CASPER COLLEGE COURSE SYLLABUS

RDKT 1640 01 – Radiographic Imaging II

Semester/Year: Spring 2017

Lecture Hours: 2  Lab Hours: 3  Credit Hours: 3

Class Time:  
9:00am-11:30am

Days:  
Monday/Tuesday

Room:  
HS 124/118

Instructor’s Name: Jennifer Harshman

Instructor's Contact Information:  
Office Phone: 268-2587
Email: jharshman@caspercollege.edu

Office Hours:  
Monday, Tuesday & Thursday: 8:00am-9:00am  
Friday: 8:00am-11:00 am

Course Description: Skills that facilitate the production of quality radiographs. Analysis of different modes of imaging and intensification systems. Emphasis is placed on primary and secondary exposure factors, recording media, and special imaging techniques. Computed radiography and digital imaging as well as PACS will be covered in detail.

Statement of Prerequisites: RDKT 1610 - Radiographic Imaging I

Goal: Students will gain an understanding of the various factors necessary in producing a high quality image. They will expand their knowledge of computed and digital imaging.

Outcomes: After completion of this course the student will be able to do the following:
1. Given a radiograph, analyze the radiographic image and critique it in regard to density, contrast, detail and distortion.
2. Identify the tools necessary, and be able to use them to monitor quality control. Understand the importance of maintaining an effective QC program.
3. Compare and contrast the various exposure systems, and be able to develop a technique chart.
4. Explain the purpose of special imaging systems and the main components of each.
5. Gain an understanding of how differing variables affect contrast, density, detail and distortion.
6. Explain the process of film development.
7. Conduct processing sensitometry and calculate necessary parameters to evaluate processor function and film characteristics.
8. Gain an understanding of intensifying screens and their importance in radiography.
9. Understand film/screen combinations and how they relate to various characteristics essential to image production.
10. Utilizing critical thinking and problem solving skills design a project involving an imaging topic.
11. Understand computerized imaging techniques to include digital and computed radiography.

Course Objectives:

Methodology: Discussion, group activities, lecture, research and laboratory activities.

Evaluation Criteria:
1. Graded percentage scale:  
   A = 92 - 100  
   B = 83 – 91  
   C = 75 – 82

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2. Weighted components:
   A. Tests 1,000 points
   B. Final Exam 200 points
   C. Research Project = 200 points
   D. *Worksheets/lab S/U
   E. Assignment/Quizzes Variable
   F. Digital Imaging Assignment 50 points

Workbook - A 10% deduction will occur for each U grade or each lab not completed. Labs can be made up with excused absences prior to the testing being given over that chapter. Labs cannot be made up after the chapter test is given.

Casper College may collect samples of student work demonstrating achievement of the above outcomes. Any personally identifying information will be removed from student work.

**Required Text, Readings, and Materials:**
4. Handouts provided by instructor.

**Class Policies: Last Date to Change to Audit Status or to Withdraw with a W Grade:** 5:pm April 13, 2017

1. Attendance and punctuality required. If an absence/tardy is unavoidable, you must email the instructor jharshman@caspercollege.edu See Program Policies
2. One test can be made up for this course. The test must be made up the same week it was originally given.
3. Failure to pass this course will result in dismissal from the program.
4. "Casper College encourages intellectual honesty." Proven dishonesty of anyone involved will result in failure of the course.
5. All assignments, worksheets, and lab analysis are due at the beginning of class. Assignments turned in one day late will be given half credit. No assignments will be accepted over one day past the due date. For lab manual exercises and worksheets see criteria located in the Grading Criteria Section.

**Student Rights and Responsibilities:** Please refer to the Casper College Student Conduct and Judicial Code for information concerning your rights and responsibilities as a Casper College Student.

**Chain of Command:** If you have any problems with this class, you should first contact the instructor to attempt to solve the problem. If you are not satisfied with the solution offered by the instructor, you should then take the matter through the appropriate chain of command starting with the Department Chair/Program Director, the Dean, and lastly the Vice President for Academic Affairs.

**Academic Code Violations:** (Cheating and Plagiarism) Casper College demands academic honesty. Academic code violations focus on academic dishonesty, which includes but is not limited to, cheating, plagiarism, buying, selling, or stealing exams; substituting for another person, collusion when collaboration is not approved; knowingly furnishing false information; and copyright violations. Violations of the college's academic code can result in a range of negative consequences from failing
a graded assignment to expulsion from the college. See the Student Code of Conduct for more information on this topic.

