JEFFERSON COLLEGE

COURSE SYLLABUS

RAD125

Radiographic Positioning II

3 Credit Hours

Revised by: Janet E. Akers BS RT (R)(M)
Date: September 25, 2013

Kenny Wilson, Director, Health Occupation Programs
Dena McCaffrey, Dean, Career and Technical Education
RAD125 Radiographic Positioning II

I. CATALOGUE DESCRIPTION

A. Prerequisites: Acceptance to Radiologic Technology Program, Reading Proficiency

B. Credit hour award: 3

C. Description: This course consists of lecture and practicum in routine radiographic procedures for the lower extremities, pelvis, thorax and spine as well as contrast studies using relevant structural relationships, landmarks in radiographic positioning, types and sizes of image receptors used for each study, routine positioning and techniques of the region, medical terms, definitions, abbreviations and symbols. Radiographic anatomy, radiation protection and patient care skills are reinforced. This course is a portion of the five steps to clinical competency and must be completed with an 86% or better in both the lecture and practicum sections. (F)

II. EXPECTED LEARNING OUTCOMES/CORRESPONDING ASSESSMENT MEASURES

<table>
<thead>
<tr>
<th>Expected Learning Outcomes</th>
<th>Assessment Measures</th>
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<tbody>
<tr>
<td>Identify the major anatomical structures and positioning terms related to the lower extremities, pelvis, hip and spine.</td>
<td>Written Assignments, Class Discussion/Activity</td>
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<tr>
<td>Compare traditional and non-traditional projections used for lower extremities, hip and spine procedures and contrast studies.</td>
<td>Class Discussion/Activity, Written Examinations, Written Assignments, Competency Testing</td>
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<tr>
<td>Determine film size, exposure factors, central ray direction and/or angulation for radiographic procedures.</td>
<td>Class Discussion/Activity, Written Examinations, Written Assignments, Competency Testing</td>
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<td>Demonstrate, in the lab, an understanding of pre-examination patient criteria practices for lower extremities, hip, pelvis, spine and contrast studies.</td>
<td>Class Discussion/Activity, Written Examinations, Written Assignments, Competency Testing</td>
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<tr>
<td>Demonstrate, in the lab, radiation safety protection practices utilized in radiographic procedures.</td>
<td>Class Discussion/Activity, Written Examinations, Written Assignments, Competency Testing</td>
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### III. OUTLINE OF TOPICS

**A. Lower Extremity**

1. **Anatomy Review**
   - Leg, Knee and Femur
     1. Leg
        - Tibia/ Fibula
     2. Knee
        - Patella
     3. Femur
   2. **General Procedural Guidelines**
      - Patient preparation
      - General patient position
      - IR (Image Receptor) size
      - SID (Source to Image Distance)
      - ID (identification) markers
      - Radiation Protection
      - Patient instructions
   3. **Essential Projections: Leg**
      - AP (Anterior posterior)
        1. Positioning considerations
      - Lateral (mediolateral)
        1. Positioning considerations

**B. Pelvis and Upper Femora & Hip**

1. **Anatomy Review**
   - Pelvis

### Identify the anatomical structures visible on radiographs of the lower extremities, hip, pelvis, spine and contrast studies.

<table>
<thead>
<tr>
<th>Class Discussion/Activity</th>
<th>Written Examinations</th>
<th>Written Assignments</th>
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</table>
1. Pelvic Gidle
2. Ileum
3. Ischium
4. Pubis
5. Hip bone
6. Proximal femur
7. Joints of the pelvis
8. Gender differences
9. Boney landmarks
10. Hip Join Localization

2. General Procedural Guidelines
   i. Patient preparation
   ii. General Patient position
   iii. IR size
   iv. SID
   v. ID markers
   vi. Radiation protection
   vii. Patient instructions

3. Essential Projections: Pelvis
   i. AP
      1. Positioning considerations

4. Essential Projection: Hip
   i. AP
      1. Positioning considerations
   ii. Lateral (mediolateral) (Lauenstein; Hickey)
      1. Positioning considerations
   iii. Trauma: Axiolateral (Danelius-Miller)
      1. Positioning considerations

C. Vertebral Column
   1. Anatomy Review: Vertebral Column and Cervical Spine
      i. Vertebral Column
         1. General information
         2. Divisions
         3. Curvatures
         4. Disks
      ii. Typical Vertebra
         1. Cervical
   2. General Procedural Guidelines
      i. Patient preparation
      ii. General patient position
      iii. Image Receptor (IR) size
      iv. Source to Image Distance (SID)
      v. Identification (ID) markers
      vi. Radiation protection
      vii. Patient instructions

D. Essential Projections: C-Spine
   1. AP open-mouth position for C1 and C2
      i. Positioning Considerations
         1. Anatomy
2. Indications
3. Receptor Size
4. Technique
5. Patient Position
6. Part Position
7. Computed Radiography (CR)
8. Respiration
9. Film Critique

2. AP axial
   i. Positioning Considerations

3. Lateral (Grandy)
   i. Positioning Considerations

4. AP axial oblique
   i. Right Posterior Oblique (RPO)
      1. Positioning Considerations
   ii. Left Posterior Oblique (LPO)
      1. Positioning Considerations

5. PA axial oblique
   i. Right Anterior Oblique (RAO)
      1. Positioning Considerations
   ii. Left Anterior Oblique (LAO)
      1. Positioning Considerations

6. Lateral (swimmer’s technique)
   i. Positioning Considerations

E. Essential Projections: Thoracic and Lumbar Vertebrae, Sacrum, and Coccyx

1. Anatomy Review
   i. Thoracic
   ii. Lumbar
   iii. Sacrum
   iv. Coccyx

2. General Procedural Guidelines
   i. Patient preparation
   ii. General patient position
   iii. IR size
   iv. SID
   v. ID markers
   vi. Radiation protection
   vii. Patient instructions

