

School of Diagnostic Imaging

A program of Rhode Island Hospital, a Lifespan partner

Magnetic Resonance Imaging

Course Name

Cross Sectional Anatomy & Pathology: In Magnetic Resonance Imaging Section I

This course has Clinical & Didactical components

Prerequisites

ARRT Registered Radiologic Technologist

Introduction to Magnetic Resonance Imaging

Didactic & Clinical coursework is given correlative

Human Anatomy & Physiology I & II: covered prior to Radiology

Course Credits

CSA-In MRI: Three and a half (3.5) accumulative semester credit hours

CSP-In MRI: A half (.5) accumulative semester credit hour

Course Description

This course is the study of cross sectional normal and abnormal anatomy, known as pathology. The course will demonstrate and educate the student on the correlation of the study of cross sectional anatomy and MRI. MRI allows a detailed view into the human body with multiple orthogonal planes (axial, sagittal, coronal and oblique planes). Looking at the human anatomy in multiple orthogonal planes with MRI allows an evaluation of soft tissue, vascular structures, bony structures, organs and muscles.

This course is split into two separate sections, allowing logical and transitional time for the student to evaluate the different anatomic regions in the human body. In Section I (October- November) the following anatomic regions are explored:

- Head and Soft Tissue Neck
- CNS: Central Nervous System (brain and spine)
- Thorax and Mediastinum (Thoracic Cavity, Heart and Breast)

This course will familiarize the student with the Common Pathologies found in Magnetic Resonance Imaging and their appearance with various imaging protocols. The content will be encompassing all of the common Anatomic Regions evaluated in the Anatomy component.

Objectives

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

Identify for Sectional Anatomy:

- Anatomical Structures in the axial, sagittal, coronal and oblique planes
- Gross anatomical relationships in the body
- Anterior-Posterior, Superior-Inferior, and Lateral-Medial relationships

- Appearance of different tissues on MR/How it differs due to anatomical structure differences
- Anatomical Structures on Magnetic Resonance Imaging
- Recognize Normal vs.- Abnormal anatomy on Magnetic Resonance Imaging
- Identify for Pathology:
- Pathologies that require further evaluation with Magnetic Resonance Imaging
- Understand with each pathology the different signal characteristics demonstrated with different pulse sequences
- Recognize anatomical structure changes do to the pathology
- Describe and understand basic pathologic conditions demonstrated on MR
- Nature and course
- Impact contrast media will have

Textbooks & Materials

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

Dean, D., PhD, & Herbener, T., MD. (2000). *Cross--Sectional Human Anatomy* (P. Kelley, Ed.). Maryland: Lippincott Williams & Wilkins.

Grey, M., & Ailinani, J., MD. (2003). *CT & MRI Pathology A Pocket Atlas*. New York: McGraw-Hill Professionals.

Kelley, L., & Petersen, C. (2007). *Sectional anatomy for Imaging Professionals* (2nd). Missouri: Mosby, Inc Elsevier.

Kelley, L., & Petersen, C. (2007). *Sectional Anatomy for Imaging Professionals Workbook* (2nd). Missouri: Mosby, Inc Elsevier.

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 & Workbook Exercises

Power Point Lectures & Handouts

Video Lectures & Resources

Assessments

Pathology Project

Evaluation

This course is graded on:

- Attendance, Attitude, Participation and Evaluation
- Assessments

Course Schedule

This course is split up into Two Semesters:

- The first Semester is Cross Sectional Anatomy Section I & II

See Student Handbook and Course of Study Schedule

- The second Semester is A Case Review Lecture/Lab on MRI: Cross Sectional Pathology with a Radiologist

The schedule will be posted by the MRI Program Director/Clinical Coordinator for the Pathology Lecture/Labs with the individual Radiologists

Course Faculty

MRI: Cross Sectional Anatomy instructor:

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

MRI: Cross Sectional Pathology instructor(s):

- Dr Jeffrey Rogg: CNS
- Dr Jeffrey Brody: MSK
- Dr Holly Gil: MSK
- Dr David Grand: Abdominal
- Dr Courtney Woodfield: Pelvic

**Other lectures can/may be added into lecture schedule by MRI Program Director/Clinical Coordinator*

Method of Instruction

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

Method of Evaluation & Grading:

The Cross Sectional Anatomy: In MRI I grade will have an accumulative grade based on the following percentages:

- Test/Exam(s) = 40%
- Clinical Applications = 40%
- Participation, Preparation, and Attitude = 20%

See Student Handbook for Course of Study and Schedule to visually see the course breakdown for Cross Sectional Anatomy & Pathology: In MRI I/II

The Cross Sectional Pathology grade will have an accumulative grade based on the following percentages:

- Pathology Project = 60%
- Participation, Preparation, Attendance, and Attitude = 40%

The MRI Director/Clinical Coordinator along with any instructors can alter the assessment schedule and grade percentage based on the needs of the MRI Program success