ADVANCED MEDICAL IMAGING – MAGNETIC RESONANCE IMAGING (MRI)

Magnetic resonance technologists are highly trained radiographers who operate magnetic resonance (MR) equipment that scans the patient using a combination of magnetic fields and radiofrequency to produce high-resolution images of the body. MR technologists are essential members of the medical imaging team performing scans that are vital to the diagnosis of a variety of injuries and diseases. Graduates of the advanced certificate program at ECC are highly skilled and qualified to sit for advanced certification by the American Registry of Radiologic Technologists (ARRT).

Accreditation
The Magnetic Resonance Program is accredited by:

The Joint Review Committee on Education in Radiologic Technology (JRCERT)
20 N. Wacker Drive, Suite 2850
Chicago, IL 60606
312-704-5300
jrcert.org (http://www.jrcert.org)

Entrance Requirements
Each applicant must be a graduate of a JRCERT-accredited radiography or radiation therapy program and must have passed the ARRT certification examination; or be ARRT- or NMTCB-registered in nuclear medicine technology and a graduate of a JRCNMT-accredited nuclear medicine technology program; or be a graduate of a JRCDMS-accredited sonography program and have passed the ARRT or ARDMS certification examination.

Approximately ten part-time and ten full-time applicants will be accepted on a first-come, first-served basis. Full-time students will be given priority for clinical placement. Click on the link to view enrollment options for full-time and part-time enrollment: https://elgin.edu/academics/departments/medical-imaging/program-options/.

Admission Procedures
Admission into the program is selective. For more information, please see admission requirements (https://elgin.edu/academics/departments/medical-imaging/program-admissions/).

Program Requirements
Students must complete all required courses with grades of C or better and meet graduation requirements in order to be eligible to apply to sit for the ARRT national certification exam in magnetic resonance offered by the American Registry of Radiologic Technologists.

Policies and Procedures for Medical Imaging Certificate Programs
Any student demonstrating a positive background check will be denied admission to any health professions program.

Before attending clinical training, students must submit documentation through the Castlebranch portal including: completed medical form which includes proof of immunizations/titer results, proof of health insurance coverage, TB test, and proof of healthcare provider CPR certification. Background checks and drug testing are also conducted through Castlebranch.

Health professions students will be required to update their drug test, TB test/TB survey, and flu vaccine on information an annual basis. Any student demonstrating a positive drug test will be dismissed from the Health Professions Division.

The standards, policies, and procedures of the medical imaging programs are published in the advanced medical imaging student handbook. Copies of the student handbook may be obtained online at elgin.edu/medicalimaging (http://www.elgin.edu/medicalimaging/).

Advanced Medical Imaging Programs
Mission Statement
Elgin Community College’s advanced imaging programs in magnetic resonance, computed tomography and mammography provide accessible and relevant education in accordance with the highest professional standards. The programs, in partnership with its clinical affiliates, will provide the healthcare community with competent advanced imaging technologists who provide high-quality images and excellent patient-centered care to the diverse populations within the community.

Program Goals and Expected Outcomes
The program will graduate competent imaging technologists.

Expected outcomes: Students/graduates will demonstrate competency by:

• Producing quality images.
• Practicing safety for the patient, him or herself and others.
• Demonstrating overall competence in clinical practice.

Expected outcomes: Students/graduates will develop and practice proficiency in problem-solving and critical thinking skills by:

• Modifying standard procedures to accommodate patient conditions and other variables.
• Determining the need and adapting exposure factors and/or protocol for various patient conditions, equipment, accessories and contrast media to maintain appropriate image quality.
• Evaluating image quality and to make appropriate adjustments to obtain diagnostic images.

Expected outcomes: Students/graduates will practice effective communication skills in the clinical setting.

Expected outcomes: Students/graduates will conduct him or herself in a professional manner.

Expected outcomes: Students/graduates will demonstrate professional growth through participation in lifelong learning.

Demonstrating overall competence in clinical practice.

Program Goals and Expected Outcomes
The program will graduate competent imaging technologists.

Expected outcomes: Students/graduates will demonstrate proficiency in problem-solving and critical thinking skills by:

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• Evaluating image quality and to make appropriate adjustments to obtain diagnostic images.

Expected outcomes: Students/graduates will practice effective communication skills in the clinical setting.

Expected outcomes: Students/graduates will conduct him or herself in a professional manner.

Expected outcomes: Students/graduates will demonstrate professional growth through participation in lifelong learning.

Demonstrating professional values and behavior in clinical practice.

