RDT 154 D01  
2017 Spring  
Instructor: Karie Solembrino, M.S., R.T. (R)(CT)(ARRT)  
Department Head and Professor of Radiologic Technology

Class Times:  
Lecture: Wednesdays, 9 – 11 a.m.  
Office Hours:  
- Mondays  2:15 pm – 5:15 pm  
- Wednesdays  2:45 pm – 4:15 pm  
- Thursdays  8:45 am – 9:15 am

Office: AHB 307H  
Phone: 410-572-8741  
Email: ksolembrino@worwic.edu  
Access to course instructor via Blackboard  
Associate: 410-572-8740

Text  


Course Description  
This course is a continuation of RDT 104. Image acquisition and processing techniques for conventional, computed, and digital radiography methods are discussed. Image analysis, exposure controls, and exposure calculations are emphasized in this course. Two lecture hours per week.  
Prerequisite: RDT 104 with a grade of “C” or better or permission of the department head.  
Corequisites: RDT 205 or permission of the department head. Course fee: $40. Usually offered in the spring.
<table>
<thead>
<tr>
<th>Course Objectives</th>
<th>Assessment Goals</th>
<th>Assessment Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Describe the factors affecting IR exposure, contrast resolution, and spatial resolution, and distortion on the radiographic image and explain how the manipulation of these factors affect image quality and patient dose. (GEO 1, 2, 3, 4, 7)</td>
<td>1. Differentiate between photographic and geometric properties. 2. Explain the relationship image quality factors have upon IR exposure. 3. Explain the relationship image quality factors have upon contrast resolution. 4. Explain the relationship image quality factors have upon spatial resolution. 5. Explain the relationship image quality factors have upon distortion. 6. Calculate modifications to radiographic IR exposure. 7. Explain how beam limiting devices are employed to improve image quality. 8. Evaluate exposure factors that influence image quality and patient dose.</td>
<td>Examinations Quizzes Exposure Experiments Exposure Questions/Terms</td>
</tr>
<tr>
<td>2. Identify the parts of the x-ray tube on a diagram. 2. Explain the function of each component of the x-ray tube. 3. Describe the characteristics of x-rays. 4. Differentiate between ionizing and nonionizing radiation. 5. Describe the process of x-ray production in the tube. 6. Explain the two most common interactions of x-ray radiation with matter in diagnostic radiography.</td>
<td></td>
<td>Examinations Quizzes Exposure Questions/Terms</td>
</tr>
<tr>
<td>3. Describe the construction of film and the function of each component. 2. Describe the construction of the intensifying screen and the function of each component. 3. Describe the latent image formation for conventional radiography, CR and DR image receptors. 4. Compare direct exposure with the use of intensifying screens in terms of patient dose, image quality, and recorded detail.</td>
<td></td>
<td>Examinations Quizzes Exposure Experiments Information Literacy Paper Exposure Questions/Terms</td>
</tr>
<tr>
<td>4. Identify the equipment required to construct technique charts. 2. Describe how basic technique charts are extrapolated according to comparative anatomy. 3. Explain how basic technique charts are modified according to trauma and mobile radiography considerations. 4. Describe how radiographic exposure is modified according to the presence of additive or destructive pathology. 5. Develop a technique chart according to personal body habitus.</td>
<td></td>
<td>Examinations Quizzes Information Literacy Paper Exposure Questions/Terms</td>
</tr>
<tr>
<td>Course Objectives</td>
<td>Assessment Goals</td>
<td>Assessment Strategies</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>5. Explain sensitometry in terms of equipment used, components of the sensitometric curve, and the implications upon image quality. (GEO 1, 2, 3, 7)</td>
<td>1. Identify the equipment required for sensitometry. 2. Identify the components of the sensitometric curve. 3. Evaluate the sensitometric curve according to film speed, radiographic contrast, and exposure latitude. 4. Define terminology associated with sensitometry. 5. Differentiate between the dynamic range of screen film radiographs and digitally acquired images.</td>
<td>Examinations Quizzes Exposure Questions/Terms</td>
</tr>
<tr>
<td>6. Explain the AEC in terms of equipment operation, patient dose considerations, parameters modified by the radiologic technologist, and potential errors resulting in degradation of image quality. (GEO 1, 2, 3, 7)</td>
<td>1. Define AEC. 2. Describe the two types of AEC devices. 3. Describe the exposure parameters manipulated by the radiographer when using the AEC. 4. Differentiate between manual technique selection and an AEC technique. 5. Explain potential errors which may arise when using the AEC. 6. Describe the use of the AEC in terms of image density, image contrast, and patient dose. 7. Identify exams or situations when using the AEC is contraindicated.</td>
<td>Examinations Quizzes Exposure Experiments Information Literacy Paper Exposure Questions/Terms</td>
</tr>
<tr>
<td>7. Describe the basic components of the computer, operating systems used, computer language, and computer science terminology and explain the uses of PACS and the computer workstation. (GEO 1, 2, 3, 7)</td>
<td>1. Define terminology associated with the computer. 2. Differentiate between input and output devices. 3. Describe two basic types of networks and their application in the clinical environment. 4. Differentiate between hardware and software computer components. 5. Define PACS. 6. Identify the contents located on the patient worklist in PACS. 7. Describe post-processing image manipulation techniques available in PACS. 8. Identify the image acquisition devices responsible for sending images in PACS. 9. Describe the types of display workstations available with PACS and the function of each. 10. Identify the main components of PACS. 11. Explain PACS image storage methods.</td>
<td>Examinations Quizzes</td>
</tr>
</tbody>
</table>

