Fall 9-1-2006

RAD 122T.01: Radiographic Imaging II

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COURSE SYLLABUS

COURSE NUMBER AND TITLE: RAD 122T Radiographic Imaging II

DATE REVISED: Fall 2006

SEMESTER CREDITS: 3

CLASS HOURS: Friday 8:10 – 11:00

PREREQUISITES: SCN 119N Anatomy and Physiology, CRT 100 Computer Literacy, MAT 100 Algebra, RAD 110T, RAD 111 T, RAD 121 T, RAD 131 T

Faculty: Anne Delaney
E-Mail: Anne.Delaney@umontana.edu
Phone: 243-7809
Office: AD
Office Hours: By appointment

RELATIONSHIP TO PROGRAM: Students will learn the detailed imaging techniques of computerized imaging. Special imaging techniques such as MRI, CT Mammography will be included in this imaging course. Course will offer more detailed cross sectional anatomy.

COURSE DESCRIPTION: Content of the class is designed to establish students with a knowledge base in more sophisticated imaging techniques found in advance imaging procedures.

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

1. Differentiate between quality improvement/management, quality assurance and quality control.
2. List the benefits of a quality management program to the patient and to the department
3. List elements of a quality management program and discuss how each is related to the quality management program.
4. Define analog to digital conversion and digital signal processor.
5. Describe major functions of central processing unit (CPU).
6. Discuss the impact the internet has on the distribution of health information.
7. Define terminology associated with digital imaging systems.
8. Describe the various types of digital receptors.
9. Discuss the fundamentals of digital radiography, distinguishing between cassette-based systems and cassetteless systems.
10. Compare the image acquisition and extraction of cassette-based vs. cassetteless systems, including detector mechanism, initial image processing, histogram analysis, automatic rescaling and exposure index determination.
11. Describe the evaluative criteria for digital radiography detectors.
12. Describe the response of digital detectors to exposure variations.
13. Compare the advantages and limits of each system.
14. Compare dynamic range to latitude of a screen/film receptor system to that of a digital radiography system.
15. Describe the histogram and the process or histogram analysis as it relates to automatic rescaling and determining an exposure indicator.
16. Describe or identify the exposure indices used by each photostimulable phosphor (PSP)-based system.
17. Relate the receptor exposure indicator values to technical factors, system calibration, part/beam/plate alignment and patient exposure.
18. Describe image acquisition precautions necessary for CR imaging.
19. Describe the response of PSP systems to background and scatter radiation.
20. Utilize appropriate means of scatter control.
21. Avoid grid use errors associated with grid cut off and Moiré effect.
22. Identify common limitations and technical problems encountered when using PSP systems.
23. Employ appropriate beam/part/receptor alignment to avoid histogram analysis errors.
24. Describe the various image processing employed for digital images.
25. Associate impact of image processing parameters to the image appearance.
26. Associate effects of inappropriate processing on image clarity or conspicuity.
27. Describe the fundamental physical principles of exposure for digital detectors.
28. Apply the fundamental principles to digital detectors.

STUDENT PERFORMANCE ASSESSMENT METHODS AND GRADING PROCEDURES:

Grading scale:

- **100-90 A**
- **89-80 B**
- **79-70 C**
- **69-60 D**

Total grade will be determined by total points received on homework, tests, final paper and final exam.

- Quizzes: 20%
- Exams: 20%
- Presentation: 30%
- Final Exam: 30%
**Instructions for Semester Presentation:** The paper for this course will be a team presentation. Students will form groups of 2. Each group will be assigned a week to prepare and present the material from the assigned chapter in Bushong. Presentations must include outside research about topic and complete understanding of the chapter information. The presentation may be power point or any means that presenters determine will assist students in understanding the material. Teams and dates of presentation will be determined the first day of class.

The purpose of the presentation is to instruct fellow students, provide opportunity for discussion and to deepen the understanding of the subject material. Presenters will also gain confidence in presenting ideas and information. Teams are encouraged to contact me to meet prior to presenting the chapter. I will do my best to help each group have a clear understanding of the material and find other sources of research. You may assign questions or homework assignments prior to the week you are presenting if you like. Please supply me with 3 test questions that relate to the information that you present to the class.

Presentations will be graded for content, interest, attention to detail, and depth of understanding of the material. To alleviate the problem of one student doing all of the work, students will be given an opportunity to evaluate their team member and grades will also be based on team contribution.

**Note:** Students must pass this course with a “B” (80%) in order to continue with the Radiology Technology Program the next semester.

**ATTENDANCE POLICY:** All students are expected to come to class each day, on time and prepared by having read the required chapters. Class participation is expected and may impact grades that are borderline.

Eligible students with disabilities will receive appropriate accommodations in this course when requested in a timely way. Please speak with me after class or in my office. Please be prepared to provide a letter from your DSS Coordinator.

### RAD 122 T Radiographic Imaging

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<tr>
<th>DATE</th>
<th>READING ASSIGNMENT</th>
<th>WORK DUE</th>
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<td>September 1</td>
<td>Introduction, Bushong Chapter 19 &amp; 20</td>
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<td>September 8</td>
<td>Bushong Chapter 21</td>
<td>Video Magnetic Resonance imaging 618.92097 mag</td>
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<td>October 6</td>
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<td>December 1</td>
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Revised 2/13/20