COURSE OUTLINE

Course Number	Course Title	Credits
RAD127	**Radiographic Procedures I**	**6**
Lecture Hours	**Prerequisites:**	
3	**Proficiency in Basic Algebra & Basic English**	
Laboratory Hours	**Co-Requisites:**	
3	**RAD107, RAD119, BIO103, MAT__ Elective**	
Clinical Days		
24		

Catalog Description (2006-2009):

Standard radiographic positioning with related medical terminology of the chest, abdomen, upper and lower extremities. Laboratory simulation and evaluation are conducted. Students acquire clinical experiences at an affiliate hospital sufficient to demonstrate competency in a specified number and variety of radiographic procedures. Fall offering.

Required Texts/Other Materials:

Title:	Textbook of Radiographic Positioning and Related Anatomy
Author:	K. Bontrager
Publisher:	Mosby
Edition:	Sixth
Title:	Radiographic Positioning and Related Anatomy Workbook and Laboratory Manual, Volume I
Author:	K.L. Bontrager
Publisher:	Elsevier Mosby
Edition:	6th
Title:	Merrill's Pocket Guide to Radiography
Author:	E. Frank, et al
Publisher:	Elsevier Mosby
Edition:	6th
Title:	Mosby's Dictionary of Medicine, Nursing & Health Professions
Publisher:	Mosby
Edition:	7th

Revision Date

Summer 2008

Course Coordinator:

William Petrosky
Voice: 609.570.3341; E-mail: petroskw@mccc.edu

Statement of Course Relevance as Required under the Federal Carl D. Perkins Grant:

As the first of three procedures-related courses, students will become acquainted with the instrumentation and equipment specific to radiography. They will also learn fundamental positioning terminology, general rules for obtaining the appropriate number and type of radiographic positions, and the most common positions of the upper and lower extremity, chest and abdomen. Students will use radiographic equipment in the laboratory to perform procedures under simulated conditions. The knowledge and skill acquired this semester will serve as the basis for continued learning and training in subsequent semesters. Skills are soon applied in the clinical setting, where -- under appropriate supervision – students perform similar procedures on patients. Upon completion of the entire Program curriculum, graduates should have demonstrable competency in radiographic procedures sufficient to obtain entry-level employment as diagnostic radiologic technologists (radiographers).

Course Competencies/Goals:

At the completion of the course, the student should be able to:

1. Define the medical terms that apply to the upper and lower extremities, chest and abdomen.

2. Efficiently perform the routine radiographic positions applicable to the upper and lower extremities, chest and abdomen under simulated conditions in the laboratory utilizing radiographic equipment and accessories as needed.

3. Evaluate radiographs to determine acceptability of radiographic positioning and identify anatomical structures.

4. Describe accessory devices utilized and demonstrate appropriate use.

5. Identify the radiology department protocols as they relate to radiographic procedures.

6. Communicate effectively during laboratory simulation of radiographic procedures.

7. Successfully complete initial competency evaluations involving three (3) radiographic procedures on patients in the clinical setting.*

*Students who demonstrate competency in any procedure may perform that procedure with indirect supervision. This means that the licensed radiographer need not be present in the radiographic room during the procedure, but must be adjacent to the room and immediately available should the student require assistance.

Any student who produces an unacceptable image that requires a retake must have it performed with direct supervision regardless of that student's level of competency. Failure to comply with this rule will subject the student to disciplinary action.

Course-specific General Education Goals and Core Skills:

General Education Knowledge Goals:

- **Goal 1. Communication.** Students will communicate effectively in both speech and writing.
- **Goal 2. Mathematics.** Students will use appropriate mathematical and statistical concepts and operations to interpret data and to solve problems.
- **Goal 3. Science.** Students will use the scientific method of inquiry, through the acquisition of scientific knowledge.
- **Goal 4. Technology.** Students will use computer systems or other appropriate forms of technology to achieve educational and personal goals.
- **Goal 5. Social Science.** Students will use social science theories and concepts to analyze human behavior and social and political institutions and to act as responsible citizens.
- **Goal 8. Diversity.** Students will understand the importance of a global perspective and culturally diverse peoples.
- **Goal 9. Ethical Reasoning and Action.** Students will understand ethical issues and situations.

