IDAHO STATE UNIVERSITY
Radiographic Science Program
RS 3320, Radiographic Imaging Applications
Course Syllabus

Course Credit: 1 Credit
Time and Location: Monday, 12:00 - 12:50 p.m, NURS Rm 120
Instructor: Wendy Mickelsen, MHE, RT(R)(M)
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Overview: This course will provide instruction regarding radiographic image acquisition and processing for various types of radiographic recording media including: computed radiography (CR) and direct-capture radiography (DR).

In this course students will be instructed in the utilization of imaging equipment, accessories, optimal exposure factors, and proper patient positioning to minimize radiation exposure to the patients, themselves, and others. These practices assure radiation exposures are kept as low as reasonably achievable (ALARA).

Method of Presentation: Lecture, PowerPoint, Radiographic Images, Handouts

Course Learning Objectives/Goals: This course has been designed to provide the knowledge and foundation to efficiently process radiographic images from a variety of different types of radiographic recording media including: computed radiography (CR), and direct-capture radiography (DR). Ultimately, the student will gain a better understanding of the processes involved in obtaining and processing technically adequate radiographic images. This classroom understanding will prepare the student for the corresponding laboratory experience.

The **Secretary's Commission on Achieving Necessary Skills (SCANS)**: This commission was appointed by the Secretary of Labor to determine the skills people need to succeed in the work place. The Commission's fundamental purpose is to encourage a high-performance economy characterized by high-skill, high-wage employment. The Commission's research found that effective job performance is what business calls *workplace know-how*. This know-how has two elements: competencies and a foundation. The SCANS report identifies five competencies and a three-part foundation of skills and personal qualities that lie at the heart of job performance. While the Commission's work ended with the report, its recommendations must be implemented; as the report stated, "...defining competencies and a foundation is not enough. Schools must teach them. Students must learn them."

http://www.academicinnovations.com/report.html

Description of SCANS competencies are as follows:

A Three Part Foundation	
1. Basic Skills	reads, writes, performs arithmetic and mathematical operations, listens and speaks
2. Thinking Skills	thinks creatively, makes decisions, solves problems, visualizes, knows how to learn, and reasons

3. Personal Qualities	displays responsibility, self-esteem, sociability, self-management, and integrity and honesty
The Five Competencies	
4. Resources	identifies, organizes, plans and allocates resources
5. Interpersonal	works with others
6. Information	acquires and uses information
7. Systems	understands complex interrelationships
8.Technology	works with a variety of technologies

Each of these foundations and competencies are listed after the objective that meet the competency or skill set described above.

Course Learning Outcomes:

Upon completion of this material the student will be able to:	**SCANS**
Identify various types of radiographic recording media including: CR & DR	1,2,6
Describe the steps required to copy a radiographic image.	1,2,6
Describe the process of digitizing a radiographic image.	1,2,6
Describe and identify the construction components/layers of a CR PSP imaging plate (IP).	1,2,6
Describe the function of the CR IP reader and technologist workstation.	1,2,6
Perform all steps necessary for radiographic image acquisition utilizing CR technology.	1,2,6
Critique and edit CR images on a workstation.	1,2,6
Evaluate image acquisition utilizing a CR system.	1,2,6
Perform all steps necessary for radiographic image acquisition utilizing a DR flat panel system.	1,2,6
Critique and edit DR images on a workstation.	1,2,6
Evaluate image acquisition utilizing a DR flat panel system.	1,2,6
Describe the function of the DR flat panel detector.	1,2,6
Identify multiple artifacts associated with digital images (CR & DR).	1,2,6
Describe the process of printing a dry laser film.	1,2,6
Evaluate exposure indicator values and discuss the importance of each: lgM, S, EI	1,2,6
Discuss the future of medical imaging.	1,2,6

Code of Ethics: RS 3320 adheres to the ISU Code of Conduct. In particular, academic dishonesty, however small, creates a breach in academic integrity. A student's participation in this course comes with the expectation that his or her work will be completed in full observance of the ISU Code of Student Conduct.

Academic Dishonesty Policy: Academic dishonesty (cheating, plagiarism, etc.) will not be tolerated in this class and may result in suspension or dismissal from this course and from the program. Cases will also be referred to the Dean of Students for possible dismissal from the university.

Cheating includes, but is not limited to, (1) use of any unauthorized assistance in taking quizzes, tests, or examinations; (2) dependence upon the aid of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or completing other assignments; or (3) the acquisition of tests or other academic materials belonging to the university faculty or staff without permission.