Demonstrating professional growth through participation in lifelong learning.
The student/graduate will provide excellent patient care for a diverse population of patients.
Expected outcomes: Students/graduates will provide excellent patient care for a diverse population of patients by:

• Demonstrating increased understanding of the importance of cultural competence in clinical practice.
• Demonstrating increased awareness of current trends and changes in healthcare affecting the global population.

The program will provide the healthcare community with qualified practitioners of advanced medical imaging modalities.
Expected outcomes:

• A retention rate of 75 percent or higher.
• The 5-year average employment rate of graduates within one year of graduation will be 75 percent or greater. A positive outcome is defined as employment in the field for those graduates who declare they are actively seeking employment in the field or pursuing continued education in the field.
• First-time pass rates of graduate cohorts on the ARRT credentialing exam will be consistent with or above the national passing rates each year of the exam, with a minimum pass rate of 75%.
• Mean scores of graduate cohorts on the ARRT credentialing exam will be consistent with or above the national mean scores each year.
• The mean score on the employers' satisfaction survey of the graduates' preparation for employment will be 3.0 (meets expectations) or higher on a 5.0 (exceeds expectations) point scale.

Magnetic Resonance Imaging - Basic Vocational Specialist

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>First Semester</td>
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<tr>
<td>MRI 100</td>
<td>MR Physical Principles</td>
<td>3</td>
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<tr>
<td>MRI 101</td>
<td>MR Procedures I</td>
<td>3</td>
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<td>AMI 110</td>
<td>Advanced Sectional Anatomy I</td>
<td>2</td>
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<td>AMI 102</td>
<td>Patient Care and Safety</td>
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<td>MR Clinical Practicum I</td>
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<td>Second Semester</td>
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<td>MRI 200</td>
<td>Clinical Aspects of MR</td>
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<tr>
<td>MRI 201</td>
<td>MR Procedures I</td>
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<td>AMI 210</td>
<td>Advanced Sectional Anatomy II</td>
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<td>MRI 205</td>
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Advanced Medical Imaging Courses

SPECIAL NOTE: For more information on ECC's advanced imaging programs, go to elgin.edu/medicalimaging (https://elgin.edu/academics/departments/medical-imaging/).

A criminal background check and drug test MAY be required prior to enrollment.
AMI 110 Advanced Sectional Anatomy I (2)  1,2
Advanced Sectional Anatomy I will enhance the student’s knowledge of gross radiographic anatomy through the observation of the human body from multiple orthogonal planes. The following anatomical regions of interest included in this course are: brain, face, neck, spine, upper and lower musculoskeletal regions. This course also familiarizes the student with the common pathologies found in magnetic resonance imaging and computed tomography through the appearance of normal and abnormal pathologies in various imaging planes. Pathological and traumatic disease processes associated with the skeletal, endocrine, and hemopoietic systems will be discussed to help the student identify these disease processes in common practice and make the associated imaging changes required to adequately demonstrate the patient’s anatomy and pathology. (1.2) Proficiency Credit Not Available Pass/No Credit Not Available
www.elgin.edu/radiography

SPECIAL NOTE: Explore the radiography program and come to an information session. For more details, go to elgin.edu/visitecc

A criminal background check, drug test, and appropriate PSB-HOA test scores are required for the Radiography (RAD) program. For more information please refer to elgin.edu/radiography.

Prerequisite: Acceptance in to the Computed Tomography Imaging or the Magnetic Resonance Imaging program
Semester(s) Offered: Fall

AMI 210 Advanced Sectional Anatomy II (2)  1,2
Advanced Sectional Anatomy II is the secondary anatomy and pathology course. It will further enhance the student’s knowledge of gross radiographic anatomy and increase understanding of this anatomy through the observation from a three dimensional perspective. The student will be introduced to gross anatomy from a cross sectional perspective including the following regions/systems: thorax, abdomen and pelvis. Pathological and traumatic disease processes associated with the respiratory, cardiovascular, abdomen, gastrointestinal, hepatobiliary, urinary, and reproductive systems. Anatomical structures and the plane that best demonstrates anatomy are discussed as well as signal characteristics of normal and abnormal structures will be discussed. (1.2) Proficiency Credit Not Available Pass/No Credit Not Available
www.elgin.edu/radiography

SPECIAL NOTE: Explore the radiography program and come to an information session. For more details, go to elgin.edu/visitecc

A criminal background check, drug test, and appropriate PSB-HOA test scores are required for the Radiography (RAD) program. For more information please refer to elgin.edu/radiography.

In-District Tuition/Fees: $264 (effective 2020/21 academic year)
In-district tuition is subject to change based on Board approval (https://elgin.edu/pay-for-college/tuition-fees/)

Prerequisite: Grade of C or better in AMI 110
Semester(s) Offered: Spring

Magnetic Resonance Imaging Courses

MRI 100 MR Physical Principles (3)  2,2
MR Physical Principles will introduce the fundamental principles that lend themselves to the creation of the magnetic resonance images through the understanding of basic quantum physics, instrumentation, and the manipulation of basic technical factors. This course’s topics will cover magnetic molecular principles, image weighting and contrast, tissue characteristics, spatial localizations, MR system components, data collection and image formation, imaging parameters and their trade-offs, and MR safety. (1.2) Proficiency Credit Not Available Pass/No Credit Not Available
www.elgin.edu/radiography

SPECIAL NOTE: Explore the radiography program and come to an information session. For more details, go to elgin.edu/visitecc

A criminal background check, drug test, and appropriate PSB-HOA test scores are required for the Radiography (RAD) program. For more information please refer to elgin.edu/radiography.

In-District Tuition/Fees: $525 (effective 2020/21 academic year)
In-district tuition is subject to change based on Board approval (https://elgin.edu/pay-for-college/tuition-fees/)

Prerequisite: Acceptance into the Magnetic Resonance Imaging program
Semester(s) Offered: Fall
MRI 101 MR Procedures I (3) 2,2
This course will help the student begin to apply their knowledge of MR physical principles, MR safety, sectional anatomy, MR instrumentation and image formation, and patient care within the MR environment. The student will be introduced to intravenous puncture techniques and contrast administration. This course also provides the student with slice and patient positioning, proper coil selection and positioning, imaging protocols and techniques related to the central nervous system (CNS), neck, and spine. (1.2) Proficiency Credit Not Available Pass/No Credit Not Available

www.elgin.edu/radiography (http://www.elgin.edu/radiography/)

SPECIAL NOTE: Explore the radiography program and come to an information session. For more details, go to elgin.edu/visitecc (http://elgin.edu/visitecc/)

A criminal background check, drug test, and appropriate PSB-HOA test scores are required for the Radiography (RAD) program. For more information please refer to elgin.edu/radiography (http://elgin.edu/radiography/).

In-District Tuition/Fees: $525 (effective 2020/21 academic year)
In-district tuition is subject to change based on Board approval (https://elgin.edu/pay-for-college/tuition-fees/) (https://elgin.edu/pay-for-college/tuition-fees/).

Prerequisite: Acceptance into the MRI program or consent of the instructor

Semester(s) Offered: Fall

MRI 103 MR Clinical Practicum I (3) 0,15
MR Clinical Practicum I encompass the clinical application of technical and professional aspects of magnetic resonance imaging within a healthcare setting. Content is presented as a progression in competency levels through clinical performance objectives and competency exams. Students will be rotated through different MR facilities and be exposed to MR personnel, examinations and educational materials necessary to competently achieve content objectives. The student will be required to demonstrate clinical competency in a number and variety of procedures as required by the American Registry of Radiologic Technologists (ARRT). Activities include demonstration and observation, after which the student assists in performing the activity. When a satisfactory degree of proficiency is apparent, the student can perform the activity under direct supervision. When both the student and instructor are satisfied with the student's proficiency, the student performs studies under indirect supervision to gain experience and expertise in MR imaging and meet the clinical procedural examination requirements outlined in this course. (1.2) Proficiency Credit Not Available Pass/No Credit Not Available

www.elgin.edu/radiography (http://www.elgin.edu/radiography/)

SPECIAL NOTE: Explore the radiography program and come to an information session. For more details, go to elgin.edu/visitecc (http://elgin.edu/visitecc/)

A criminal background check, drug test, and appropriate PSB-HOA test scores are required for the Radiography (RAD) program. For more information please refer to elgin.edu/radiography (http://elgin.edu/radiography/).

In-District Tuition/Fees: $525 (effective 2020/21 academic year)
In-district tuition is subject to change based on Board approval (https://elgin.edu/pay-for-college/tuition-fees/) (https://elgin.edu/pay-for-college/tuition-fees/).

