

RAD 232L—SELECTED RADIOGRAPHY SYSTEMS LABORATORY

COURSE INSTRUCTOR:

Sandi Watts, MSHA, RT(R), ARRT
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COURSE DESCRIPTION:

This course is designed to instruct the student in the radiographic positioning of the skull, facial bones, paranasal sinuses, mandible, digestive system, urinary system, biliary system, and human reproductive systems. Routine imaging projections common to most health facilities will be practiced and performed on phantoms in the energized laboratory. Particular emphasis is placed on radiography of the trauma patient.

Please note: This course requires student to student, or instructor to student physical contact appropriate and necessary to demonstrate, teach, or learn the principles of radiographic positioning. Any student who is unable or unwilling to participate in such contact should discuss this concern with the course instructor immediately.

Each student is required to wear a personal radiation exposure monitoring badge (dosimeter) during each lab session. This dosimeter will be supplied by the University. If the student's dosimeter is lost, stolen or damaged, the student is charged \$10.00 to replace it.

This is a one credit hour course that meets for the full summer semester. Students are required to attend one lab session each week. The skills learned in this course are refined on human patients in the clinical environment, in the subsequent semesters.

The course is restricted to RADS majors. Lab fee: \$75.00.

COURSE OBJECTIVES:

1. Apply the principles of radiation protection in the laboratory setting.
2. Apply the principles and concepts of skull positioning in the laboratory.
3. Define and identify skull topographic landmarks.
4. Apply the principles and concepts of paranasal sinuses positioning in the laboratory.
5. Apply the principles and concepts of mandible positioning in the laboratory.
6. Discuss the principles and concepts of digestive, urinary, and biliary system positioning.
7. Discuss the principles and concepts of the urinary system and reproductive system imaging.
8. Identify anatomy visualized on respective radiographs.
9. Always practice **ALARA**-by keeping your patient's radiation exposures (and your own occupational exposures) **As Low As Reasonably Achievable** through the proper use of:
 - a. correct exposure factors (mA, time, kVp, density, SID);
 - b. correct use of AEC & AEC sensor selection (photocell selection);
 - c. correct breathing instructions;
 - d. proper use of collimation;
 - e. proper use of leaded right & left X-ray markers;

- f. gonadal shielding of the patient; and,
- g. wearing lead aprons and lead gloves during fluoroscopy procedures

PREREQUISITE: RAD 222; **CO-REQUISITE:** RAD 232 and RAD 212

TEXTBOOKS:

Frank, E.D., Long, B.W., Smith, B.J. (Ed.). (2016). Merrill's Atlas of Radiographic Positions and Radiologic Procedures, 13th edition. Volume 2.

Frank, E.D., Long, B.W., Smith, B.J. (Ed.). (2016) Merrill's Pocket Guide to Radiography 13th edition.

SUPPLEMENTAL TEXTBOOKS:

Ehrlich, R.A. and Coakes, D.M. (2013). Patient care in radiography with an introduction to medical imaging, 8th edition.

Selected pages from Kapit, W. and Elson, L.M. (2002). The anatomy coloring book, 3rd edition.

ACADEMIC HONESTY:

All students are expected to adhere to a strict code of academic honesty. Academic honesty is addressed according to the "Policies and Procedures Applicable to Academic Dishonesty" as stated in the "Important Information for Students, Faculty and Staff" booklet, available from the Office of Vice Chancellor for Student Affairs.

ACTS OF ACADEMIC DISHONESTY, from the "SIUC Student Conduct Code", section II Violations, article A (www.siuc.edu/~policies/policies/conduct.html):

- A. Plagiarism, representing the work of another as one's own work;
- B. Preparing work for another that is to be used as that person's own work;
- C. Cheating by any method or means;
- D. Knowingly furnishing false information to a University official relative to academic matters;
- E. Soliciting, aiding, abetting, concealing, or attempting conduct in violation of this code.

Penalties will be imposed for violations of this policy in accordance with the SIUC Student Conduct Code. These penalties may include one or more of the following disciplinary measures for a case of academic dishonesty:

- A grade of zero (0) for the assignment, lab or test.
- An "F" for the entire course.
- Recommendation of dismissal from the RADS Program.

RADIATION LIMITS

Any radiation exposure above 125 mrem (1.25 mSv) within a 60-day period will trigger an investigation by the University's Radiation Safety Officer (RSO) in conjunction with Program faculty.

- This investigation will require the student to provide Program faculty with a written report, explaining how/why such a dose occurred.
- It may be necessary for the student to meet with Program faculty to determine further clinical progress.

