful completion requires a minimum grade of C. Students may apply for ARRT certification exam upon successful completion of RADT 434 and RADT 435, plus documented completion of the ARRT Clinical Experience Requirements in Mammography.</p> <p><b>Prerequisite:</b> RADT 340 with a minimum grade of C+</p>	<p><b>RADT 475 Clinical Radiography V</b> 4 cr</p> <p>Allows interaction with patients and health care team members in a health care imaging department. This fifth clinical experience of five, assists students in gaining mastery of techniques utilized in radiography, as assessed through competency examination of specific body areas. Students will practice patient care skills and radiation safety procedures under direct supervision of a registered radiologic technologist. Successful completion requires a minimum grade of C+. Additional fee required.</p> <p><b>Prerequisite:</b> RADT 465 with minimum grade of C+</p> <p><b>Attributes:</b> Additional Fees Apply (FEE)</p>
<p><b>RADT 435 Principals of Mammography II</b> 3 cr</p> <p>Focuses on mammographic procedures, patient care and image evaluation. Second of a two-course sequence. Explores breast ultrasound, digital breast tomosynthesis, biopsies and breast cancer. Includes 50 hrs of clinical practice. Successful completion requires a minimum grade of C. Students may apply for the ARRT certification exam upon successful completion of RADT 434 and 435, plus documented completion of the ARRT Clinical Experience Requirements in Mammography.</p> <p><b>Prerequisite:</b> RADT 434 with a minimum grade of C</p>	<p><b>RADT 480 Senior Seminar</b> 3 cr</p> <p>Focuses on factors that impact decision-making related to delivery of health care and radiological practice. Topics addressed include recent scientific findings in related fields of medicine, imaging modalities, and the future of radiographic study. Focuses on the synthesis of professional knowledge, skills and attitudes in preparation for professional practice and lifelong learning. Successful completion requires a minimum grade of C+. Additional fee required.</p> <p><b>Prerequisite:</b> Minimum overall GPA of 2.3 and completion of RADT 455 with a minimum grade of C+</p> <p><b>Attributes:</b> Additional Fees Apply (FEE)</p>
<p><b>RADT 440 Radiographic Critique and Analysis</b> 3 cr</p> <p>Focuses on radiographic image critique from a problem-based perspective. Enhances the student's knowledge of factors that influence the production of radiographic images and the correlation with radiographic critique. Bridges the gap between patient positioning and the resulting radiograph, and focuses on the analysis of image quality. Successful completion requires a minimum grade of C+. Additional fee required.</p> <p><b>Prerequisite:</b> RADT 420 with a minimum grade of C+</p> <p><b>Attributes:</b> Additional Fees Apply (FEE)</p>	<p><b>RADT 495 Special Topics in Radiologic Technology</b> 1-4 cr</p> <p>Provides students with an opportunity to explore different topics in radiologic technology at the advanced level. Successful completion requires a minimum grade of C+.</p> <p><b>Prerequisite:</b> Varies by course</p> <p><b>Repeatable:</b> Maximum of 4 credits</p>
<p><b>RADT 455 Clinical Radiography III</b> 6 cr</p> <p>Allows interaction with patients and health care team members in a health care imaging department. This third clinical experience of five, assists students in gaining mastery of techniques utilized in radiography, as assessed through competency examination of specific body areas. Students will practice patient care skills and radiation safety procedures under direct supervision of a registered radiologic technologist. Successful completion requires a minimum grade of C+. Additional fee required.</p> <p><b>Prerequisite:</b> RADT 365 with a minimum grade of C+</p> <p><b>Attributes:</b> Additional Fees Apply (FEE)</p>	<p><b>RADT 496 Special Topics Radiography I</b> 3 cr</p> <p>Focuses on fundamentals of a radiographic specialty, including history, instrumentation and quality control, data acquisition, digital analysis and image processing; first of a two-course sequence. Includes 40 hrs of clinical observation. Successful completion of this course with a minimum grade of C may fulfill one of the requirements for applying for the relevant ARRT certification exam.</p> <p><b>Prerequisite:</b> RADT 340 with a minimum grade of C+</p>
	<p><b>RADT 497 Special Topics Radiography II</b> 3 cr</p> <p>Continues education in a radiographic specialty, including topics such as exam procedures, in-depth anatomy and pathology, specialized protection procedures, and patient care. Includes 40 hrs of clinical observation. Successful completion of this course with a minimum grade of C may fulfill one of the requirements for applying for the relevant ARRT certification exam.</p> <p><b>Prerequisite:</b> Overall 2.3 GPA and RADT 495 with a minimum grade of C+</p>

**RADT 498 Special Topics in Clinical Radiography** 1-5 cr

Focuses on clinical application of a radiographic specialty. Areas of competency may include clinical indications, patient preparation and positioning, imaging protocols, radiographic technique, image evaluation, normal anatomy and pathology and special procedures. Successful completion of this course with a minimum grade of C may fulfill one of the requirements for applying for the relevant ARRT certification exam. Additional fee required.

**Prerequisite:** Instructor approval

**Attributes:** Additional Fees Apply (FEE)

**Repeatable:** Maximum of 5 credits