Valencia College Radiography Program

PRINCIPLES OF RADIOGRAPHY 1

YEAR 1, SESSION 2, 2016

RTE 1418 CRN 12832 3 Credits West Campus, AHS, Room 239 Mon 12:30pm-3:30pm

COURSE DESCRIPTION:

Basic principles of radiation, image receptor systems, processing, and a study of the factors that govern and influence the production and evaluation of the radiographic image will be presented. A minimum grade of C is required for all Radiography Program courses.

COURSE OBJECTIVES:

- 1. Explain the significance of the word "technique".
- 2. Perform mathematical calculations necessary for technique manipulation.
- 3. Define the function of the prime factors (mA, time, kVp, and distance) and how they influence production of the radiographic image.
- 4. Describe construction and function of image receptor systems.
- 5. Explain conversion of the latent image to a manifest image.
- 6. Identify components of the automatic processor and define their function.
- 7. Explain the importance of sensitometry.
- 8. Define and manipulate the four technical factors that govern image production: mA, time, kVp, and distance.
- 9. Define the four image quality factors: density, contrast, detail, and distortion.
- 10. Explain the effects of mA, time, kVp, and distance on density, contrast, detail and distortion.
- 11. Compare and contrast the similarities and differences between film screen and digital imaging.

INSTRUCTOR:

Julie Kloft, MSRS, RT (R), Professor of Radiography, Clinical CoordinatorOffice:West Campus, AHS 244Phone:(407) 582-1868Fax:(407) 582-1984

Email: jkloft@valenciacollege.edu

Office Hours: By appointment only

REQUIRED TEXTBOOKS:

- Johnston, J. (2nd Ed.). (2009). *Mosby's Radiography Online: Radiographic Imaging*. Missouri: Elsevier. [ISBN 978-0-323-05347-1]
- Bushong, S. C. (10th Ed.). (2013). Radiologic Science for Technologists: Physics, Biology, and Protection. Missouri: Elsevier. [ISBN 978-0-323-08135-1]
- Bushong, S. C. (10th Ed.). (2013). Workbook and Laboratory Manual for Radiologic Science for Technologists: Physics, Biology, and Protection. Missouri: Elsevier. [ISBN 978-0-323-08137-5]

OPTIONAL TEXTBOOK:

Johnston, J. (2012). *Essentials of Radiographic Physics and Imaging*. Missouri: Elsevier. [ISBN 978-0-323-06974-8]

EVALUATION: The grade for the course will be determined by the sum of the following percentages:

		Grading Scale	Grading Scale:	
Homework/Quizzes	25%	93-100	А	
Reaction Report	5%	85-92	В	
Project/Presentation	5%	76-84	С	
Tests	30%	70-75	D	
Final	<u>35%</u>	69 or less	F	
	100%			

CLASSROOM POLICIES:

Attendance

Regular attendance is necessary for success. The student is expected to attend all classes unless prevented by illness or emergency. Please contact me via email if you are unable to attend.

It is the responsibility of the student to gather make-up work from a fellow student in case of absence or tardy. **Only ONE makeup test will be allowed**. Any other make up work or tests will be at the discretion of the instructor when professional documentation is presented.

All makeup tests must be completed in Valenica's Testing Center before the day of the next regularly scheduled class, or you will receive a grade of 0 (zero) for the missed test.

- A combined total of 3 (three) absences and/or tardies will lower final grade by one letter grade.
- A combined total of 4 (four) absences and/or tardies will result in class failure and program dismissal.

A tardy is recorded if the student arrives after the start of class time and/or misses less than 25% of class time (between 1 and 45 minutes). An absence is recorded if the student does not attend at least 75% of class time (2 hours, 15 minutes).

Honor Code

We believe in a person's honesty, self-discipline, and sense of responsibility. Cheating, lying, and stealing are subject to disciplinary action and/or dismissal as outlined in the student handbook. This class will adhere to the Valencia honor code as presented in the catalog.

- 1. Cheating (representing someone else's work as being your own) includes:
 - a. Copying

- b. Collaboration working with another person or persons in the execution of a test, report, or paper without authorization to do so.
- c. Plagiarism the intentional or unintentional use of someone else's words or thoughts without giving proper credit. All un-cited work will be assumed to be the sole product of the author. When using a source for material, it must be cited, footnoted, or referenced.
- d. Use of crib notes referring to notes brought to class for use during an examination.
- e. Acquiring tests or other academic materials belonging to faculty or other students.
- f. Use of textbooks and/or class notes during an examination without authorization to do so.
- g. Falsifying documentation in a clinical area.
- 2. Lying (deliberate misrepresentation of the truth) includes:
 - a. Deliberate misrepresentation of the truth to persons acting in an official capacity (technologists, instructors, school faculty, medical director, etc.)
- 3. Stealing (taking possession of another's property without permission to do so) includes:
 - a. Taking any books (or other items) from someone else without permission or from the library without properly signing them out.
 - b. Taking any hospital or personal property from another individual.