STUDENT SUPERVISION

As a reminder, **you are required to have direct supervision in all Lab activities.**

In addition, to help all of us comply with the JRCERT's policies on student supervision, and to promote patient safety and proper educational practices:

- ❖ **the JRCERT defines *Indirect Supervision as that supervision* provided by a qualified radiographer**
 - Immediately available to assist students regardless of the level of student achievement.
 - ***“Immediately available”*** is interpreted as the physical presence of a qualified radiographer adjacent to the room or location where a radiographic procedure is being performed.
 - This availability applies to all areas where ionizing radiation equipment is in use on patients.
- ❖ **The JRCERT requires that students are directly supervised by a qualified radiographer when repeating unsatisfactory images.** A qualified radiographer must be:
 - physically present during the conduct of a repeat image, and
 - must approve the student's procedure (positioning) prior to re-exposure.
- ❖ During the course of a clinical competency exam, when one or more images must be repeated, the supervising (qualified) Radiographer has the responsibility to:
 - state the reason(s) for repeating each image on the student's Competency form;
 - discuss all images with the student;
 - discuss the rationale for repeating one or more images; and,
 - discuss the method for correcting identified errors, prior to re-exposing the patient.
- ❖ When one or more images must be repeated, a qualified Radiographer must directly supervise the repeated exposures, and note the quality of the repeated images on the student's Competency form.
- ❖ If it is necessary to repeat one or more of the repeated images, then the student fails the Competency exam, and the supervising Radiographer must step in to take over the exam.

MEANS OF STUDENT EVALUATION:

Students are required to keep current on the daily reading assignments and to complete the learning activities/review exercises for each area of the body. Student use of class positioning notes is permitted and strongly encouraged in lab on Monday, Tuesday and Wednesday.

Each test (written and lab competency) will be based on the following materials:

- | | |
|----------------------|-----------------------------------|
| 1. Power Points | 3. Class notes/Topical Objectives |
| 2. Textbook readings | 4. Workbook Activities |

Each test (written and lab comp) will require the student to identify, apply knowledge, and make judgments based upon the learned material. Radiographs produced for a Lab Comp must demonstrate an image quality and the positioning skills equal to or better than that displayed in the Merrill's positioning atlases.

STUDENT EVALUATION & GRADING:

Each test score and each lab competency exam score will be converted into an appropriate percentage. For the final course grade, an average percentage will be calculated, and weighted according to the following criteria:

Evaluation areas	Grading Scale
Lab Assignments: 25% (presence & active participation)	93-100 = A
<u>Lab Practical Exams</u> 75%	85- 92 = B
Total 100%	75- 84 = C
	0- 74 = F

Minimum passing average is 75%.

Successful completion of this course allows the student to register for the next course in the program sequence...**RAD 332 (Radiography Clinic II).**

ATTENDANCE:

Please note:

1. Due to the frequently graphic content presented in this course, bringing infants and/or children to class/lab is strongly discouraged!
2. Please turn off all cell phones, MP3 players, tablets, iPods, iPads, headsets, pagers, beepers, all other personal communication devices, and remove all types of earphones/earbuds!! **If it is absolutely necessary to be in constant communication with your children, their schools, business associates, spouse, friends, etc., then, now is not the right time for you to be pursuing our Radiologic Sciences Program.**

A record of daily attendance is kept. Attendance, both to class and labs, is mandatory for this course. **Habitual tardiness to lecture and/or lab will result in points being deducted from each final grade.** Each late arrival or absence will result in 0.5 point, daily, deducted from the student's final grade.

Any student that misses class is responsible for the material covered. He or she should get notes from other students and contact the course instructor for the missing material.

During the semester, if a student chooses to drop out of the Radiologic Sciences program, or this course, that student must meet with the course instructor to discuss the student's reasons for leaving the course.

Keep in mind that dropping below "full-time" status will jeopardize the student's bank loans, financial aid, scholarships, Veterans benefits, housing, academic standing, time to degree, athletic status and/or international student visa. Since thoughts and feelings often influence a

student's behavior and academic performance, any student having doubts or second thoughts about continuing in this Program should talk to any of the Radiologic Sciences faculty.

All students must pass each of their Radiologic Sciences prefix courses (RAD) with a grade of “C” or better in order to satisfy Program requirements, to graduate, and to pass the National Board Exam in Radiography. This grade of “C” or better is based upon the Radiologic Sciences grading scale.

Any student that fails a Radiologic Sciences course will not continue in our Program. When course failure occurs, the student will meet with the appropriate faculty member and academic advisor to discuss the student's future educational plans/goals. This discussion may include referring the student to the University Career Services office, in the Student Services building, for testing via the “Strong Interest Inventory” to identify the academic majors that best fit the student’s personality, values, interests and skills.

HARASSMENT

Sexual harassment creates a hostile environment and it will not be tolerated regardless of whom initiates such harassment. Page 32 and Appendix E (General Policy section, page 56) describe the University’s commitment to creating and maintaining an environment that is free of all forms of harassment, exploitation, or intimidation.

Sexual harassment in higher education is illegal! Southern Illinois University Carbondale and the Radiologic Sciences Program will not tolerate harassment of our students and are willing to use the full extent of the law to stop such behavior towards our students.

