

**Rad 394-3**  
**CT and MRI Pathology**

**Instructor:** Jennifer Walker, MS Ed RT(R)(CT)(MR)

Office: ASA Rm 120A  
Hours: MW 9-10:30am  
Phone: (618) 453-8812  
Email: jennifer.walker@siu.edu

**Course Schedule:** **3:00-4:15 p.m. MW**

**Course Description:**

This course is designed as an overview of the pathologies commonly seen in magnetic resonance imaging and computed tomography. Along with distinguishing various types of pathologies as seen on MRI and CT scan, emphasis will be placed on a general understanding of the description, etiology, epidemiology, signs and symptoms, imaging characteristics, treatments and prognosis of those pathologies. Restricted to major.

Prerequisite: RAD 362 or consent of the instructor.

**Textbook:**

Grey, M.L., & Ailinani, J. M. (2012). *CT and MRI pathology: A pocket atlas, 2<sup>nd</sup> ed.* New York: McGraw-Hill Professional.

**Course Objectives:**

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

1. Differentiate between normal and pathologic structures
2. Identify various types of pathologies commonly seen in the central nervous system, head/neck, chest, abdomen, pelvis, musculoskeletal (joints), and vascular system.
3. Define the terminology commonly used in identifying these pathologies

**Topical Outline and Objectives:**

**I. General Principles**

1. Define terms relating to general principles of pathology.
2. Define terms related to cancer.
3. List and define (4) different tissue types.
4. List and define (4) types of cancer.
5. Differentiate between malignant vs. benign tumors.
6. List and explain (3) methods cancers metastasize.
7. Differentiate between the staging and grading of cancerous tumors.
8. List and describe the (3) common methods of treating cancer.
9. List and explain the (7) warning signs of cancer.

## **II. Central Nervous System**

1. Define terms related to the central nervous system.
2. List indications for performing a CT and/or MRI examination on the CNS.
3. Provide a description of the pathologies discussed in class.
4. Provide an etiology statement for the pathologies discussed in class.
5. Provide an epidemiology statement for the pathologies discussed in class.
6. List and describe common signs and symptoms associated with diseases and disorders of the central nervous system. (See HO & textbook)
7. Describe the CT and MRI imaging characteristics of the pathologies discussed in class.
8. List the method of treatment for the pathologies discussed in class.
9. List the prognosis of the pathologies discussed in class.
10. Discuss the CT myelogram procedure.

## **III. Head and Neck**

1. Define terms related to the head and neck.
2. Provide a description of the pathologies discussed in class.
3. Provide an etiology statement for the pathologies discussed in class.
4. Provide an epidemiology statement for the pathologies discussed in class.
5. List and describe common signs and symptoms associated with diseases and disorders discussed in class.
6. Describe the CT and MRI imaging characteristics of the pathologies discussed in class.
7. List the method of treatment for the pathologies discussed in class.
8. List the prognosis of the pathologies discussed in class.

## **IV. Thorax (Chest and Mediastinum)**

1. Define terms related to the cardiovascular and pulmonary systems.
2. List indications for performing a CT and/or MRI examination on chest and/or mediastinum.
3. Provide a description of the pathologies discussed in class.
4. Provide an etiology statement for the pathologies discussed in class.
5. Provide an epidemiology statement for the pathologies discussed in class.
6. List and describe common signs and symptoms associated with diseases and disorders discussed in class. (See HO & textbook)
7. Describe the CT and MRI imaging characteristics of the pathologies discussed in class.
8. List the method of treatment for the pathologies discussed in class.
9. List the prognosis of the pathologies discussed in class.

## **V. Abdomen**

1. Define terms related to the abdomen.
2. List indications for performing a CT and/or MRI examination of the abdomen and pelvis.
3. Provide a description of the pathologies discussed in class.
4. Provide an etiology statement for the pathologies discussed in class.

5. Provide an epidemiology statement for the pathologies discussed in class.
6. List and describe common signs and symptoms associated with diseases and disorders discussed in class. (See HO & textbook)
7. Describe the CT and MRI imaging characteristics of the pathologies discussed in class.
8. List the method of treatment for the pathologies discussed in class.
9. List the prognosis of the pathologies discussed in class.

## **VI. Pelvis**

1. Define terms related to the pelvis.
2. Provide a description of the pathologies discussed in class.
3. Provide an etiology statement for the pathologies discussed in class.
4. Provide an epidemiology statement for the pathologies discussed in class.
5. List and describe common signs and symptoms associated with diseases and disorders discussed in class. (See HO & textbook)
6. Describe the CT and MRI imaging characteristics of the pathologies discussed in class.
7. List the method of treatment for the pathologies discussed in class.
8. List the prognosis of the pathologies discussed in class.
9. List (8) areas in evaluating the abdomen/pelvis.

