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Radiologic Sciences  
ASA Rm #134  
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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:


WEB Sites:
http://www.users.on.net/~vision/
http://123mri-today.4t.com
http://www.mrisafety.com
http://www.mr-tip.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).
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MAGNETIC RESONANCE (MR) SAFETY SCREENING PROTOCOL

WARNING:
An MR room has a very strong magnetic field that may be hazardous to individuals entering the MR environment if they have certain metallic, electronic, magnetic, or mechanical implants, devices, or objects. Therefore, all students are required to fill out this form before going to their clinical internship. Be advised, the MR system magnet is ALWAYS on.

Do not enter the MR environment or MR system room if you have any question or concern regarding an implant, device, or object.

Please indicate if you have any of the following:
- Aneurysm clip(s)
- Cardiac pacemaker
- Implanted cardioverter defibrillator (ICD)
- Electronic implant or device
- Magnetically-activated implant or device
- Neurostimulation system
- Spinal cord stimulator
- Cochlear implant or implanted hearing aid
- Insulin or infusion pump
- Implanted drug infusion device
- Any type of prosthesis or implant
- Artificial or prosthetic limb
- Any metallic fragment or foreign body
- Any external or internal metallic object
- Hearing aid
- Body piercing jewelry
- Other implant______________________
- Other device_______________________

For female students:
Are you pregnant?  No  Yes

Please indicate below if you have not specified any of the above:
- I have not received any implants, devices, or objects to the best of my knowledge

I attest that the above information is correct to the best of my knowledge. I have read and understand the entire contents of this form and have had the opportunity to ask questions regarding the information on this form.
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>
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</thead>
<tbody>
<tr>
<td>Article Reviews (3)</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Quizzes (9)</td>
<td>80</td>
<td></td>
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<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>
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</tbody>
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A = 93 - 100% 288 - 310 points  Article Review Topics
B = 85 - 92% 263 - 289 points  1. Hardware
C = 77 - 84% 239 - 262 points  2. Pulse Sequences
D = 70 - 76% 217 - 238 points  3. Contrast Agents
F = Below 70% below 216 points  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.

MOBILE TECHNOLOGY POLICY:

No mobile devices are allowed during class unless approved by the instructor.

STATEMENT ON ACADEMIC HONESTY/PLAGIARISM:

1. Plagiarizing or representing the work of another as one’s own work;
2. Preparing work for another that is to be used as that person’s own work;
3. Cheating by any method or means;
4. Knowingly or willfully falsifying or manufacturing scientific or educational data and representing the same to be the result of scientific or scholarly experient or research;
5. Knowingly furnishing false information to a University official relative to academic matters;
6. Soliciting, aiding, abetting, concealing, or attempting acts of academic dishonesty.
**ADA Accommodations:**
Under the Americans with Disabilities Act (ADA) and Section 504 of the Rehabilitation Act, educators and students have both rights and responsibilities. It should be the mutual goal of the student and the university to maximize the likelihood that students with disabilities succeed. Accommodation sometimes is necessary.
If you think you have a learning disability or know you have a disability but have not been tested, then please contact SIUC Disability Support Services at 453-5738 for an appointment for the evaluation of your learning disability.

Once you have been diagnosed as having a learning disability, we, the faculty of the Radiologic Sciences Program, strongly encourage you to tell us what type of learning disability and what type of accommodation is needed to help you succeed in our Program. If you do not notify us (prior to the end of the first week of the semester) that you have a disability, and you do not request accommodation during this course, then you accept full responsibility for your own success or failure in this course. Ultimately, YOU are responsible for your own success or failure and the resulting consequences.

**EMERGENCY PROCEDURE STATEMENT:**
Southern Illinois University Carbondale is committed to providing a safe and healthy environment for study and work. Because some health and safety circumstances are beyond our control, we ask that you become familiar with the SIUC Emergency Response Plan and Building Emergency Response Team (BERT) program. Emergency response information is available on posters in building on campus, available on BERT’s website at www.BERT.SIU.EDU. Department of safety’s website at www.DPS.SIU.EDU (disaster drop down) and in Emergency Response Guideline pamphlet. Know how to respond to each type of emergency.

**OFFICE HOURS:**
Monday & Wednesday 9:00 am – 12:00 (noon)
By appointment (if needed) please call or e-mail to schedule.

**SIU E-Mail Policy:**
Official SIU student E-mail Policy: http://policies.siu.edu/policies/email.htm

**SIU Student Conduct Code:**
SALUKI CARES:

The purpose of Saluki Cares is to develop, facilitate and coordinate a university-wide program of care and support for students in any type of distress—physical, emotional, financial, or personal. By working closely with faculty, staff, students and their families, SIU will continue to display a culture of care and demonstrate to our students and their families that they are an important part of the community. To make a referral to Sakuki Cares click, call or send:

http://salukicares.siu.edu/index.html; (618) 453-5714; or siucares@siu.edu