If an SIUC RADS student is harassing another student at a clinical site, or is harassing an employee of a clinical site, then the appropriate steps will be taken to remove the offending student from the clinical site, even removing the offending student from the RADS Program.

If an SIUC RADS student is harassed by:

- another SIUC student at a clinical site;
- a student from another school at the same clinical site; or,
- an employee of a clinical site (even by a physician, including a radiologist),

then the appropriate steps will be taken to remove the student from the clinical site, and to prosecute the offender to the full extent of the law to stop such behavior towards our students.

Bottom Line #1: In the event that a RADS student is concerned with sexual harassment, substance abuse, communicable diseases, and/or workplace hazards, she/he should contact the Program Director (Ms. Watts) or faculty immediately. Ms. Watts will work with the facility to ensure the safety of the student.

Bottom Line #2: Any SIUC RADS student who believes he or she is being subjected to sexual harassment, or retaliated against should report the incident(s) to:

- **Complaint Resolution Officer:** Linda McCabe Smith, Associate Chancellor for Institutional Diversity (ACID), 110 Anthony Hall, 618-453-1186; or
- **Office of Diversity and Equity** (under ACID): Davies Hall, Room 157; 618-453-4807, Casey Parker, Investigator.

Please note, the Office of Diversity and Equity (ODE; <http://ode.siu.edu>) at SIU Carbondale **processes complaints** of violations of **Title IX and Title VII** and conducts investigations. This includes complaints of **sexual harassment**; gender, race, age, disability, veteran status, religious or other **discrimination; bias**; and **retaliation**.

ADA Accommodations:

Under the Americans with Disabilities Act (ADA) and Section 504 of the Rehabilitation Act, educators and students have both rights and responsibilities. It should be the mutual goal of the student and the university to maximize the likelihood that students with disabilities succeed. Accommodation sometimes is necessary.

If you think you have a learning disability or know you have a disability but have not been tested, then please contact SIUC Disability Support Services at 453-5738 for an appointment for the evaluation of your learning disability.

Once you have been diagnosed as having a learning disability, we, the faculty of the Radiologic Sciences Program, strongly encourage you to tell us what type of learning disability and what type of accommodation is needed to help you succeed in our Program. If you do not notify us (prior to the end of the first week of the semester) that you have a disability, and you do not request accommodation during this course, then you accept full responsibility for your own success or failure in this course. **Ultimately, YOU are responsible for your own success or failure and the resulting consequences.**

RAD 232L LAB WORK SEQUENCE

Lab Groups meet

Monday 1-2:00pm; 2-3:00pm and Wednesday 1-2:00pm

Tuesday 11:00am-12Noon

<u>Day/Date</u>	<u>Description</u>
Monday, June 13, 2016 (Week #1)	Orientation; Begin Cranial Anatomy
Wednesday, June 15	<i>Assign Skull Positioning Lab Groups</i>
Monday, June 20 (Week #2)	<i>Begin Skull Positioning in all Lab Groups</i>
Monday, June 27 (Week #3)	<i>Begin Sinuses Positioning in all Labs</i>
Tuesday/Wednesday, July 5-6, 2015 (Week #4)	<i>Open Labs to review Skull & Sinuses</i>
Monday, July 11 (Week #5)	<i>Begin Mandible Positioning in all Labs</i>
Monday, July 18 (Week #6)	<i>Mandatory Practice/Review for Lab Final</i>
Monday, July 25 (Week #7)	<i>Start Lab Finals for all Lab Groups</i>
Monday, Aug. 1, 2015 (Week #8)	<i>Finish Lab Finals for all Lab Groups</i>

RAD 232 – LABORATORY ASSIGNMENTS
Summer 2016

<u>Week of</u>	<u>Description</u>
June 13, 2016	No Laboratories
June 20	Skull Series: <ol style="list-style-type: none">1. PA Projection (0° tube angle)2. Lateral Projections (Right & Left Laterals)3. AP Projection(0° tube angle)4. AP Axial Projection/Towne Method (30° caudad tube angle)5. SMV/Schueller Method for cranial base
June 27	Sinus Series: <ol style="list-style-type: none">1. PA Caldwell Proj. (15° caudad tube angle)2. Waters (Parietoacanthial Projection)3. Lateral4. SMV collimated for Sinuses
July 5, 2016	Open Labs to practice Skull & Sinuses
July 11	Mandible Series: <ol style="list-style-type: none">1. PA axial for Body & Rami (pg. 347)2. PA for Mandibular Body (pg. 346)3. Axialateral Obl. for Ramus (pg. 348)4. AP Axial--for TMJs & Rami (pp. 352-353)
July 18	Mandatory Practice
July 25	Laboratory Final Examinations
August 1, 2016	Finish Laboratory Final Examinations