**Course Content**

1. Influence image quality factors have upon IR exposure, contrast resolution, spatial resolution, and distortion.
4. X-ray tube components and function.
5. Interactions creating the x-ray photon.
7. Exposure calculations.
8. Development of exposure technique charts according to body habitus, pathology, trauma, mobile radiography, patient age, and contrast media administration.
9. AEC equipment, operation, implications upon image quality, patient dose considerations.
10. Sensitometry equipment and evaluation of the sensitometric curve.
11. Types of image acquisition devices.
12. Image processing.
13. Characteristics of image acquisition devices
14. PACS image acquisition, display, and archival functions.
15. Components and function of the computer.

The RDT course content reflects the American Society of Radiologic Technologists (ASRT) radiography curriculum, the American Registry of Radiologic Technologists (ARRT) licensure examination requirements, and the master plan of education enforced by the Joint Review Committee on Education in Radiologic Sciences (JRCERT).

Academic Honesty Policy

Students found exhibiting any of the following types of behavior during or in the preparation/performance of any quiz, project, report, test, or final exam will receive a zero “0” for the assignment, and the student conduct violation will be referred to the Student-Faculty Disciplinary Committee. Cheating will not be tolerated in the Radiologic Technology program. Students found cheating will be DISMISSED from the Radiologic Technology program.

A. Cheating is defined as the act of obtaining information or data improperly or by dishonest or deceitful means; and

B. Plagiarism is defined as the copying or imitating the language, ideas, or thoughts of another author and presenting them as one’s original work, the copying of a theme or section from a book or magazine without giving credit in a footnote or copying from the manuscript of another student.

Sharing information present on a quiz or test are examples of academic dishonesty and will result in a grade of “F” for the course and immediate dismissal from the Radiologic Technology program.

Class Guidelines/Expectations

1. Be punctual and arrive to class before the scheduled meeting prepared to learn.
2. Attend all class sessions in their entirety.
3. Submit only completed work. Partially completed assignments will earn a grade of 0. No late assignments will be accepted.
4. Read assigned chapters in the textbook(s) before class meetings.
5. Ask questions to the instructor and attend scheduled tutoring sessions for clarification on course content areas.
6. Using cellphones in class is disrespectful to the course instructor and is a distraction to students. Students are not permitted to use cellphones in class. Cellphones should be placed in vibrate mode and put away during class lecture.
7. Leaving class during lecture results in students missing important information and earning low scores on graded assessments. Students are expected to remain in class for the entire scheduled session.
The semester is broken down into weeks. Each week begins on Monday and ends on Sunday. All course assignments submitted through Blackboard are due at 11:00 pm on Sunday nights. Students are required to thoroughly complete all assignments/activities. No incomplete or half-attempted work will be accepted. An assignment schedule will be posted in Blackboard by the first day of class.

Emergency Information Statement
In the event of severe inclement weather or other emergency, information about the closing of the college will be communicated via e2Campus and the College's website. Faculty will communicate with students about their courses and course requirements, such as assignments, quiz and exam dates, and class and grading policies, via Blackboard. Students will be responsible for completing all assignments in accordance with class policies.

RDT students are responsible for all assignments and due dates outlined in the course syllabus regardless if the college has been closed due to an emergency.

Services for Students with Disabilities
Wor-Wic provides reasonable accommodations for students with disabilities, in compliance with the Americans with Disabilities Act of 1990 and Section 504 of the Rehabilitation Act of 1973. If you are in need of accommodations, please contact the counseling office at (410) 334-2899. For more information, see Wor-Wic's Services for Students with Disabilities web page.

Sexual Violence Disclosures
Wor-Wic Community College seeks a campus free of sexual violence which includes sexual harassment, domestic violence, dating violence, stalking, and/or any form of sex or gender discrimination. Please be aware that if a student discloses a personal experience verbally or in writing as a Wor-Wic student to a faculty or staff member, the employee cannot maintain confidentiality and has the mandatory responsibility to notify one of the college’s Title IX coordinators. However, if you’d like to make a confidential disclosure of any such violence, you can contact Wor-Wic’s director of counseling (X-2900) or you can contact the Life Crisis Center at 410-749-HELP or 2-1-1.