Plagiarism includes, but is not limited to, the use of, by paraphrase or direct quotation without correct recognition, the published or unpublished works of another person. The use of materials generated by agencies engaged in "selling" term papers is also plagiarism.

Many components RS 3320 are designed to be highly interactive. Students are encouraged to take full advantage of the many resources available including Internet sites, handouts and workbooks, other textbooks and journals, faculty, and peers. This interactive collegial learning environment is conducive for life-long learning.

Classroom Procedure:
1. **Attendance:** You are expected to attend class regularly. It is your responsibility to maintain a level of attendance which will allow you to derive maximum benefit from the instruction. Excessive absences (>10%) will result in a lower course grade if you are borderline between two grades. Conversely, if you have good attendance and are border line between two grades, I will award the higher grade.

2. **Grading Procedure:**

Assessment Method	Percentage Value
Test #1	33.5%
Test #2	33.5%
Image Processing Assignment	33%

This grading Scale will be used:

+/- System			
93-100%	A	73-76%	C
90-92%	A-	70-72%	C-
87-89%	B+	67-69%	D+
83-86%	B	63-66%	D
80-82%	B-	60-62%	D-
77-79%	C+	59% Below	F

Note: A grade of C or better is required in this course in order to receive a degree from the Department of Radiographic Science.

The minimum requirements to earn a passing grade are successful completion of all tests (70% minimum).

3. **Image Processing Assignment:** Most Medical Imaging/Radiology Departments in hospitals and clinics only approach the ideal - all could be improved in some way. This exercise is designed to let the student evaluate their clinical site and make recommendations for improvement.

1. On one sheet of paper, draft the general layout of the medical imaging department. (Include special modalities, attach to assignment.)

2. Is this layout effective? (Specifically, does this layout work well for patient and technologist use, or is it a maze?)

3. Rate the following items as optimal, acceptable, or unacceptable (if not applicable, note as N/A):

a. Staffing (of all shifts)
b. X-ray shielding (are adequate devices provided, what is utilized, and staff technologist application of shielding)
c. Work area size (approximation of square footage)
d. Location and number of CR computers, readers, workstations
e. Number of x-ray rooms (how many perform x-ray, how many rooms can perform fluoroscopy, vendor for each unit i.e. GE, Philips)

f. Number of C-arms (list model and vendor for each unit)
g. Number of DR rooms and flat panel detectors
h. Number of imaging plates-does this number match patient volume or do they need more?
i. CR and/or DR vendor
j. CR and/or DR range of values to evaluate for adequate techniques/what does your facility call this number?
k. PACS vendor
l. Number of PACS servers-are any located off site & how is the data backed up?
m. List any defects or hazards of the department
n. Overall cleanliness of the department
o. What is the policy for the x-ray department to follow if the power is out?

For each of the above items, type one or two sentences explaining why it was rated as such. List any recommendations as to how improvements could be made - let your opinions be known! This information is confidential. This assignment is due during class of "dead week". Let me know if any questions arise.

4. **Computer Account:** All students are required to have an ISU student computer account. There is a fee required for this account. Obtain the account at the Computer Center, which is located in the basement of the College of Business Building or in the Rendezvous Lab.

5. **Make-up:** If you are unable to sit for an examination, you may request a make-up exam. You must inform me that you will not be present for the examination **prior** to the scheduled time. An additional 10% drop in the test grade will result if prior notification is not given and is not accepted by me prior to taking the test. The highest grade you can receive for a make-up exam is 89% unless you provide me with an acceptable excuse. An acceptable excuse is defined **as very** sick; a death in the immediate family; some unforeseen circumstance that would prohibit you from taking the exam.

In addition, it is a requirement to take all tests offered during the semester. An incomplete will be issued for the class if a test is not taken.

Cell phone policy: Cell phones should not be used in class. They should be place in silent or vibrating mode or turned off. Additionally receiving and retrieving text messages should not occur during class or in labs. If you need to communicate to someone outside of the class in an emergency situation please inform the instructor so accommodations to this policy may be made.

Disability Services: Students with disabilities who wish to have accommodations provided by the University must self-identify with Disability Services (236-3599) in order to have accommodations provided. Information and applications are available in the Center and may be picked up in person or requested by telephone. The URL is http://www.isu.edu/ada4isu/