MCCC Core Skills

- **Goal A. Written and Oral Communication in English.** Students will communicate effectively in speech and writing, and demonstrate proficiency in reading.
- **Goal B. Critical Thinking and Problem-solving.** Students will use critical thinking and problem solving skills in analyzing information.
- **Goal C. Ethical Decision-Making.** Students will recognize, analyze and assess ethical issues and situations.
- **Goal D. Information Literacy.** Students will recognize when information is needed and have the knowledge and skills to locate, evaluate, and effectively use information for college level work.
- **Goal E. Computer Literacy.** Students will use computers to access, analyze or present information, solve problems, and communicate with others.
- **Goal F. Collaboration and Cooperation.** Students will develop the interpersonal skills required for effective performance in group situations.

- **Goal G. Intra-Cultural and Inter-Cultural Responsibility.** Students will demonstrate an awareness of the responsibilities of intelligent citizenship in a diverse and pluralistic society, and will demonstrate cultural, global, and environmental awareness.

Units of Study in Detail:

Upon completion of this three-component (lecture, laboratory, clinical education) course, the student will be able to:

- Exercise the priorities required in daily clinical practice. (Goal 1, Goal A)
- Execute medical imaging procedures under the appropriate level of supervision. (CG 7)
- Adhere to team practice concepts that focus on organizational theories, roles of team members and conflict resolution. (Goal F)
- Adapt to changes and varying clinical situations. (Goal B)
- Describe the role of health care team members in responding/reacting to a local or national emergency.
- Provide patient-centered clinically effective care for all patients regardless of age, gender, disability, special needs, ethnicity or culture. (Goal 8, Goal G)
- Integrate the use of appropriate and effective written, oral and nonverbal communication with patients, the public and members of the health care team in the clinical setting. (Goal 1, Goal A)
- Integrate appropriate personal and professional values into clinical practice. (Goal 9, Goal C)
- Recognize the influence of professional values on patient care. (Goal 8, Goal C)
- Explain how a person's cultural beliefs toward illness and health affect his or her health status. (Goal 8, Goal C)
- Use patient and family education strategies appropriate to the comprehension level of the patient/family.
- Provide desired psychosocial support to the patient and family. (Goal 5)
- Demonstrate competent assessment skills through effective management of the patient's physical and mental status.
- Respond appropriately to medical emergencies.
- Examine demographic factors that influence patient compliance with medical care. (Goal 8, Goal C)
- Adapt procedures to meet age-specific, disease-specific and cultural needs of patients. (Goal 8, Goal C)
- Assess the patient and record clinical history.
- Demonstrate basic life support procedures.
- Use appropriate charting methods. (Goal 1, Goal A)
- Apply standard and transmission-based precautions.
- Apply the appropriate medical asepsis and sterile technique.
- Demonstrate competency in the principles of radiation protection standards.
- Apply the principles of total quality management.
- Report equipment malfunctions.
- Examine procedure orders for accuracy and take corrective actions when applicable.
- Demonstrate safe, ethical and legal practices.
- Integrate the radiographer's practice standards into clinical practice setting. (Goal 8, Goal C)

- Maintain patient confidentiality standards and meet HIPAA requirements.
- Demonstrate the principles of transferring, positioning and immobilizing patients.
- Comply with departmental and institutional response to emergencies, disasters and accidents.
- Differentiate between emergency and non-emergency procedures.
- Adhere to national, institutional and departmental standards, policies and procedures regarding care of patients, providing radiologic procedures and reducing medical errors.
- Select technical factors to produce quality diagnostic images with the lowest radiation exposure possible.
- Critique images for appropriate anatomy, image quality and patient identification. (Goal 4, Goals B & E)
- Determine corrective measures to improve inadequate images. (Goal B)

