

COURSE SYLLABUS

MRI 230 – MAGNETIC RESONANCE IMAGING CLINICAL

CLASS HOURS: 0

CREDIT HOURS: 7

CLINIC HOURS: minimum 225 hours

CATALOG COURSE DESCRIPTION:

This is a one-semester course designed to prepare the Radiologic Technologist clinically for a professional career in MRI. Emphasis is placed on the foundations, concepts and procedures of Clinical Magnetic Resonance Imaging. This class is a recommended co-requisite with MRI 200 Magnetic Resonance Imaging or post-requisite for MRI 200. Advanced standing is also available for qualified candidates.

ENTRY LEVEL STANDARDS:

Graduate from a CAHEA/JRCERT approved program in Radiologic Technology. High self-motivated individual with a desire to become a skilled member of the Magnetic Resonance Imaging technology profession.

PREREQUISITE:

Active Certification (or eligible) as a Registered Technologist by the American Registry of Radiologic Technologists.

COREQUISITES: none

TEXTBOOK(S) AND OTHER REFERENCE MATERIAL BASIC TO THE COURSE

MRI For Technologists: Woodward

Magnetic Resonance Bioeffects, Safety, and Patient Management: Shellock & Kanal

Sectional Anatomy: Kelley & Peterson

Sectional Anatomy Study Guide: Kelly & Peterson

Required Student Learning Outcomes (Program Student Learning Outcomes and Course Student Learning Outcomes):

PSLO #1 The magnetic resonance imaging technical certificate exists to prepare graduates who possess the knowledge, skill, and affect to meet the demands of an entry-level position in magnetic resonance imaging. (COM, ANA, CT, TECH, CUL, KNO)

CSLO #1 Prepare patient for magnetic resonance imaging procedures giving focus to the following:

1. Patient Education and Screening
2. Patient Assessment and Monitoring
3. IV Preparation, Administration and Follow Up
4. MRI safety

CSLO #2 Perform Magnetic Resonance Imaging of the head, neck, spine, chest, abdomen, pelvis and musculoskeletal system giving attention to the following:

1. Anatomy and Physiology
2. Contrast Media
3. Scanning procedures
4. Special Procedures

CSLO #3 Operate MRI System and System components

CSLO #4 Implement professional, legal, ethical, social and political standards with responsibility and accountability to patients, clinical site, profession, Chattanooga State, society and self.

Other Learning Indicators or Objectives (optional): The student will:

PATIENT PREPARATION:

1. Obtain a complete and accurate history of previous surgeries, allergies, conditions, general complaints, and complaints/symptoms pertinent to the requested MR study by either questioning the patient and/or reading the chart as provided with in-patients.
2. Prior to scanning, screen all patients for metallic implants, devices, foreign and/or loose metallic objects, according to the procedure established by the clinical site, prior to scanning.
3. Follow facilities procedure for securing the patients clothes and valuables prior to scanning.
4. Explain the imaging procedure to the patient as well as answer, as clearly as possible, any questions the patient might have that pertains to the imaging procedure.
5. Properly prepare and place ECG electrodes on the patient if required by the procedure protocol.
6. Notify the technologist or physician in charge of any and all potential dangers caused by a patient's condition or history.

PATIENT POSITIONING:

1. Prior to the patient entering the imaging room, prepare the imaging suite and table for each type of study by selecting and positioning imaging devices and aides such as coils, coil holder, sponges, etc.
2. Assist the patient on and off the imaging table.
3. Position patients, coils, and other devices (as applicable) for each of the following exams and others as performed during the clinical hours: routine head, IAC's orbits, all types of spine exams, abdomen, extremities, pelvis/shoulder, chest/heart studies. Satisfactory positioning is to be determined by the staff technologist performing the study or the clinical instructor.
4. Demonstrate working knowledge of various anatomic landmarks such as EAM, xiphoid, pelvis rest, symphysis pubis, sternal notch, etc. as it pertains to the specific study being performed.
5. Demonstrate the complete functioning of the imaging table as applicable to the clinical system.
6. Demonstrate functional knowledge of table operation in an emergency situation (as applicable to the clinical system).
7. Explain to the clinical instructor the facility's procedure for removal of a patient in an emergency situation.