Electronic Devices

Portable electronic devices (PED) must be on silent mode and **put away** during classroom or lab time. Students may NOT use PED during class time. All PED must be **turned off** during tests (silent and/or vibrate mode still disrupts class and will not be tolerated). If a student's PED makes any noise (including vibrations) during a test, 10 points will be deducted from the earned test score.

Audio and video recording (including photography) is **strictly prohibited** without the consent of the instructor. Permission may be granted on a case-by-case basis, but covert recording is unethical and will incur disciplinary action up to and including dismissal.

Valencia's classroom laptops are provided as a convenience for students to access Blackboard and take notes during class. Quizzes and tests will be administered via Respondus LockDown in Blackboard. Wireless internet use is provided, but should not be used during class time. Students are required to use the laptop number coordinated with their seat number. Please remember, these are Valencia computers and personal files should never be saved on the laptops. You may save your data to an external USB storage device (flash or jump drive) or email the file to yourself. Background images, desktop styles, and laptops settings should never be adjusted.

Valencia provides a classroom set of "clickers" known as a Personal Response System (PRS). Students are required to use the PRS that corresponds to their name/number on the attendance roster, unless directed otherwise.

Valencia Student Core Competencies

The Valencia core competencies, **Think**, **Value**, **Communicate**, **and Act** are designed for student success and are outlined in the College Catalog. All aspects of this course will involve the use of these competencies for proper success in the radiography program and in your chosen occupational field.

Disability Statement

Students with disabilities who qualify for academic accommodations must provide a Notification to Instructor (NTI) form from the Office for Students with Disabilities (OSD) and discuss specific needs with the professor, *preferably during the first 2 weeks of EACH class*. The OSD determines accommodations based on appropriate documentation of disabilities. The West Campus OSD is located in the SSB in Room 102. Phone: 407-582-1523, Fax: 407-582-1326, TTY: 407-582-1222

Communication

Communication with the instructor of this course should be sent via an email through Atlas (<u>jkloft@valenciacollege.edu</u>) or by direct contact. The professors' office hours are posted on the office door each semester (West, AHS 244) and the office phone number is (407) 582-1868. Students should check Blackboard at least once a week for announcements and Atlas at least once a week for email.

Release of Student Information

Throughout the Radiography Program and at the completion of the Radiography Program, information necessary for clinical affiliation and licensure will be sent to the appropriate agency.

Withdrawal Deadline

To obtain a "W", you must withdraw by November 11, 2016.

Per Valencia Policy 4-07 (Academic Progress, Course Attendance and Grades, and Withdrawals), a student who withdraws from class before the established deadline for a particular term will receive a grade of "W." A student is not permitted to withdraw after the withdrawal deadline. A faculty member MAY withdraw a student up to the beginning of the final exam period for violation of the class attendance policy. A student who is withdrawn by faculty for violation of the class attendance policy will receive a grade of "W." Any student who withdraws or is withdrawn from a class during a third or subsequent attempt in the same course will be assigned a grade of "F." For the complete policy and procedure overview on Valencia Policy 4-07 please go to: http://valenciacollege.edu/generalcounsel/policy/default.cfm?policyID=75&volumeID_1=4&navst=0.

Assignments

Homework (25%): Students are expected to have read and completed assignments before they arrive for class. The class schedule at the end of this syllabus provides the assignments and due dates. Homework will be collected at the beginning of class. Late assignments will **NOT** be accepted and a grade of 0 (zero) will be recorded. You will find the best way to ensure you understand the concepts presented during this course is to read the assigned material (the schedule at the end of the syllabus tells you which chapter to read, and which pages to focus on) and complete the assignments prior to participating in class. Classroom and lab participation is required. Students should be prepared for quizzes at the beginning and/or end of class. Quizzes will be calculated as part of the homework grade. Make up quizzes are offered only at the discretion of the professor.

Reaction Report (5%): A reaction report is a one page, double-spaced typed, personal review of a <u>peer-reviewed</u> journal article related to the field of radiology (you may <u>not</u> use RT Image, Radiology Today, Advance, ASRT Scanner, or any newspaper, magazine, or other internet source). A copy of the article must accompany the report. You may briefly summarize the article, but the "point" of this assignment is **your opinion or reaction** to the article. You may use personal pronouns (I think, my opinion, etc.).

