COURSE DESCRIPTION:

This course will focus on the technology of magnetic resonance imaging. It will include its physical principles, instrumentation, imaging techniques, contrast agents, patient care/safety precautions, quality assurance, and imaging applications for the head, spine, chest, abdomen, pelvis, and musculoskeletal (joints). In addition, a review of future applications of magnetic resonance imaging will be discussed. Prerequisite: RAD 362 or consent of instructor.

TEXTBOOK:

Suggested:


Additional:


**Note:** Theses books are located in the Reserve Area of the Undergraduate Library.

**WEB Sites:**
http://www.users.on.net/~vision/
http://123mri-today.4t.com
http://www.mrisafety.com
http://www.mrtip.com
http://www.medicinenet.com

**COURSE OBJECTIVES:**

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

1. Explain the physical principles of MRI.
2. List and explain the hardware components (instrumentation) of the MRI system.
3. Describe the process of signal encoding and image formation.
4. List and explain the design and application of MR imaging pulse sequences.
5. List and explain imaging parameters used in MRI.
6. List and describe the use of contrast agents in MRI.
7. Discuss flow phenomena and imaging.
9. List and explain common artifacts associated with MRI.
10. List and explain tests used to evaluate quality assurance in MRI.
11. Describe basic imaging applications for the head, spine, chest, abdomen, pelvis and musculoskeletal (joints).
GRADING SCALE:
The grading will be on a straight scale. Course grades will be based on article reviews, quizzes, tests and a final exam.

EVALUATION AND POINT VALUE FOR THE COURSE:

<table>
<thead>
<tr>
<th></th>
<th>Maximum Points</th>
<th>Your Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Article Reviews (3)</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Quizzes (9)</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>Tests (2) 50 points each</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Final Exam</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>310</strong></td>
<td></td>
</tr>
</tbody>
</table>

A = 93 - 100% 288 - 310 points
B = 85 - 92% 263 - 289 points
C = 77 - 84% 239 - 262 points
D = 70 - 76% 217 - 238 points
F = Below 70% below 216 points

Article Review Topics
1. Hardware
2. Pulse Sequences
3. Contrast Agents
4. MRA
5. Pt. Care & Safety
6. Artifacts
7. Quality Assurance

All students are expected to attend class and come prepared to discuss the topic assigned for that day. Tests will cover text, lecture, reading assignments, and handouts. No make-up tests will be given except for instructor approved absences.