Information on rights of victims of sexual violence and related resources is available in the college catalog and at the public safety page of Wor-Wic’s website: http://www.worwic.edu/Administration/PublicSafety.aspx.

Attendance
Students are expected to attend all class sessions. If a student misses a class session, it is the student’s responsibility to acquire the information reviewed and ask questions to the course instructor during tutoring. Students absent from class will not be permitted to make-up missed quizzes or graded assessments administered during the scheduled class session.
**Blackboard**

Blackboard is used as a supplementary site for all RDT courses. To access course content in Blackboard you need to have access to a computer with an Internet connection, (other requirements may apply). Computers that meet these requirements are available on campus in BH 217, HH 100, GH 204, FOH 305, and AHB 108.

Please follow these directions to access course syllabi and any other materials posted for this course:

**Login Information:**

1. From Wor-Wic home page, point to “Blackboard” at the bottom left of the page and click.
2. Enter your Wor-Wic user ID and password. Don’t know your user ID or password? Contact Student Services

**Blackboard Components**

The following are tools the course instructor will be using in Blackboard:

**Syllabus**
The posted course syllabus documents the didactic schedule, assignments, due dates, and information pertinent to the course.

**Messages**
- Email from the course instructor will be located under the messages section of Blackboard.
- Students may email the instructor and other students in the class through messages.
- Email is the primary method of communication between students and the course instructor outside of the classroom.
- Students should visit the messages section daily in the course for new information sent by the instructor.

**Course Content**
The following items will be located within the course content of Blackboard:
(1) PowerPoint Presentations,
(2) Study Guides and Reviews, and
(3) Assignment information. Content folders will be labeled by subject to organize course material.

**Grades**
Students can view grades in Blackboard. All graded assessments will be recorded into Blackboard.
Blackboard Integrity

All students logging into Blackboard affirm that they understand and agree to follow Wor-Wic Community College policies regarding academic integrity and the use of College resources as described in the college catalog. Wor-Wic Community College considers the following as violations of the computer usage policy:

1. Using the campus computing network and facilities to violate the privacy of other individuals.
2. Sharing of account passwords with friends, family members or any unauthorized individuals

Violators are subject to college disciplinary procedures.

ASSIGNMENTS/CLASSWORK (15% of the weighted grade)

Classwork
(GEO 1, 3, 4, 6, 9) (CO 1-7)

Students will complete classwork during scheduled course sessions. Participation is required to earn credit for classwork. **Failure to attend class or arriving late/leaving early will result in students earning a grade of 0 for classwork participation.** Classwork is part of the assignment weighted grade in the RDT 154 course evaluation.

Exposure Experiments
(GEO 1, 4) (CO 1, 3, 6)

Students will complete exposure experiments to reiterate course concepts. Students will submit a completed assignment for each experiment module electronically or in hard copy form. **All experiments must be completed in their entirety for credit. Late assignments will earn a grade of 0.**

Exposure Assignments
(GEO 1, 3, 4, 6, 9) (CO 1-7)

Students will answer questions, define terms, complete study guides, and perform math problems reviewing lecture content for RDT 104 and RDT 154. Exposure Assignments will be distributed in class and/or posted into Blackboard. Assignments will be submitted electronically or in hard copy form. Students should use the assignment link for all assignments requiring an electronic submission. **All assignments must be completed in their entirety for credit. Assignments will not be accepted late. Late assignments will earn a grade of 0.**

An RDT 154 Assignment Schedule will be posted in Blackboard by the first week of class.
Electronic/Information Literacy Writing Assignment  
(GEO 1, 3, 4, 5) (CO 1, 3)

The student will review the electronic journal article titled “Image Acquisition and Quality in Digital Radiography” located on the ASRT website for the Electronic information literacy RDT 154 writing assignment. The paper should include the following components:

1. A fully developed introduction and conclusion. The introduction should explain the purpose of the paper and introduce the subtopics of the paper including 5 complete sentences. The conclusion should summarize the information presented in the paper including 5 complete sentences.
2. The paper should be 3 full pages, double-spaced, 12-point Times New Roman font, and a minimum of 500 words of content.
3. Headings should be included introducing each new topic to the reader.
4. APA format must be followed throughout the paper including a reference page and in-text citations adhering to APA guidelines.
5. Summarize the ASRT journal article according to subtopics selected by the course instructor.
6. Explain three specific lessons learned regarding exposure technique selection documented within the selected article.