The articles should be retrieved from the *Radiologic Technology* Journal. Other journals MAY be permitted on a case-by-case basis. You should submit your article for approval to ensure you meet the requirements for this assignment.

**Grade will be reduced if the report is not typed, there is no copy of article, or if it is not from a peer-reviewed journal.

Evidence of individual effort	Outstanding (11-15)	
	Above Average (7-10)	
	Average (3-6)	<i></i>
	Below Average (0-2)	/15
Organization of paper (logical/orderly)	Outstanding (11-15)	
	Above Average (7-10)	
	Average (3-6)	
	Below Average (0-2)	/15
Technical level of paper (too technical/too	Outstanding (11-15)	
simple)	Above Average (7-10)	
	Average (3-6)	
	Below Average (0-2)	/15
Grammar/spelling/punctuation	Outstanding (11-15)	
	Above Average (7-10)	
	Average (3-6)	
	Poor (0-2)	/15
Educational value/applicable to Radiology field	Outstanding (11-15)	
	Above Average (7-10)	
	Average (3-6)	
	Poor (0-2)	/15
Applicable article/source	Yes (10)	
	No (0)	/10
Paper typed	Yes (5)	
	No (0)	/5
Copy of article included	Yes (5)	
	No (0)	/5
Obvious you "got" something from the article	Yes (5)	
	No (0)	/5

Grading Rubric for Reaction Report:

Project/Presentation (5%): In the lab, produce images of a non-living object (at least two exposures are required). Purpose:

- 1. To demonstrate one of the principles or concepts you have learned in the Radiography program, while using your creative abilities to produce an artistic image of a non-living thing.
- 2. To critically think about the atomic density of different materials and the appearance of the final image, by determining the technique needed to produce an image of a non-living object.
- 3. To evaluate the image using the four quality factors: density/brightness, contrast, detail/spatial resolution, and distortion.

You must present at least two images by completing at least one of the following items: opposing views (AP/lateral/oblique), different processing algorithms, different techniques, angles, vary OID/SID, grid/non-grid/table-top, etc. You must save your images on a storage device and present your images (along with an oral presentation) to your classmates. A PowerPoint presentation is suggested, but not required. Grading Rubric for Project/Presentation:

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Evidence of individual effort/ingenuity	Above Average (7-10)	
	Average (3-6)	
	Little or none (0-3)	
Educational value/related to Radiology field	Above Average (7-10)	
	Average (3-6)	
	Little or none (0-3)	
Technical level of project	Above Average (7-10)	
	Average (3-6)	
	Little or none (0-3)	
Quality of finished project	Above Average (7-10)	
	Average (3-6)	
	Little or none (0-3)	
Two images submitted (as required)	Yes (5)	
	No (0)	
Project Presentation (as required)	Yes (5)	
- · · · /	No (0)	

Tests (30%): During class, three tests will be administered using Respondus LockDown within Blackboard. These tests will cover the preceding sections of material. Please review the attendance policy regarding make-up tests.

Final Exam (35%): During finals week, a comprehensive final exam will be administered using Respondus LockDown within Blackboard. This exam will include material presented throughout the semester.

Week	Date	Lecture Topic	Homework Due	Bushong	Johnston			
1	Aug 29	Syllabus & Review		Ch 1	Ch 1			
2	Sep 5	Labor Day	Module 1					
3	Sep 12	Density	Module 2	Ch 13, 245-248	Ch 9, 80-82			
4	Sep 19	Contrast	Module 3	Ch 13, 248-250	Ch 9, 82-85			
5	Sep 26	Review						
6	Oct 3	Test & Presentations						
7	Oct 10	Techniques	Module 4	Ch 13	Ch 10			
8	Oct 17	Image Quality	Module 5	Ch 10 & 11	Ch 9 & 11			
9	Oct 24	Review						
10	Oct 31	Test & Presentations	Reaction Report					
11	Nov 7	Digital Imaging	Module 6	Ch 15, 16, & 17	Ch 12, 157-167			
12	Nov 14	Image Processing	Module 7	Ch 12 & 13	Ch 12			
13	Nov 21	Review						
14	Nov 28	Test & Presentations						
15	Dec 5	Review						
16	Dec 12	Final Exam						

Class Schedule, Homework, and Reading Assignments

 \checkmark This syllabus may be revised at any time at the discretion of the instructor.