Faculty Expectations of RAD 232 students

1. Retain knowledge and principles of:
 - Basic algebra for exposure factor calculations;
 - Anatomy & physiology—RAD 232 takes anatomy to a deeper level;
 - Medical terminology & directional terminology;
 - X-ray physics (RAD 202)—some principles have direct application to Lab work; and,
 - X-ray techniques (RAD 102)—some principles have direct application to Lab work.
2. Retain current passwords AND access to your siu.edu E-mail account.
 - ✚ SIUC administration & faculty expect you to check your siu.edu E-mail account at least 2x per week, if not daily.
 - ✚ Make sure your all your RADS faculty E-mail addresses, including Mr. Broomfield, are identified as ‘safe’ addresses by all your E-mail providers.
 - ✚ Make sure all RADS faculty have your siu.edu E-mail address so you can receive course materials or information that is electronically distributed.
3. Pay attention to and keep up with ALL deadlines & due dates for paperwork.
4. Keep your RAD 122B Ehrlich & Coakes Patient Care book. You’ll need it for RAD 232 Lab Orientation AND for RAD 332-Radiography Clinic 2.
5. Punctuality vs. Tardiness
 - ✓ All RADS students are expected to report to class, to Lab and to the clinical facility at the designated time.
 - ✓ Punctuality is a simple way to prove that you are dependable and reliable, two desirable character qualities that are priceless to your Clinical faculty.
 - ✓ Tardiness is not responsible professional behavior. Habitual tardiness demonstrates:
 - Lack of respect. Lateness cheats classmates of their time.
 - It implies that you are selfish with your time.
 - Lack of organization.
 - ✓ Each late arrival will be considered the equivalent of one absence for grade determination. A record of daily attendance will be kept. Attendance, both to class and labs, is mandatory for this course.
 - ✓ Each late arrival or absence will result in 0.5 point, daily, deducted from the student’s final grade.
6. Each radiography student has signed up for a 60 minute Lab on Monday, Tuesdays, Wednesday, or Thursdays. Testing will be done during those lab times when scheduled. During the 60 minute Labs, each student will practice on his/her lab partner. If you want to take an image you may use the phantom(s) for the designated body part(s).

The responsibilities of the RADS student are:

a. Modest attire/modest clothing of all students is required in all RAD Labs & Lectures.

- (1) Modest attire demonstrates
 - Respect for yourself and for others;
 - A competent professional appearance that backs up your body language & oral communication skills.
- (2) Trendy and/or provocative clothing are not acceptable because they create an unprofessional appearance and a hostile learning environment.

(a) Examples of unsuitable attire include, but are not limited to,:

- Low cut neck lines,
- Bare midriffs
- High cut hem lines,
- Low slung jeans/shorts,
- Waistbands below the hips,
- Exposed chest;
- Exposed abdomen,
- Exposed gluteal fold,
- Exposed underwear, etc.

b. When in doubt, look at yourself in a full-length mirror, and ask yourself:

- “Would this outfit/set of garments inspire confidence in my professionalism if I were a hospital patient, physician, or another healthcare worker?”
- “Would this outfit/set of garments be so distracting that it interferes with my verbal patient instructions?”

c. **Arrive on time and be prepared for the day's Lab activities.**

- (1) Review/read notes and Merrill's PRIOR to each Lab session.
 - (a) Don't study for RAD 212 while waiting for your Lab session!
- (2) Bring positioning notes and Merrill's textbook to each Lab session.
- (3) Late arrivals, lack of preparation, and/or lack of notes/Merrill's will not be tolerated. Such behavior will result in the student being expelled from Lab for that day and that student will receive a 0 (zero) as the grade for the day's Lab work.

7. TECHNICAL COMPETENCIES

During the course of the clinical semester, the student shall be able to:

- a. Use oral and written medical communication;
- b. Demonstrate knowledge of human structure, function and pathology;
- c. Anticipate and provide basic patient care and comfort;
- d. Apply the principles of body mechanics;
- e. Perform basic mathematical functions;

- f. Operate radiographic imaging equipment and accessory devices;
- g. Position the patient and imaging system to perform radiographic exams and procedures;
- h. Modify standard procedures to accommodate for patient condition and other variables;
- i. Correctly process radiographs to obtain diagnostic quality radiographs;
- j. Determine exposure factors to obtain diagnostic quality radiographs with minimum radiation exposure;
- k. Adapt exposure factors for various patient conditions, equipment, accessories, and contrast media to maintain appropriate radiographic quality;
- l. Practice radiation protection for the patient, yourself and others;
- m. Recognize emergency patient conditions and initiate first-aid and basic life-support procedures;
- n. Evaluate radiographic images for appropriate positioning and image quality; and,
- o. Evaluate the performance of radiographic systems, know the safe limits of equipment operation, and report malfunctions to the proper authority.