F. Essential Projections: Thoracic Spine

1. AP
   i. Positioning Considerations

2. Lateral
   i. Positioning Considerations

G. Essential Projections: Lumbar Spine

1. AP
   i. Positioning Considerations

2. Lateral
i. Positioning Considerations
3. Lateral L5-S1
   i. Positioning Considerations
4. AP oblique
   i. RPO
      1. Positioning Considerations
   ii. LPO
      1. Positioning Considerations
H. Essential Projections: Sacral Iliac Joints
1. AP oblique
   i. RPO
      1. Positioning Considerations
   ii. LPO
      1. Positioning Considerations
I. Essential Projections: Sacrum & Coccyx
1. Sacrum
   i. AP axial
      1. Positioning Considerations
   ii. Lateral
      1. Positioning Considerations
2. Coccyx
   i. AP axial
      1. Positioning Considerations
   ii. Lateral
      1. Positioning Considerations
J. Bony Thorax:
   1. Anatomy Review
      i. General Information
      ii. Functions
      iii. Sternum
      iv. Ribs
      v. Diaphragm
   2. General Procedural Guidelines
      i. Patient preparation
      ii. General patient position
      iii. IR size
      iv. SID
      v. ID markers
      vi. Radiation protection
      vii. Patient instructions
K. Essential Projections: Sternum
   1. PA obliques
      i. RAO – 15 to 20 degrees
         1. Positioning Considerations
      ii. LAO - 15 to 20 degrees
         1. Positioning Considerations
   2. Left Lateral
i. Upright
  1. Positioning Considerations

L. Essential Projections: Sternoclavicular Joints
  1. PA oblique: *Body rotation method*
     i. RAO and LAO
        1. Positioning Considerations

M. Essential Projections: Ribs
  1. Upper Rib Injury
     i. PA Chest x-ray
        1. Upper, anterior ribs
           a. Positioning Considerations
     ii. AP – Upper
        1. Posterior ribs
           a. Positioning Considerations
     iii. AP – Lower
        1. Posterior ribs
           a. Positioning Considerations
     iv. AP obl Upper 45 degrees
        1. Axillary portion
           a. Positioning Considerations
  2. Lower Rib Injury
     i. PA Chest x-ray
        1. Upper, anterior ribs
           a. Positioning Considerations
     ii. AP – Upper
        1. Posterior ribs
           a. Positioning Considerations
     iii. AP – Lower
        1. Posterior ribs
           a. Positioning Considerations
     iv. AP obl Lower 45 degrees
        1. Axillary portion
           a. Positioning Consideration

N. Digestive System / Alimentary Canal:
  1. Anatomy Review
     i. Alimentary Canal, Esophagus, Stomach, and Duodenum
        1. General Information
        2. Esophagus
        3. Stomach
  2. Technical Considerations
     i. Examination procedure
     ii. Contrast media
        1. Patient education
           a. Radiographer’s responsibility
           b. Standard procedure
        2. Patient preparation and care per procedure
        3. Follow-up care
           a. Post exam
4. Reactions to Contrast Agents
   a. Signs and symptoms
   b. Medical intervention
   c. Vasovagal reactions

3. Essential Projections: Esophagus
   i. AP or PA
      1. Positioning Considerations
   ii. AP or PA oblique
      1. Positioning Considerations
   iii. Lt. Lateral
      1. Positioning Considerations

4. Essential Projections: Upper Gastro Intestinal (UGI)
   i. AP
      1. Positioning Considerations
   ii. PA
      1. Positioning Considerations
   iii. PA oblique / RAO
      1. Positioning Considerations

5. Anatomy Review
   i. Small Intestines
      1. General Information
      2. Function

6. Technical Considerations
   i. Gastrointestinal transit
   ii. Examination procedure
   iii. Contrast media
   iv. Preparation of examination room
   v. Exposure time
   vi. Radiation protection

7. Essential Projections: Small Bowel Follow-through (SMB)
   i. PA or AP
      1. Positioning Considerations

8. Anatomy Review
   i. Large Intestines
      1. General Information
      2. Function
   ii. Large Intestine Procedures
   iii. Examination methods
   iv. Contrast media
   v. Preparation of intestinal tract
   vi. Barium enema (BE) apparatus
   vii. Preparation of BE suspensions
   viii. Patient care and preparation
   ix. Enema tip insertion
   x. Single-contrast BE
   xi. Double-contrast BE
9. Essential Projections: Single-contrast/Full Column BE
   i. AP scout
      1. Positioning Considerations
   ii. AP/PA
      1. Positioning Considerations
   iii. AP/PA sigmoid
      1. Positioning Considerations
   iv. LPO/ RPO
      1. Positioning Considerations
   v. Post Evacuation
      1. Positioning Considerations
10. Essential Projections: Double-contrast/Air contrast BE
    i. AP scout
       1. Positioning Considerations
    ii. AP
       1. Positioning Considerations
    iii. LPO/ RPO
       1. Positioning Considerations
    iv. PA
       1. Positioning Considerations
    v. RAO / LAO
       1. Positioning Considerations
    vi. Rt. & Lt. Lateral Decubitus
       1. Positioning Considerations
    vii. Sigmoid
       1. Positioning Considerations
O. Urinary System & Venipuncture:
   1. Anatomy Review
      i. Urinary System
         1. General Information
         2. Kidneys
            a. Nephron
         3. Ureter
         4. Urinary Bladder
         5. Urethra
            a. Prostate
   2. Overview
      i. