

# MAGNETIC RESONANCE IMAGING (MRI)

SPECIAL NOTE: For more information on ECC's advanced imaging programs, go to [Medical Imaging](#).

A criminal background check and drug test MAY be required prior to enrollment.

## **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

### **Radiography Program Information**

**In-District Tuition/Fees:** \$543 (effective 2025/26 academic year)

**In-district tuition rates are subject to change based on Board approval.**

**Prerequisite:** Acceptance into the Magnetic Resonance Imaging program

**Semester(s) Offered:** Spring

## **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

### **Radiography Program Information**

**In-District Tuition/Fees:** \$543 (effective 2025/26 academic year)

**In-district tuition rates are subject to change based on Board approval.**

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

**Semester(s) Offered:** Fall

## **MRI 102 MRI Safety (3) 3,2**

This course provides a comprehensive understanding of Magnetic Resonance Imaging (MRI) technology and the critical aspects of ensuring MRI safety. In the introductory section, students gain insights into the overview of MRI technology, the significance of magnet protection, and the basic principles of magnetic fields in MRI. Moving into the core components and operation of MRI magnets, the course delves into superconducting magnets, gradient coils, and radiofrequency coils, emphasizing their roles and potential risks. Students explore various magnet protection systems, including quench protection systems and cryogenic systems, with a focus on emergency response protocols. The course outlines safety measures for magnet protection, including operational guidelines, patient screening, and routine maintenance procedures. Emergency procedures and protocols are thoroughly covered, addressing magnet quench events, cryogenic system failures, and collaboration with emergency services. Real-life case studies and scenarios provide valuable insights, allowing students to analyze historical incidents, learn from successful interventions, and implement lessons into current practices. The course also covers regulatory compliance, emphasizing international and local standards, and certification processes for MRI magnet systems. Students are updated on future developments in magnet protection, including emerging technologies and proactive strategies for staying ahead of challenges. Proficiency Credit: Not Available Pass/No Credit: Not Available.

**In-District Tuition/Fees:** \$414 (effective 2025/26 academic year)

**In-district tuition rates are subject to change based on Board approval.**

**Prerequisite:** Acceptance into the Magnetic Resonance Imaging Program.

**Semester(s) Offered:** Summer

**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

**Radiography Program Information .**

**In-District Tuition/Fees:** \$543 (effective 2025/26 academic year)

**In-district tuition rates are subject to change based on Board approval.**

**Prerequisite:** Acceptance in the MRI Program or consent of instructor

**Semester(s) Offered:** Fall

**MRI 200 Clinical Aspects of MR (3) 2,3**

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

**Radiography Program Information .**

**In-District Tuition/Fees:** \$543 (effective 2025/26 academic year)

**In-district tuition rates are subject to change based on Board approval.**

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

**Semester(s) Offered:** Summer

**MRI 201 MR Procedures II (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

**Radiography Program Information .**

**In-District Tuition/Fees:** \$543 (effective 2025/26 academic year)

**In-district tuition rates are subject to change based on Board approval.**

**Prerequisite:** Grade of C or better in MRI 101 or consent of the instructor

**Semester(s) Offered:** Spring

**MRI 202 MRI Image Evaluation (1) 0,2**

This course is demonstrating the fundamentals of cause and effect associated with MRI imaging. Students will learn the routine examinations and selected non-routine MRI examinations of the neurological system, muscle skeletal system, vascular system, and body. The factors that control and influence image quality will be discussed in depth. This included technical factors selection, positioning, patient condition, and other challenges so that students can producing acceptable images. The expectation of students entering this course is to know and understand cross sectional anatomy and the parameters used to produce an MRI image. This course includes demonstrations and laboratory activities to reinforce concepts and enhance student learning. Problem solving and critical thinking skills will be emphasized in technique formulation and exposure calculations Proficiency Credit: Not Available Pass/No Credit: Not Available.

**In-District Tuition/Fees:** \$138 (effective 2025/26 academic year)

**In-district tuition rates are subject to change based on Board approval.**

**Prerequisite:** Grade of C or better in MRI 100, AMI 210, MRI 201 and MRI 204

**Semester(s) Offered:** Summer

**MRI 204 MR Clinical Practicum II (3) 0,15**

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

**Radiography Program Information**

**In-District Tuition/Fees:** \$543 (effective 2025/26 academic year)

**In-district tuition rates are subject to change based on Board approval.**

**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

**Radiography Program Information**

**In-District Tuition/Fees:** \$405 (effective 2025/26 academic year)

**In-district tuition rates are subject to change based on Board approval.**

**Prerequisite:** Grade of C or better in MRI 204 or consent of instructor

**Semester(s) Offered:** Summer

**MRI 206 Clinical Practicum IV (5) 0,25**

This course is a continuation of the MRI Clinical Practicum III. The course emphasizes the continued development of clinical competency and professional development. Students complete clinical rotation assignments which reinforce and provide opportunities for observation, assistance and participation in MRI procedures which are covered in the Procedures courses and patient care skills covered in the Methods of Patient Care course. Emphasis is placed on application of concepts in the actual performance of procedures. Students will complete 384 hours of clinical experience in MRI under direct and/or indirect supervision of an MRI technologist as appropriate. The student will continue attaining, maintaining and documenting competency in MRI procedures. Proficiency Credit: Not Available Pass/No Credit: Not Available.

**In-District Tuition/Fees:** \$690 (effective 2025/26 academic year)

**In-district tuition rates are subject to change based on Board approval.**

**Prerequisite:** Grade of C or better in MRI 200, MRI 202 and MRI 205

**Semester(s) Offered:** Fall

**MRI 207 Clinical Practicum V (5) 0,25**

This is the final clinical practicum course. 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. Clinical requirements include successful completion of final clinical competencies in all major areas of MRI including critical thinking and problem-solving. Successful completion of final competencies is a program graduation requirement, Emphasis is placed on application of concepts in the actual performance of procedures. The student will continue attaining, maintaining and documenting competency in MRI procedures. Special Note: A criminal background check and drug test are required prior to enrollment Proficiency Credit: Not Available Pass/No Credit: Not Available.

**In-District Tuition/Fees:** \$690 (effective 2025/26 academic year)

**In-district tuition rates are subject to change based on Board approval.**

**Prerequisite:** Grade of C or better in MRI 103, MRI 204, MRI 205 & MRI 206.

**Semester(s) Offered:** Spring