RAD 232L TOPICAL OBJECTIVES

I. Radiographic Positioning of the Skull

A. Instructional Methodologies

1. Lecture/Power Point slides
2. Dry skull demonstrations
3. Reading assignments
4. Workbook activities

B. Assignments

1. Merrill's 13th ed., Vol. 2, Chapter 20
2. Merrill's 13th ed., Workbook, Chapter 20

C. Objectives:

1. Describe the CR location & imaging baseline used for the positioning of:
 - a. Posteroanterior projection of the skull (PA skull)
 - b. Lateral skull
 - c. AP axial projection of the skull (Towne skull; Towne method)
2. Describe the anatomical parts demonstrated on the:
 - a. PA skull with 0° tube angle
 - b. AP skull with 0° tube angle
 - c. Lateral skull
 - d. Towne skull
3. For each skull projection listed in #2, describe these technical considerations with 100% accuracy.
 - a. Select the correct cassette size (IR size; LW or CW)
 - b. Positioning of the head
 - c. Use the correct CR location/placement
 - d. Use the correct tube angle, where applicable
 - e. Use correct SID to Bucky tray
 - f. Remove of all radiopaque objects within radiation field
 - g. Select the correct exposure factors, including focal spot size, breathing instructions
 - h. Use correct X-ray marker placement on the IR
 - i. Use the correct parameters to digitally process the image
 - j. Save the multi-image exam onto a CD-R disk.

II. Radiographic Positioning of the Paranasal Sinuses and Cranial Base

A. Instructional Methodologies

1. Lecture/Power Point slides
2. Dry skull demonstrations
3. Reading assignments
4. Workbook activities

B. Assignments

1. Merrill's 13th ed., Vol. 2, Chapter 20
2. Merrill's 13th ed., Workbook, Chapter 20
 - a. Cranial floor
 - b. Submentovertical projection
3. Merrill's 13th ed., Workbook, Chapter 22 Paranasal sinuses
 - a. pp. 491-500, items 1-55.
 - b. pp. 500-502, Exercise 2, items 1-8.

C. Objectives

1. Given a radiograph of the paranasal sinuses (sinuses), locate the given structures with 85% accuracy.
 - a. Frontal sinuses
 - b. Ethmoid sinuses
 - c. Maxillary sinuses
 - d. Sphenoid sinuses
2. Given a radiograph of the cranial base, locate the given external structures with 85% accuracy.
 - a. Occipital condyles
 - b. Foramen magnum
 - c. Mandibular fossa
 - d. Foramen lacerum
 - e. Foramen spinosum
 - f. Foramen ovale
 - g. Greater wing of sphenoid
 - h. Hard palate
 - i. Zygomatic arch
 - j. Palatine bone
 - k. Petrous ridge
 - l. Mandibular body
 - m. Gonion
3. Given a radiograph of the floor of the skull (cranial base), locate the given internal structures with 85% accuracy.
 - a. Crista galli
 - b. Cribriform plate
 - c. Lesser sphenoid wing
 - d. Optic groove
 - e. Optic foramen (Optic canal)
 - f. Sella turcica
 - g. Foramen lacerum
 - h. Foramen rotundum
 - i. Foramen ovale
 - j. Foramen spinosum
 - k. Jugular foramen
 - l. Clivus (Basilar process)
 - m. Dorsum sellae
4. Discuss the rationale for performing sinus images with the patient in the erect position, rather than in the recumbent position.
5. Describe the CR location & imaging baseline used for the positioning of:
 - a. PA Caldwell sinuses
 - b. Lateral sinuses
 - c. Waters
 - d. SMV for sinuses
 - e. SMV for full cranial base

6. Describe the sinuses demonstrated on the:
 - a. PA Caldwell sinuses
 - b. Lateral sinuses
 - c. Waters
 - d. SMV for sinuses
7. For each sinus/skull projection listed in #5, describe these technical considerations with 100% accuracy.
 - a. Select the correct cassette size (IR size; LW or CW)
 - b. Positioning of the head
 - c. Use the correct CR location/placement
 - d. Use the correct tube angle, where applicable
 - e. Use correct SID to Bucky tray
 - f. Remove of all radiopaque objects within radiation field
 - g. Select the correct exposure factors, including focal spot size, breathing instructions
 - h. Use correct X-ray marker placement on the IR
 - i. Use the correct parameters to digitally process the image
 - j. Save the multi-image exam onto a CD-R disk.