Topical Outline:

The general plan for the fifteen-week semester identifies the topics and procedures to be discussed and simulated in the laboratory:

Week #	Topic
1	Introduction to X-ray Laboratory Equipment
2	Positioning Terminology/Radiography of the Digits (Fingers & Thumb
3	Radiography of the Hand and Wrist
4	Radiography of the Forearm, Elbow and Humerus
5	Radiography of the Shoulder Girdle, Part I
6	Radiography of the Shoulder Girdle, Part II
7	Radiography of the Toes and Feet (without shoes and socks)
8	Midterm Examination
9	Radiography of the Ankle and Calcaneus (without shoes and socks)
10	Radiography of the Tibia/Fibula and Knee
11	Radiography of the Intercondylar Fossa and Knee
12	Radiography of the Mid-to-Distal Femur

13 Radiography of the Chest

14 Radiography of the Abdomen

15 Review for Final Examination

CONTINUE ON NEXT PAGE

Tentative Lecture & Laboratory Schedule:

Lecture Schedule (Mondays 10 am – 12 pm; Wednesdays 11 am – 12 pm):

SEMESTER WEEK	TOPIC	READING ASSIGNMENT (BONTRAGER)
1	**Introduction/Equipment**	On-line Handouts
2	**LABOR DAY -- NO CLASS Monday**; Wednesday: Patient Communication	On-Line Handouts
3	Positioning Terminology Radiography of the Digits	pp.14-29; 30-31; 34-37; 49; 130-131; 145-152; ARRT handout
4	Radiography of the Hand & Wrist **Test #1: Terminology & Digits**	pp. 130-133; 139; 153-165
5	Radiography of the Forearm, Elbow and Humerus **Test #2: Hand & Wrist**	pp. 134-136; 166-178
6§	Radiography of the Shoulder Girdle **Test #3: Forearm, Elbow and Humerus**	pp. 182-190; 191-192; 195; 197-198
7§	Radiography of the Shoulder Girdle, part II **Test #4: Shoulder Girdle**	pp. 199;202; 203-307
8	Radiography of the Toes and Feet **Test #5: Shoulder Girdle, part II**	pp. 210-213; 215; 222; 228-235
9	**Comprehensive Midterm Examination (including Toes and Feet)**	
10	Radiography of the Ankle and Calcaneus	pp. 214-215; 236-242
11	Radiography of the Tibia/Fibula and Knee **Test #6: Ankle and Calcaneus**	pp. 216; 218-220; 243-249
12	Radiography of the Intercondylar Fossa and Patella **Test #7: Tibia/Fibula and Knee**	pp. 217-220; 250-255
13	Radiography of the Patella (continued) and Femur **Test #8: Intercondylar Fossa and Patella**	pp. 254-255; 256-258
14*	**Test #9: Patella (continued) and Femur (to be given on Monday 11/24/08)** Radiography of the Chest	pp. 76-95; 96-106
15	Radiography of the Abdomen **Test #10: Chest Radiography**	pp. 110-120; 121-128
16	**Test #11: Abdomen Radiography** Review for Final Examination	
17	**Final Examination: 12/15/08**	

Laboratory Schedule (Mondays and Wednesdays 1 to 4 pm, depending on section):