Students will research the article “Image Acquisition and Quality in Digital Radiography” within the ASRT website. A paper template will be provided in Blackboard and should be followed when completing this assignment. Students will document the electronic resource using APA format and include a minimum of five in-text citations. Paper length has a 500 word minimum and a 1000 word maximum. The paper should include a cover page and a references page (this is not part of the 500 word requirement). The paper should be double-spaced using Times New Roman 12 point font. Students should refer to the writing assignment rubric when developing the paper. The rubric will be posted in Blackboard.

The Electronic/Information Literacy writing assignment is **Due Sunday March 26, 2017 by 11:00 pm EST** as an attachment in messages of Blackboard. NO LATE PAPERS WILL BE ACCEPTED. FAILURE TO SUBMIT THE PAPER BY Sunday March 26, 2017 at 11:00 pm EST WILL EARN A 0.

The Electronic/Information Literacy assignment is a college requirement. Students who fail to submit the paper or do not submit the paper by the due date will receive a 0 for the assignment.

**Reading and Writing Center (MTC204):** You may seek writing assistance from a qualified instructor in the Reading/Writing Center. These “drop in” conferences are available on a “first-come, first-served” basis during the regular hours of the Reading and writing Center, so do not wait until the last minute to seek writing assistance. Come prepared with your original assignment and a printed copy of your written work. Center hours are: M&Th. 8:30-6:30; T&W: 8:30-8:00; F: 10:00-1:30; Sat 10:00-1:00. Do not wait until the day before an assignment is due to seek assistance.

Students are required to submit the electronic information literacy assignment in a digital format through blackboard. The paper must be submitted in a Microsoft Word compatible document. Papers will not be accepted in hard copy form.
Quizzes
(GEO 1, 3, 4, 6, 9) (CO 1-7)

Quizzes will be administered throughout the semester to measure the student’s comprehensive knowledge of course concepts. Students will complete quizzes during scheduled class sessions. Students should anticipate quizzes every class session. **NO MAKE-UP QUIZZES WILL BE ADMINISTERED. A GRADE OF 0 IS EARNED FOR STUDENTS ABSENT DURING A QUIZ.**

Tests
(GEO 1, 3, 4, 6, 9) (CO 1-7)

Chapter tests will be administered throughout the semester. Three tests will be administered in RDT 154. Study guides will be provided for all chapter tests. Chapter tests may contain content from RDT 104 and RDT 154. **NO MAKE-UP TESTS WILL BE ADMINISTERED. A GRADE OF 0 WILL BE EARNED IF A TEST IS MISSED DUE TO ABSENCE.**

Exposure Technique Assessment Test
(GEO 1, 4, 6) (CO 1, 4, 6)

Students will complete an exposure technique assessment demonstrating knowledge of technique selection for routine radiographic projections and exams. The assessment will be scheduled during class time. Students are expected to complete the assessment on the scheduled date as documented in the course syllabus. **No make-up exposure technique assessments will be administered. A grade of 0 is earned for any missed exposure technique assessments.**

Comprehensive Final Examination
(GEO 1, 3, 4, 6, 9) (CO 1-7)

The comprehensive final examination will cover all information from RDT 104 and RDT 154. A study guide will be provided for the comprehensive final examination. **NO MAKE-UP FINAL WILL BE ADMINISTERED.**

<table>
<thead>
<tr>
<th>Course Evaluation</th>
<th>Grading Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignments</td>
<td>15%</td>
</tr>
<tr>
<td>Quizzes</td>
<td>15%</td>
</tr>
<tr>
<td>Chapter Tests</td>
<td>35%</td>
</tr>
<tr>
<td>Comprehensive Final Exam</td>
<td>35%</td>
</tr>
</tbody>
</table>

**A FINAL GRADE BELOW A 75.0% RESULTS IN COURSE FAILURE AND DISMISSAL FROM THE RADIOLOGIC TECHNOLOGY PROGRAM. GRADES ARE NOT ROUNDED. A FINAL GRADE OF 74.9% WILL RESULT IN COURSE FAILURE AND DISMISSAL FROM THE RADIOLOGIC TECHNOLOGY PROGRAM.**

**An assignment schedule will be posted in blackboard by the first day of class**
RDT 154: Tentative Lecture Schedule

January
18   Review of RDT 104
25   Review of RDT 104

February
1   Review of RDT 104
8   TEST ONE
15   Chapter 4: Digital Imaging (Fauber)
22   Chapter 4: Image Receptors/Acquisition (Fauber)

March
1   Chapter 5: Film-Screen Imaging (Fauber)
8   Spring Break
15   Chapter 12: Image Receptors (Johnston)
22   PACS/Components of Digital Imaging

29   TEST TWO

April
5   Chapter 13: AEC (Johnston)
Chapter 8: Exposure Technique Selection (Fauber)
Chapter 10: Exposure Technique (Johnston)
12   Chapter 9: Image Evaluation (Fauber)
     Image Analysis
19   TEST THREE
26   RDT 154 Comprehensive Final Examination
     (Covering Topics in RDT 104 and 154)