**Official Means of Communication:** Casper College faculty and staff will employ the student's assigned Casper College email account as a primary method of communication. Students are responsible to check their account regularly. This is also, where you will find course evaluation links during course evaluation periods.

**ADA Accommodations Policy:** If you need academic accommodations because of a disability, please inform me as soon as possible. See me privately after class, or during my office hours. To request academic accommodations, students must first consult with the college’s Disability Services Counselor located in the Gateway Building, Room 344, (307) 268-2557, bheuer@caspercollege.edu. The Disability Services Counselor is responsible for reviewing documentation provided by students requesting accommodations, determining eligibility for accommodations, and helping students request and use appropriate accommodations.

**Harassment and discrimination:** Casper College seeks to provide an environment that is free of bias, discrimination and harassment. If you have been the victim of sexual harassment/gender or sex discrimination/sexual misconduct/assault, we encourage you to report this. If you report this to an employee, she or he must notify our college's Title IX Coordinator, Linda Toohey, Associate Vice President for Student Services, 125 College Drive, GW 412, Casper, WY 82601; (307) 268-2667; linda.toohey@caspercollege.edu about the basic facts of the incident. Employee concerns should be directed to the Human Resources Director. For more information about your options, please go to: caspercollege.edu/nondiscrimination

**Calendar or schedule indicating course content:**

**RDTK 1640 Imaging II SCHEDULE WITH COURSE CONTENT:** Subject to change

<table>
<thead>
<tr>
<th>Date</th>
<th>Chapter</th>
<th>Lab / WS</th>
<th>Modules</th>
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<tbody>
<tr>
<td>January 17</td>
<td>Course Introduction Library 10:00</td>
<td>Semester Project Library Room 215A.</td>
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<tr>
<td>23</td>
<td><strong>Digital Imaging Assignment</strong> due 2/27 <strong>Project topic</strong> due 4/11</td>
<td><strong>Handout for Asgn:</strong> <strong>Best Practices in Digital Imaging</strong></td>
<td>M1: X-ray Beam Review basic concepts in imaging.</td>
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<tr>
<td>24</td>
<td><strong>Chapter 1&amp;2</strong>: Introduction to Digital Radiography and PACS: Carter Text</td>
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<td>30</td>
<td><strong>Chapter 3 &amp;4</strong> Digital image processing and Manipulation</td>
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<td>31</td>
<td><strong>Test: Chapters 1,2,3</strong></td>
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<td>Feb. 6</td>
<td><strong>Chapter 4</strong> Photostimulable Phosphor Image Capture</td>
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<td>Feb. 7</td>
<td><strong>Chapter 5, 6</strong> TFT Flat Panel Array Image Acquisition;</td>
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<td>13</td>
<td>Test: Chapter 4,5,6</td>
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<td>14</td>
<td>Ch. 7,8,9,10 PACS</td>
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<td>20</td>
<td>President’s Day no school</td>
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<td>21</td>
<td>Test 7,8,9,10</td>
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<td>27</td>
<td>Digital Imaging Presentations</td>
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<td>28</td>
<td>Ch. 11-12 Quality in PACS and Digital Quality Acceptance</td>
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<td>March 6</td>
<td>Ch. 26 Density</td>
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<td>7</td>
<td>Density Continued</td>
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<td>March 13-17</td>
<td>SPRING BREAK</td>
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<td>20</td>
<td>Ch. 27 Contrast</td>
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<td>21</td>
<td>Ch. 27 Contrast Continued</td>
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<td>27</td>
<td>Test - Ch. 26, 27 Module</td>
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<td>28</td>
<td>Ch. 28 – Recorded Detail, 29 Distortion</td>
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<td>April 3</td>
<td>Ch. 29 – Distortion</td>
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<td>4</td>
<td>Test - Ch. 28, 29 CR/DR Quality Management</td>
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<td>10</td>
<td>Ch. 31 – Quality Management</td>
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<td>11</td>
<td>Project Display 9:00-11:30</td>
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<td>17</td>
<td>Ch. 31 – cont’d. Developing Exposure Systems</td>
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<td>18</td>
<td>Test – Ch. 31, 32 Ch. 33 – AEC</td>
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<td>24</td>
<td>Ch. 33 – AEC contd. Ch. 34 – Exp. Conversions Ch. 36 – Fluoroscopy</td>
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<tr>
<td>25</td>
<td>Test - Ch. 33, 34,36 Ch. 35–Mobile Radiography Ch. 37 – Tomography</td>
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<td>May 1</td>
<td>Test - Ch. 35,37</td>
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<td>May 2</td>
<td>Final – Comprehensive Exam</td>
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Digital Imaging Assignment