LECTURE DATE	WEEK	FRIDAY A.M. LAB TEST (Monday P.M. Practice Lab)	FRIDAY P.M. LAB TEST (Wednesday P.M. Practice Lab)
8/25/08	1	Equipment	Equipment
9/1/08	2	No Lab Practice or Testing	No Lab Practice or Testing
9/8/08	3	Digits	Digits
9/15/08	4	Hand & Wrist	Hand & Wrist
9/22/08	5	Forearm, Elbow, Humerus	Forearm, Elbow, Humerus
9/29/08	6	Shoulder Girdle, Part I	Shoulder Girdle, Part I
10/6/08	7	Shoulder Girdle, Part II	Shoulder Girdle, Part II
10/13/08	8	Toes and Feet	Toes and Feet
10/20/08	9	Make Up Testing	Make Up Testing
10/27/08	10	Ankle & Calcaneus	Ankle & Calcaneus
11/3/08	11	Tibia/Fibula and Knee	Tibia/Fibula and Knee
11/10/08	12	Intercondylar Fossa & Patella, Part I	Intercondylar Fossa & Patella, Part I
11/17/08	13	Patella, continued and Femur	Patella, continued and Femur
11/24/08	14*	Thanksgiving Recess; no classes or labs	Thanksgiving Recess; no classes or labs
12/1/08	15	Chest Radiography	Chest Radiography
12/8/08	16	Abdomen Radiography	Abdomen Radiography
12/15/08	17**	Final Make Ups	Final Make Ups

§Wednesday class session meets from 10:00 a.m. to 10:50 a.m.
*Wednesday follows Friday schedule

**Any make up labs must be completed no later than Tuesday December 16, 2008 provided that students have satisfied requirements in accordance with competency process explained in this course outline.

Evaluation of Student Learning:

The student must receive a minimum grade of "C" (75%) or higher in each component of the course (lecture, laboratory and clinical education) in order to continue in radiography courses. A grade of "P" (pass) must be earned in the clinical component. The following course grade distribution will be utilized:

Lecture:	60%
Laboratory:	40%
Clinical:	Pass/Fail (P/F)

Lecture Evaluation & Grading Policy:

A minimum of ten weekly written tests, a midterm and a final examination will be administered in the lecture component. The lecture grade will be determined on the basis of the following distribution:

Weekly Tests:	40%
Midterm Exam:	30%
Final Exam:	30%

For students maintaining a B or higher average in the lecture component of the course, they will have the option not to take the comprehensive final examination in RAD127. In this case, the lecture grade will be calculated as follows:

Weekly Tests:	57%
Midterm Exam:	43%

Laboratory Evaluation & Grading Policy:

Laboratory testing is an integral part of the clinical competency process. This process begins with classroom instruction followed by laboratory demonstration. Students then practice those positions learned in lecture and demonstration.

Laboratory testing requires the student to demonstrate proficiency in positioning, patient care and communication, equipment use and radiation protection. Students must demonstrate a minimum of two positions chosen at random from those practiced in the laboratory during the current week. A minimum score of 85% is needed in order to successfully complete a laboratory test, also called a laboratory practical evaluation.

Each position is evaluated separately. Certain objectives must be successfully achieved in order to pass. The laboratory test will be terminated

if the requirements of these areas are not met before a simulated exposure is made. These objectives are related to proper communication, interpretation of the procedure to be demonstrated and radiation protection. A copy of the laboratory testing form will be distributed during the first laboratory practice session.
Students are required to complete twelve (12) laboratory tests (laboratory evaluations). To achieve the highest degree of success, students are urged to study the assigned material, ask relevant questions in class when the material is not clearly understood, and actively engage in laboratory practice. **Until a laboratory test is successfully completed, students are not permitted to perform that same procedure on patients in the hospital!** However, students are free to practice with each other while at the hospital when circumstances permit and make the best use of laboratory practice sessions. The best use of laboratory time requires **observation, collaboration and participation**.

The laboratory grading is based on the number of laboratory tests (not including equipment check) completed **on the first attempt** as follows:

12 = 100%(A); 11 = 92%(A); 10 = 83%(B); 9 = 75%(C); 8 = 67%(D)

When a laboratory test is unsuccessful, the student will be asked to retest provided that remediation is performed and that evidence of remediation is submitted in a timely fashion as determined by the course instructor. A maximum of three different radiographic procedures can be retested. An unsuccessful retest in any one of these will result in an unsatisfactory laboratory grade. All outstanding laboratory testing must be completed by the end of the semester. Otherwise, the student will earn an unsatisfactory grade for the course.