## **VII. Musculoskeletal (Joints)**

1. Define terms related to the musculoskeletal system.
2. List indications for performing a CT and/or MRI examination of the musculoskeletal system.
3. Provide a description of the pathologies discussed in class.
4. Provide an etiology statement for the pathologies discussed in class.
5. Provide an epidemiology statement for the pathologies discussed in class.
6. List and describe common signs and symptoms associated with diseases and disorders discussed in class. (See HO & textbook)
7. Describe the CT and MRI imaging characteristics of the pathologies discussed in class.
8. List the method of treatment for the pathologies discussed in class.
9. List the prognosis of the pathologies discussed in class.

## **VIII. Homework Assignments**

You will have 5 homework assignments worth 25 points each that will be due the class period before each test. This will be a nice review for you before the test. We will go over the answers before the test so you can use it to study.

## Grading Scale:

The grading will be on a straight scale. Course grades will be based on the presentation project, tests, and a final exam. There will be at least one bonus point on every test. The final exam is cumulative.

## Evaluation and Point Value for the Course:

	Maximum Points	Your Points
Homework Assignments (5)	125	_____
Tests (5)	250	_____
Final Exam	<u>100</u>	_____
<b>Total:</b>	<b>475</b>	_____

A = 93-100%	440-475 Points
B = 85-92%	402-440 Points
C = 77-84%	364-402 Points
D = 70-76%	331-364 Points
F = Below 70%	below 331 Points

All students are expected to attend class and come prepared to discuss the topic assigned for that day. Tests will cover the lecture, textbook, handouts, and images reviewed during class. No make-up tests will be given except for instructor approved absences. USE OF CELL PHONES DURING MY CLASS WILL NOT BE TOLERATED WHILE I AM LECTURING. IF I SEE YOU ON YOUR PHONE YOU WILL BE ASKED TO LEAVE AND WILL BE RESPONSIBLE FOR FINDING OUT WHAT YOU MISSED. I understand there are those emergency instances, if you need to answer your phone please leave the classroom as to not disrupt the class. I will give one break during the class, you can use your phones then.

### RAD 394- Tentative Schedule (Fall 2016)

WEEK	DATE (M&W)	<u>TOPIC/ASSIGNMENT</u>
<b>1</b>	Aug 22	Course Introduction
	Aug 24	General Principles and Central Nervous System Terms
<b>2</b>	Aug 29	Central Nervous System
	Aug 31	Central Nervous System
<b>3</b>	Sept 5	<b><i>No School-Labor Day</i></b>
	Sept 7	Central Nervous System/Review for Test 1/ <b>HOMEWORK 1 DUE</b>
<b>4</b>	Sept 12	<b>TEST #1 (Central Nervous System Part 1 Pathologies, General Principles, and CNS terms)</b>
	Sept 14	Central Nervous System
<b>5</b>	Sept 19	Central Nervous System
	Sept 21	Central Nervous System/Review for Test 2/ <b>HOMEWORK 2 DUE</b>
<b>6</b>	Sept 26	<b>TEST #2 (Central Nervous System Part 2 Pathologies)</b>
	Sept 28	Head and Neck and Terminology for Head/Neck and Thorax
<b>7</b>	Oct 3	Head and Neck
	Oct 5	Thorax
<b>8</b>	Oct 10	<b><i>No School-Fall Break</i></b>
	Oct 12	Thorax
<b>9</b>	Oct 17	Thorax/Review for Test 3/ <b>HOMEWORK 3 DUE</b>
	Oct 19	<b>Test #3 (Head/Neck and Thorax Pathologies and Terminology)</b>
<b>10</b>	Oct 24	Abdomen and Pelvis and Terminology
	Oct 26	Abdomen and Pelvis
<b>11</b>	Oct 31	Abdomen and Pelvis
	Nov 2	Abdomen and Pelvis
<b>12</b>	Nov 7	Abdomen and Pelvis/Review for Test 4/ <b>HOMEWORK 4 DUE</b>
	Nov 9	<b><i>No School-Veterans Day</i></b>
<b>13</b>	Nov 14	<b>Test #4 (Abdomen and Pelvis and Terminology)</b>
	Nov 16	Musculoskeletal and Terminology
<b>14</b>	Nov 21	Musculoskeletal
	Nov 23	<b><i>No School-Thanksgiving Break</i></b>
<b>15</b>	Nov 28	Musculoskeletal
	Nov 30	Musculoskeletal/Review for Test 5/ <b>HOMEWORK 5 DUE</b>
<b>16</b>	Dec 5	<b>Test #5 (Musculoskeletal and Terminology)</b>
	Dec 7	Complete Review for Finals
<b>17</b>	Dec 12-16	<b>Finals Week</b>