III. Anatomy of the Facial Bones, Orbits and Radiography of the Mandible

A. Instructional Methodologies

1. Lecture/Power Point slides
2. Dry skull demonstrations
3. Reading assignments
4. Workbook activities

B. Assignments

1. Merrill's 13th ed., Vol. 2, Chapter 20
2. Merrill's 13th ed., Workbook, Chapter 20
 - a. Mandible
 - b. Facial bones & Mandible
 - c. Facial bones, Orbits & Mandible:
3. Merrill's 13th ed., Workbook, Chapter 21:
 - a. Lateral facial bones
 - b. Parietoacanthial projection – Waters method
 - c. Zygomatic Arches
 - d. Mandible
 - e. Facial bones

C. Objectives

1. Given a diagram of the following facial bones, locate the given structures with 85% accuracy.
 - a. **Nasal bones**
 - b. **Lacrimal bones**
 - c. **Maxillae**
 - (1) Maxillary sinuses
 - (2) Alveolar process
 - (3) Anterior nasal spine
 - (4) Acanthion

- d. Zygomatic bones (Malar bones)**
 - (1) Zygomatic process of malar bone
 - (2) Zygomatic process of temporal bone
- e. Inferior nasal conchae (turbinates)**
- f. Vomer**
- g. Palatine bones**
- h. Mandible**
 - (1) Body
 - (2) Mental point
 - (3) Alveolar process
 - (4) Mental foramen
 - (5) Rami
 - (6) Coronoid process
 - (7) Condylod process
 - (8) Mandibular notch

2. Identify the bones that comprise the nasal septum.
3. Given a diagram, locate the bones that comprise the orbit.
4. State the articulations of each of the 14 facial bones with 85% accuracy.
4. Discuss the rationale for performing mandible images with the patient in the erect position, rather than in the recumbent position.
5. Describe the CR location & imaging baseline used for the positioning of:
 - a. PA Mandible for Body
 - b. Axiolateral Oblique Mandible
 - c. PA Axial Mandible for Rami
 - d. SMV for Mand. Body
 - e. AP Axial-TMJs
7. For each mandible projection listed in #5, describe these technical considerations with 100% accuracy.
 - a. Select the correct cassette size (IR size; LW or CW)
 - b. Positioning of the head
 - c. Use the correct CR location/placement
 - d. Use the correct tube angle, where applicable
 - e. Use correct SID to Bucky tray
 - f. Remove of all radiopaque objects within radiation field
 - g. Select the correct exposure factors, including focal spot size, breathing instructions
 - h. Use correct X-ray marker placement on the IR
 - i. Use the correct parameters to digitally process the image
 - j. Save the multi-image exam onto a CD-R disk.

IV. Radiography of the Biliary System

A. Instructional Methodologies

1. Lecture
2. PPT Slides
3. Reading assignments
4. Workbook activities

B. Assignments

1. Merrill's Atlas 13th edition, Volume 2: Liver & Biliary System,
2. Merrill's/Frank, et al, 13th ed., Workbook, Liver & Biliary System, Chapter 17:
 - a. Using your medical dictionary, define these terms:
 - (1) Cholelithiasis
 - (2) Choledocholithiasis
 - (3) Cholecystitis
 - (4) Biliary stenosis

C. Objectives

1. Identify the specific function of the:
 - a. liver
 - b. gallbladder (GB)
 - c. biliary ductal system
2. Describe the production & storage of bile.
3. Given a line diagram or radiographic image of the biliary system, identify these specific structures.
 - a. liver
 - b. gallbladder
 - c. cystic duct
 - d. common hepatic duct
 - e. common bile duct
 - f. hepatopancreatic ampulla
4. Given a line diagram or radiographic image of the biliary system, identify these specific structures.
 - a. hepatic arteries
 - b. hepatic veins
 - c. lobes of the liver
 - d. porta hepatus
5. Describe the location of spleen & pancreas.
6. Using your medical dictionary, name the blood chemistry tests that are significant in patients having a cholecystogram.
7. Given these body habitus, discuss the effect of body habitus on the location of the gallbladder.
 - a. sthenic
 - b. hyposthenic
 - c. asthenic
 - d. hypersthenic
8. Identify alternative modalities that are used to visualize the biliary system.
9. List the advantages of each of these modalities, as they relate to imaging the gallbladder.

- a. Gallbladder sonography
- b. Oral cholecystogram

V. Anatomy and Radiography of the Digestive System

A. INSTRUCTIONAL METHODS

- | | |
|------------------------------------|------------------|
| 1. Lecture & Handouts | 4. Demonstration |
| 2. Discussion | 5. Radiographs |
| 3. Reading & Workbook ASSIGNMENTS: | 6. Power Points |

B. ASSIGNMENTS:

- 1. Merrill's Atlas 13th edition, Volume 2:
 - a. Abdomen:
 - b. Upper GI, Chapter 17
 - c. Small Bowel, Chapter 17
 - d. Colon
- 5. **Merrill's/Frank, et al, 13th ed., Workbook:**
 - a. **Abdomen, Chapter 3**
 - b. **Abdomen, Chapter 16:**
 - c. **Alimentary Canal Chapter 17:**
 - d. **Upper GI, Chapter 17:**
 - e. **Small Bowel, Chapter 17:**
 - f. **Colon, Chapter 17:**