Due: Feb 27

Students will be broken into groups and assigned important areas relating to use of digital imaging in the radiology department.

Scenario:

You are department administers and you are tasked with reviewing the ASRT Best Practices in Digital Radiography study. Your CEO has asked you to prepare a presentation to your staff outlining these best practices.

You will need to convince your technologists that the practices outlined in the study must be implemented in your department to provide low dose, high quality images for your patients. Use the ASRT paper as a guide but draw information from other areas as well to give a well-rounded convincing presentation.

Your task is to prepare a 20 minute professional Power-Point presentation on the following topics and how they relate to best practices in digital imaging:

**Group I**  Image Acquisition and Dose Reduction: Pg. 1-11

**Group II** Considerations for Pediatric Patients and Image Critique: Pg. 11-15

**Group III**  Following Exam Completion, post processing and Quality Control: Pg. 15-21
The student should now be able to synthesize many of the concepts covered in Radiographic Imaging I and II reviewed over the last two semesters into a critical evaluation of a topic they select and support with bibliographic research, critical thinking, problem solving, experimentation, and analysis of results. The experimentation and analysis will relate to how this information can be incorporated into the clinical setting. The assignment can incorporate any subject that the student has covered or will be covering in Imaging I and Imaging II.

The student will be required to:

- Choose a subject area and develop a research question on a specific topic of interest to them.
- Conduct a literature review or search of the subject. Paper must contain bibliography in APA format, and work cited. Accepted resources: class textbook, scholarly journals, resources found through the library search engine. (No WIKI or word-of-mouth)
- Formulate a hypothesis from the literature review
- Design an experiment that will prove or disprove the hypothesis
- Present the findings of the research and experiment through a project design.
- Each student will discuss and demonstrate their project with the class.

In constructing your project:

- Specify the goal of your project and create it with that in mind.
- Pay close attention to clarity of ideas and organization of thoughts.
- Be comprehensive and be sure your ideas are completely developed and concise.
- Integrate your research material and your own personal discussion or discoveries.
- Present your own perspective and critical comments, they are integral to your project.
- Pay attention to your writing as well as the organization of the project. Watch spelling, grammar, and sentence structure.

The completed project presentation should include the following:

A professional display that includes a 3-5 page discussion of the research and experiment results. The following must be included:

- Title page
- Introduction, with statement describing the relevance and importance of the topic in the clinical setting.
- The research itself. This area must include your cited findings from the literature review, explanation of experiments if performed, your perspective on the material.
- The design of your experiment and how it was conducted
- The results of your research or experiment.
- Conclusion.
- APA Bibliography (be sure to cite your references throughout the paper or project)
- Displays must include relevant pictures or diagrams that outline your experiment and results. Displays will be graded on their professional appearance and design.

The student will develop and complete a 5-6 minute presentation of their experiment, findings and research results. Papers will be collected at time of presentation.

Projects will be displayed for competition at the Wyoming society of Radiologic technologist Seminar in September
RDTK 1640
Radiographic Imaging II
Semester Project- 200 Points

Student Name:         Date:

Rubric for Assessing Research Project
Followed by criteria for project

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<thead>
<tr>
<th>Criteria for Credit</th>
<th>Points Possible</th>
<th>Points Earned</th>
<th>Instructor Comments</th>
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<tbody>
<tr>
<td>Mechanics Of Research Review, grammar, spelling</td>
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<tr>
<td>Organization and Purpose of Research Design</td>
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<td>Research Content and APA Bibliography of Accepted Resources, sited</td>
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<td>Experiment Design and Review of Results</td>
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<td>Professional Display</td>
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<tr>
<td>TOTAL POINTS</td>
<td>200 Possible</td>
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