

School of Diagnostic Imaging

A program of Rhode Island Hospital, a Lifespan partner

Magnetic Resonance Imaging

Course Name

Introduction to Magnetic Resonance Imaging

Clinically & Didactically

Prerequisites

ARRT Registered Radiologic Technologist

Up to date certification in CPR

Current state licensing

Course Credits

Six (6) semester credit hours

Course Description

This course will provide the student with an overview of Magnetic Resonance Imaging. The fundamental principles of Magnetic Resonance Imaging Terminology, Safety, Instrumentation, Imaging, Protocols, and Physical Principles will be discussed. Included in this course is an introduction to GE & Siemens's MRI Clinical Equipment; the student is familiarized with the operating console, coils, and specified protocols. An understanding of patient and exam set up for the majority of all exams performed in Magnetic Resonance Imaging is developed. The future technologists develop the needed skills to maintain safety and comfort within the department for the best interest of both the patient and coworkers. Time is spent in the clinical setting to demonstrate, support and refine competency in critical thinking and problem solving skills, within various scenarios that can arise while caring for a variety of demographics within MRI.

Another component to this course is Pharmacology & Drug administration for Imaging Professionals. This will cover a large spectrum of necessary applications and variables learned in Radiology that must be reviewed and refined. This will review: Imaging Ethics & Laws, Computers, Fundamentals of Imaging Sciences & Health Care, Creditors, Organizations, and Societies. The technologist's venipuncture and MR contrast administration skills will be refined. An Imaging Professionals Nursing Review will be covered as well.

The MR Students are introduced to all of the Clinical sites and equipment at RIH, TMH, and RIMI.

Objectives

Upon the successful completion of this course, the student will be able to:

- Understand the historical development leading to Magnetic Resonance Imaging
- Understand and perform as an imaging professional within the MRI department; applying professional values, life-long learning, and competency in critical thinking and problem solving skills
- Apply some basic concepts related to the physical principles, instrumentation, imaging, fundamentals, protocols and parameters utilized in MRI
- Use MR terminology correctly

- Maintain a safe work environment for the patient, self and coworker(s)
- Demonstrate proper patient preparation for their MR exam (screen, change, set up etc)
- Demonstrate proper exam set up for the majority of MRI exams (scan room, ancillary equipment needed, etc) using both GE & Siemens's MR systems and equipment.
- Apply their knowledge of claustrophobia and how it affects our MRI patients; helping them recognize obvious systems and utilize techniques to assist the patient successfully through their exam.
- Monitor their patient during MRI exams both in and out of the scan room; as well as discuss and perform duties during emergent situations
- Prepare MR contrast for the specific MR patient; understand and apply the contraindications, policies, procedures and dangers of gadolinium with each specific patient

Textbooks & Materials

Westbrook, C., & J. Talbot (2005). *MRI in Practice* (3rd). Massachusetts: Blackwell Publishing Ltd.

Jensen, S., & Peppers, M. (2006). *Pharmacology and Drug Administration for Imaging Technologists* (2nd). Missouri: Mosby.

Siemens MAGNETOM Symphony & Espree; Applications Guide

General Electric Medical Systems, Technical Publication: MR-Signa Excite 9.0, 10.0, 11.0 & HDX Operator Manual

**A number of lectures, labs, handouts etc will be given to support this course*

Learning activities

Readings

Power Point Lectures & Handouts

Lab simulations

Assessments

Evaluation:

*See MRI Program Student Handbook

Course Schedule

See Student Handbook and Course of Study Schedule; subject to change based on clinical conditions

Course Faculty

Amy Allen R.T. (R)(M)(MR)(ARRT)

Method of Instruction

The instructor will utilize lectures, demonstrations, videotapes, and instructional exercises to achieve the objectives of this course.

Method of Evaluation & Grading:

- Assessments: Test & Quiz = 40%
- Clinical demonstration/Application = 40%
- Attendance, Attitude, Participation and Preparation = 20%