Prerequisite: Grade of C or better in MRI 100 or consent of instructor

Semester(s) Offered: Spring

MRI 200 Clinical Aspects of MR (3) 2,2
Clinical Aspects of MR will introduce the student to clinical aspects of magnetic resonance imaging. Topics include pulse sequences, vascular imaging, artifacts and their compensation, contrast agent and their effects on the overall image, advanced imaging techniques and quality assurance. (1.2) Proficiency Credit Not Available Pass/No Credit Not Available

www.elgin.edu/radiography (http://www.elgin.edu/radiography/)

SPECIAL NOTE: Explore the radiography program and come to an information session. For more details, go to elgin.edu/visitecc (http://elgin.edu/visitecc/)

A criminal background check, drug test, and appropriate PSB-HOA test scores are required for the Radiography (RAD) program. For more information please refer to elgin.edu/radiography (http://elgin.edu/radiography/).

In-District Tuition/Fees: $525 (effective 2020/21 academic year)
In-district tuition is subject to change based on Board approval (https://elgin.edu/pay-for-college/tuition-fees/) (https://elgin.edu/pay-for-college/tuition-fees/).

Prerequisite: Grade of C or better in MRI 100 or consent of instructor

Semester(s) Offered: Spring

MRI 201 MR Procedures I (3) 2,2
This procedures course will help the student begin to apply their knowledge of MR physical principles, MR safety, sectional anatomy, MR instrumentation and image formation, and patient care within the MR environment. The student will be introduced to intravenous puncture techniques and contrast administration. This course also provides the student with slice and patient positioning, proper coil selection and positioning, imaging protocols and techniques related to the muscular skeletal system, thorax, abdomen, pelvis, vascular examinations, and special procedures. (1.2) Proficiency Credit Not Available Pass/No Credit Not Available

www.elgin.edu/radiography (http://www.elgin.edu/radiography/)

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A criminal background check, drug test, and appropriate PSB-HOA test scores are required for the Radiography (RAD) program. For more information please refer to elgin.edu/radiography (http://elgin.edu/radiography/).

In-District Tuition/Fees: $525 (effective 2020/21 academic year)
In-district tuition is subject to change based on Board approval (https://elgin.edu/pay-for-college/tuition-fees/) (https://elgin.edu/pay-for-college/tuition-fees/).

Prerequisite: Acceptance in the MRI Program or consent of instructor

Semester(s) Offered: Spring
MRI 204 MR Clinical Practicum II (4)  0,20
This clinical course provides the student with additional clinical experience necessary to comply with the ARRT clinical experience requirements in order to be eligible to take the ARRT Advanced Certification Examination. It will encompass many of the same technical and professional aspects the prerequisite course, MRI 103; however, the focus here will be to increase the student’s knowledge and confidence with more repetition within a healthcare setting. Technologists performing magnetic resonance imaging must competently apply basic protocols, recognize when and how to appropriately alter the standard protocol and recognize equipment and patient considerations that affect image quality. The technologist is responsible for maintaining a safe MRI environment. This course provides the necessary supervised clinical education to become proficient in these skills. (1.2) Proficiency Credit Not Available Pass/No Credit Not Available
www.elgin.edu/radiography

SPECIAL NOTE: Explore the radiography program and come to an information session. For more details, go to elgin.edu/visitecc

A criminal background check, drug test, and appropriate PSB-HOA test scores are required for the Radiography (RAD) program. For more information please refer to elgin.edu/radiography.

In-District Tuition/Fees: $657 (effective 2020/21 academic year)
In-district tuition is subject to change based on Board approval (https://elgin.edu/pay-for-college/tuition-fees/)

Prerequisite: Grade of C or better in MRI 103 or consent of instructor
Semester(s) Offered: Spring

MRI 205 MR Clinical Practicum III (2)  0,10
This clinical course provides the student with additional clinical experience necessary to comply with the ARRT clinical experience requirements in order to be eligible to take the ARRT Advanced Certification Examination. It will encompass many of the same technical and professional aspects the prerequisite courses, MRI 103 and 204. (1.2) Proficiency Credit Not Available Pass/No Credit Not Available
www.elgin.edu/radiography

SPECIAL NOTE: Explore the radiography program and come to an information session. For more details, go to elgin.edu/visitecc

A criminal background check, drug test, and appropriate PSB-HOA test scores are required for the Radiography (RAD) program. For more information please refer to elgin.edu/radiography.

In-District Tuition/Fees: $393 (effective 2020/21 academic year)
In-district tuition is subject to change based on Board approval (https://elgin.edu/pay-for-college/tuition-fees/)

Prerequisite: Effective Summer 2021 Grade of C or better in MRI 204 or consent of instructor
Semester(s) Offered: Summer