C. Objectives

- 1. Given a diagram and/or radiograph of the stomach, locate the following anatomical parts:

a. cardiac orifice	d. greater curvature
b. pyloric antrum	e. lesser curvature
c. body	
- 2. Given a diagram and/or radiograph of the small intestine, locate the following anatomical parts:

a. duodenum	c. ileum
b. jejunum	d. ileocecal valve
- 3. Given a diagram and/or radiograph of the large intestine (colon), locate the following anatomical parts:

a. cecum	e. splenic flexure
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|----|------------------|----|-----------------|
| b. | descending colon | f. | ascending colon |
| c. | hepatic flexure | g. | sigmoid colon |
| d. | transverse colon | h. | rectum |

4. Define the following terms as they relate to the digestive system.

a.	esophagram	i.	small bowel series
b.	barium swallow	j.	barium enema
c.	cardiac series	k.	peritoneum
d.	UGI series	l.	mesentary
e.	cathartic	m.	omentum
f.	volvulus	n.	intussusception
g.	appendicitis	o.	appendectomy
h.	peritonitis	p.	purgative
5. List and describe the three (3) parts of the small intestine.
6. Differentiate between mechanical digestion and chemical digestion.
7. List the three (3) primary functions of the digestive system.
8. List and describe the three (3) divisions of the pharynx.
9. Describe the effect of body position on stomach contents.
10. Given selected radiographs and/or line drawings, identify all anatomy of the alimentary canal from mouth to ileocecal valve.
11. Describe the four (4) general classes of bodily habitus.
12. List several common abnormalities demonstrated on an Upper GI series.
13. Explain the various anatomic landmarks used during the patient positioning for an UGI exam.
14. Describe the post-procedure care and complications associated with radiography of the UGI system.
15. Given selected radiographs and/or line drawings, identify all anatomy of the alimentary canal from ileocecal valve to anus.
16. Differentiate between radiolucent and radiopaque contrast media used in radiography of the lower GI tract.
17. Describe the purpose of the following:
 - a. Small bowel series
 - b. Barium enema
18. List three (3) contraindications to the oral ingestion of barium sulfate.
19. List three (3) types of patients for whom a water-soluble contrast medium should be used with caution.

20. Describe patient preparation for the following:
 - a. Small bowel series
 - b. Barium enema
21. Explain how to identify when a small bowel series is completed.
22. In item #21, list who has the responsibility for determining when the exam is completed.
23. List three (3) methods to accelerate normal transit time through the small bowel.
24. List two (2) methods used to study the large intestine, radiographically.
25. List three (3) general instructions for the patient to keep in mind during a barium enema exam.
26. List three (3) general and two (2) specific duties of the radiographer during the fluoroscopic portion of a barium enema exam.
27. Describe several methods to facilitate patient bowel evacuation after the barium enema

VI. Radiography of the Urinary System and Human Reproductive Systems

A. INSTRUCTIONAL METHODS

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|----------------------------------|----------------|
| 1. Lecture & Handouts | 4. PPT slides |
| 2. Discussion | 5. Radiographs |
| 3. Reading & Workbook Activities | |

B. ASSIGNMENTS:

1. YouTube videos:
 - a. Kidney function
 - b. Urine formation
3. Merrill's Atlas 13th edition
4. Merrill's Atlas 13th ed
5. **Merrill's/Frank, et al, 13th ed., Workbook:**
 - a. Urinary System, Ch. 18:

C. Objectives, Urinary System

1. Using your medical dictionary, define these blood chemistry tests that are significant in patients scheduled for an intravenous urogram.

a. BUN	c. glomerular filtration rate (GFR)
b. creatinine	
2. Given a diagram and/or radiograph of the urinary system, locate the following anatomical parts:

a. kidneys	d. urethra
b. urinary bladder	e. adrenal glands

- c. ureters
3. Define the following terms as they relate to the urinary system.
 - a. urography
 - b. nephroptosis
 - c. micturition
 - d. excretory urography
 - e. urination
 - f. ureters
4. List two alternate names for urography & excretory urography.
5. Describe the blood supply to and from each kidney.
6. List and describe the structural and functional unit of the kidney.
7. Describe the location and function of the ureters.
8. List and describe the three locations of constriction along the course of each ureter.
9. Describe the function of the urinary bladder.
10. Given various radiographs or line drawings, identify all anatomy of the:
 - a. urinary system.
 - b. female reproductive system
 - c. male reproductive system
11. In relation to the urinary bladder, describe the location of the:
 - a. uterus
 - b. ovaries
 - c. prostate gland
 - d. fallopian tubes
 - e. seminal vesicles
 - f. pubic bone
12. List the purposes and seven indications for excretory urography.
13. Demonstrate proper patient preparation for excretory urography.
14. Describe the information obtained from the IVP scout film.
15. Describe the "ten-day" rule and discuss its importance in radiographic exams of the abdomen and body systems. (See Bushong physics book, pp. 608-610).