Clinical Education Evaluation & Grading Policy:

There will be two (2) clinical evaluations that will cover the student's overall technical and professional development. Students will be evaluated weekly by the staff that they are assigned with. These weekly evaluations will become the basis for the clinical evaluations conducted by the senior clinical instructor and the adjunct clinical faculty member. An image evaluation presentation will be made by students that will demonstrate their ability to critique the quality of images taken in the clinical setting with respect to technique, positioning and other criteria (patient identification, marker placement, etc.).

Students are required to satisfactorily complete clinical competency testing involving three (3) radiographic procedures covered in lecture, evaluated in laboratory and performed at the initial level as defined in the Clinical Education Student Handbook. In this regard, a CCE is a clinical competency evaluation is that which is conducted by a clinical instructor or adjunct clinical faculty member to determine a student’s ability to successfully perform a radiographic procedure at an initial level of ability.

The clinical grade is computed as follows:

Clinical Evaluations	30%
Image Evaluation	30%
Clinical Competency Evaluations	40%

Clinical Assignment Schedule:

Students will report to the assigned clinical facility prepared to begin clinical education at 8:00 a.m. unless otherwise notified. Specific clinical dates, hours and sites will be distributed at the start of the course.

*Note: Students who demonstrate competency in any procedure may perform that procedure under indirect supervision. This means that the licensed radiographer need not be present in the radiograph room during the procedure, but must be adjacent to the room and immediately available should the student require assistance.

Students who produce unacceptable radiographs must repeat those radiographs under direct supervision regardless of the student's level of competency. Failure to comply with this rule is subject to disciplinary action.

Clinical Education Policies:

The student should refer to the clinical education handbook for the pertinent policies regarding attendance, punctuality, the clinical competency process, etc.

Attendance Policy:

All students are expected to attend every class and laboratory session. Any student expecting to be absent from class must notify the course instructor **before** the class session ends. A valid reason for the absence is expected. Excessive lateness and/or absence will require counseling of the student by the course instructor and/or Program Coordinator. Continued disregard of counseling will be grounds for disciplinary action.

A weekly test will be given on material covered the previous week. Missed tests cannot be made up. The weighting assigned to missed tests will be redistributed to the final examination. The student is responsible for all material covered in missed classes.

Academic Integrity Policy Statement:

Mercer County Community College is committed to Academic Integrity -- the honest, fair and continuing pursuit of knowledge, free from fraud or deception. Academic Integrity is violated whenever a student:

A. Uses or obtains unauthorized assistance in any academic work.
B. Gives fraudulent assistance to another student.
C. Knowingly represents the work of others as his/her own, or represents previously completed academic work as current.
D. Fabricates data in support of an academic assignment.
E. Inappropriately or unethically uses technological means to gain academic advantage.

In all cases, the instructor shall notify the Chair of the Academic Integrity Committee of the violation. Students should refer to the MCCC Student Handbook for the complete policy. **Students may be required to be report violations of Academic Integrity to the American Registry of Radiologic Technologists (ARRT).**

CONTINUE ON NEXT PAGE

MERCER COUNTY COMMUNITY COLLEGE
RADIOGRAPHY PROGRAM CLASS OF 2010
CLINICAL EDUCATION DATES, FALL 2008

September 2008

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				11		
		16		18		
		23		25		
		30				

October 2008

Sun	Mon	Tue	We	Thu	Fri	Sat
				2		
		7		9		
		14		16		
		21		23		
		28		30		

November 2008

Sun	Mon	Tue	We	Thu	Fri	Sat
		4		6		
		11		13		
		18		20		
		25				

December 2008

Sun	Mon	Tue	We	Thu	Fri	Sat
		2		4		
		9				

ORIENTATION: SEPTEMBER 11
MIDTERM EVALUATIONS DUE: OCTOBER 23
THANKSGIVING HOLIDAY: NOVEMBER 27-28
END TERM EVALUATIONS DUE: DECEMBER 9
FINAL EXAMS: DECEMBER 11-16
GRADES AVAILABLE ONLINE: DECEMBER 18