IMAGING PROCEDURE:

1. Explain and/or perform the routine "booting" sequence for the specific clinical site.
2. Perform the routine Q.A. procedures as dictated by the clinical site's protocols.
3. Enter all patient data to initiate a scan.
4. Follow established imaging protocols as well as demonstrate a working knowledge of those protocols and their desired results.
5. Enter pulse parameters as outlined on "non-routine" studies in a timely manner.
6. Demonstrate proper use of patient monitoring/triggering devices/methods and explain their applications.
7. Perform frequency tuning prior to the study by both automatic and manual methods as applicable to the clinical system.
8. Communicate with the patient during the scan by properly utilizing whatever method or system is used.
9. Recognize when the patient is distressed through careful observation/communication throughout the imaging procedure.
10. Critique the series obtained as to the expected quality and appearance of the images.
11. Recognize factors contributing to image quality and explain their interaction, as it relates to image quality.

ARCHIVING:

1. Demonstrate proper power up and loading procedure for the archiving as applicable to the clinical system.

2. Archive to, retrieve from, delete from, restore to magnetic tape, floppy disk, optical disk, image disk, dat, PACS, as applicable to the clinical system.
3. Record archiving information on log books and/or storage medium as dictated by the facility's procedures.

FILMING:

1. Demonstrate a working knowledge of the clinical site's imaging camera.
2. Expose and process images using the format and procedures specific to the clinical setting.
3. Demonstrate and use proper darkroom technique.
4. Prepare films for reading by checking to see that all acquired information is placed in the correct patient's jacket.
5. Mount and remove films from viewers accordingly to the site's procedure.
6. Locate, retrieve and file films and/or jackets in the clinical site's file room.

GENERAL:

1. Treat patients, physicians, and staff in a courteous and professional manner.
2. Keep the imaging suite neat, organized, and well stocked with replaceable items such as linens.
3. Keep the patient's comfort and safety in mind at all times prior to, during, and following the imaging procedure.
4. Keep all patient and facility operational information confidential.
5. Follow all policies and standard operating procedures according to the criteria set by the clinical site.

Required Assessments:

Assessment Names and Descriptions: Clinical grading will be based on the following:

1. Completed and approved clinical site agreement
2. Verification of completed clinical time
3. Patient examination records
4. Completion of competencies
5. Completion of clinical experience documentation form
6. Completion of clinical competency evaluation
7. Evaluation by an approved clinical instructor and radiologist supervisor at the MRI facility

CSLO/Assessment Alignment:

CSLO:	CSLO #1	CSLO #2	CSLO #3	CSLO #4	CSLO #5
Assessments:	<i>Clinical experience form, clinical competency evaluations, overall performance evaluation</i>	<i>Clinical experience form, clinical competency evaluations, overall performance evaluation</i>	<i>Clinical experience form, clinical competency evaluations, overall performance evaluation</i>	<i>Clinical experience form, clinical competency evaluations, overall performance evaluation</i>	NA

Grading Scale or Policy, Weekly Outline, Topics, or Instructional Activities:

Clinical Experience Requirements:

The Clinical Experience Requirements for MRI consist of 53 procedures in 7 different categories which include:

- A. Head and Neck
- B. Spine
- C. Thorax
- D. Abdomen and Pelvis
- E. Musculoskeletal
- F. Special Imaging Procedures
- G. Quality Control

Students must complete and document the performance of a subset of these 53 procedures according to the following rules:

1. Choose a minimum of 5 categories
 2. Choose a minimum of 4 different procedures from the selected categories
 3. Complete a minimum of 3 and a maximum of 10 repetitions of any chosen procedure
 4. Complete a minimum total of 120 repetitions across all procedures
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