CASPER COLLEGE COURSE SYLLABUS
Mammography Fundamentals RDTK 2550 H1

Semester/Year: SP 2016
Lecture Hours: 3  Lab Hours: 0  Credit Hours: 3
Class Time: 8 am  Feb 6, Mar 5, Apr 16  Days: Saturday  Room: HS 111

Instructor’s Name: Pamela Keyser
Instructor's Contact Information:  Pamela.keyser@caspercollege.edu
Office Hours: To be arranged

Course Description: This course covers the anatomy, pathology, and instrumentation involved in mammographic imaging. Topics covered will include: Patient Care, preparation and education; Instrumentation and Quality Assurance; Anatomy, Physiology and Pathology; Mammographic Technique and Image Evaluation; and Breast Imaging Procedures. Procedures will be covered in depth to include exam protocol, dose considerations, special patient care issues, interventional/special examinations, and diagnostic imaging. Special exams will include Needle Localization, Breast MRI, Breast Ultrasound: imaging, biopsy or FNA, Stereotactic Procedure, Breast Implant Imaging, Ductography, and Diagnostic Work-Up. Content is designed to impart an understanding of the physical principles, technique, quality control and image evaluation involved in mammography. Analog and digital acquisition and documentation will be discussed. Image processing and display will be examined from data acquisition through post processing and archiving.

Statement of Prerequisites: ARRT registered & licensed, acceptance into the program

Goal: Students will gain a working knowledge of routine and diagnostic mammography imaging, anatomy, pathology, instrumentation, technique, protocols, and quality assurance. An emphasis on the importance of patient care, education and communication will be discussed. Students will utilize this basis for exams in the clinical setting.

Outcomes:
1. Demonstrate effective oral and written communication
2. Solve problems using critical thinking and creativity
3. Use appropriate technology and information to conduct research

Course Objectives: During the course of this class the student will learn:
   A. Instrumentation and Quality Assurance (Outcome 3)
      1. Design characteristics of Mammography Units – Kvp, Tube, Compression, Automatic Exposure Controls (AEC), Grids, System Geometry, Density Settings
      2. Acquisition, Display, Informatics – Analog, Digital, Computer Aided Detection (CAD)
      3. Quality Assurance and Evaluation – Accreditation, Certification, Mammography Quality Standards Act (MQSA) Regulations, Quality Control, Medical Physicist Tests
   B. Anatomy, Physiology, and Pathology (Outcome 1)
      1. Localization Terminology – Clock positions, Quadrants
      2. External Anatomy – Breast margins, nipple, areola, Montgomery’s Glands, Morgagni’s Tubercles, skin, Inframammary fold, Axillary tail, Margin of Pectoralis Major
3. Internal Anatomy – Fascia, retromammary space, fibrous, glandular, adipose, Cooper’s ligaments, pectoral muscle, vascular, lymphatic
4. Histology – Terminal ductal Lobular Unit (TDLU), cellular components
5. Pathology – BI-RADS, benign conditions and their mammographic appearance, High risk conditions, malignant conditions

C. Mammographic Technique and Image Evaluation (Outcome 2)
   1. Technical factors - kVp, mas, Density Setting, Automatic Exposure Control (aec), Manual Technique, compression thickness, Target/Filter Combination, Focal Spot, Grids, Magnification Techniques
   2. Evaluation of image Quality – Positioning, Compression, exposure, contrast, Sharpness, noise, Artifacts, Collimation, Labeling, motion

Methodology: Lecture and discussion. This hybrid class commences weekly online, plus there are 3 Saturday lecture classes a semester. Your feedback is valuable as the instructor uses course evaluations in determining course methodology.

Evaluation Criteria: Exams and quizzes. Participation in class is required – there will be a 5% deduction for each Saturday missed.

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


Class Policies: Last Date to Change to Audit Status or to Withdraw with a W Grade: April 14, 2016
Attendance in class and online is expected. Missed assignments must be made up within the week they were due, with a 10% deduction for each day they are late. Assignments will not be accepted over a week late. The final exam is due by the due date – no exceptions.

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 Head/Program Director, the Dean, and lastly the Interim Vice President for Academic Affairs.

Academic Dishonesty/On Line Education Integrity: Casper College demands intellectual honesty in all courses. Only admitted and registered Casper College students who have been assigned logins and passwords are allowed access to online courses. These secure logins verify the identity of the student. Proven plagiarism or any form of academic dishonesty associated with the academic process may result in course failure, dismissal from a program, or expulsion from Casper College, or other consequences. See the Casper College 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.

Mammography Fundamentals class schedule
Please Note: this schedule is tentative, and may be subject to change.

<table>
<thead>
<tr>
<th>Unit</th>
<th>Week</th>
<th>Module – Online in Moodle</th>
<th>Mammographic Imaging Book Chapters</th>
</tr>
</thead>
</table>
| 1    | 1    | Fundamentals –self quiz 1  January 24, 2016: | 1 - History of Mammography  
2 - Background Information: Need for screening  
4 - Mammo Tech’s Expanding Role |
| 2    | 2    | Equipment and Instrumentation –self quiz 2  January 31, 2016: | 11 –Analog Machines, processors, and Films |
| 3    | 3    | Producing Quality Images –self quiz 3  February 7, 2016: | 12 –Darkroom and processing Considerations,  
13 – Quality Assurance in Film/Screen Mammo  
UNIT 1 TEST |
| 4    | 4    | UNIT 1 TEST February 14, 2016: | |
| 2    | 5    | 4 Breast Anatomy– self quiz 4  February 21, 2016: | 5 – Breast Anatomy and Physiology  
6 –Mammographic Pathology  
7 –Mammographic Positioning  
8 –The Nonconforming Patient  
9 –Thinking in 3 Dimensions  
10 –Practical Applications and Problem Solving |
<p>| 6    | 6    | 5 Pathology– self quiz 5  February 28, 2016: | 3 –Patient Considerations |
| 7    | 7    | 7 Patient Care– self quiz 7  March 6, 2016: | UNIT 2 TEST |
| 8    | 8    | UNIT 2 TEST  March 13, 2016: | UNIT 2 TEST |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>9</td>
<td>6 Quality Control and Regulations – self quiz 6 March 20, 2016:</td>
<td>17 – Quality Assurance for Full Field Digital Mammography</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>10 Digital Mammography – self quiz 10 March 27, 2016:</td>
<td>14 – End of the Road for Analog Mammography?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>UNIT 3 TEST April 3, 2016:</td>
<td>15 – Creating the Digital Image</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>16 – Digital Integration and Workflow in Mammography</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>18 – Nonimaging Components of the FFDM Network</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>UNIT 3 TEST</td>
</tr>
<tr>
<td>4</td>
<td>12</td>
<td>8 Procedures and Techniques – self quiz 8 April 10, 2016:</td>
<td>19 – Diagnostic Procedures</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>9 Breast Ultrasound – self quiz 9 April 17, 2016:</td>
<td>20 – Minimally Invasive Needle Breast Biopsy</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>UNIT 4 TEST April 24, 2016:</td>
<td>21 – Breast MR</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>22 – Breast Cancer Diagnostic Technologies</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>23 – Breast Cancer Treatments</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>UNIT 4 TEST</td>
</tr>
<tr>
<td>5</td>
<td>15</td>
<td>Registry Review May 1, 2016:</td>
<td>Mammography &amp; Breast Imaging Prep Edition 1 Olive Peart</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>Mock Registry May 8, 2016:</td>
<td></td>
</tr>
</tbody>
</table>