VII. Sterile Technique & Infection Control (if time permits)

A. INSTRUCTIONAL METHODS

1. Lecture & Handouts
2. Discussion
3. Reading & Workbook ASSIGNMENTS:
4. PPT slides
5. Radiographs

B. ASSIGNMENTS:

1. **Ehrlich & Daly, 7th ed.**, Chapter 5, pp. 139-189 plus Review Questions.
2. **Ehrlich & Daly, 7th ed.**, Appendix G Isolation Guidelines, pp. 406-409.
3. **EndoNurseInstitute** 7-page handout
www.endonurseinstitute.com/c_abcsinfect.html

C. OBJECTIVES

1. Define these words as they relate to infection control and sterile technique.

- a. asepsis
 - b. medical asepsis
 - c. disinfection
 - d. sterilization
2. Discuss the three (3) major components of asepsis.
 3. List the six (6) factors involved in the cycle of infection.
 4. List the 6 main routes of infection transmission.
 5. Explain how surgical asepsis differs from medical asepsis.
 6. Describe hand washing, disinfection and sterilization as they apply to asepsis.
 7. State five (5) examples of personal hygiene that help to prevent the spread of infection.

Building Emergency Response Protocols

University's Emergency Procedure Clause:

Southern Illinois University Carbondale is committed to providing a safe and healthy environment for study and work. Because some health and safety circumstances are beyond our control, we ask that you become familiar with the SIUC Emergency Response Plan and Building Emergency Response Team (BERT) program. Emergency response information is available on posters in buildings on campus, available on BERT's website at www.bert.siu.edu, Department of Public Safety's website www.dps.siu.edu (disaster drop down) and in the Emergency Response Guideline pamphlet. Know how to respond to each type of emergency.

Instructors will provide guidance and direction to students in the classroom in the event of an emergency affecting your location. **It is important that you follow these instructions and stay with your instructor during an evacuation or sheltering emergency.** The Building Emergency Response Team will provide assistance to your instructor in evacuating the building or sheltering within the facility.

Disabled Students:

Instructors and students in the class will work together as a team to assist disabled students out of the building safely. Disabled students will stay with the instructor and communicate with the instructor what is the safest way to assist them.

Earthquake:

In the event of an earthquake you are advised to take cover quickly under heavy furniture or near an interior wall, a corner, to avoid falling debris. Outside the building are trees and power lines and debris from the building itself that you will need to stay away from. In the building, large open areas like auditoriums are the most dangerous. Do not try to escape on a stairway or elevator. Do not hide under a stairway. **We do not** recommend that you stand in a doorway because the door could shut from the vibrations and crush your fingers trapping you there.

Fire:

During the fall semester we have a **Fire Drill**. Pick up your belongings and your instructor will lead you to either the North or South parking lot depending on what part of the building your class is in. You must stay with your instructor so he/she can take roll calls. As soon as the building is all clear, you will be allowed to return to class.

These drills are to train instructors and the Building Emergency Response Team to get everyone to a safe place during an emergency.

Tornado:

During the spring semester we have a **Storm Drill**. Pick up your belongings and your instructor will lead you to a safe area of the basement. No one will be allowed to stay upstairs. Stay away from windows. The drill should not last more than 10 minutes. You must stay with your instructor so he/she can take roll calls. Students need to be **quiet in the basement** as the BERT members are listening to emergency instructions on handheld radios and cannot hear well in the basement.

Bomb Threat:

If someone calls in a bomb threat, class is suspended and students will be asked to pick up their belongings, evacuate the building and leave the premises. Do not leave anything that is yours behind. We will not allow anyone back into the building until the police and bomb squad give us an all clear. ***DO NOT USE YOUR CELL PHONES***. Some bombs are triggered by a cell phone signal.

Shooter in the Building:

When it is safe to leave, move to a safe area far from the building where the shooter is located. If you have any information about the shooter, please contact the police after you return home. If you cannot leave, go into a room, lock the door, turn out the lights, and if possible, cover the glass on the door. Silence all cell phones after one person in the room you are in calls the police and informs them of your location and how many are in the room. Be quiet and wait for the police to arrive. The police are looking for one or more shooters, and they have no way of knowing if the shooter is in the room with you. For that reason, when the police enter the room, no one should have anything in his/her hands and each person **MUST** raise his/her hands above his/her head.

Women's Self-Defense Class:

For interested female students and female faculty and staff, the SIU Public Safety Department sets up free self-defense classes. The SIU Public Safety Department will be teaching this class. They teach a free class in the fall and spring at the Rec Center. In the fall you would register at the Rec Center for the Women's Self-Defense Class or RAD (Rape Aggression Defense) as it is sometimes called. If you have questions about registering for the class, you can send an email to lavong@siu.edu. LaVon is the contact in the Dean's Office in the Communications building that will assist you to try to find the class you need.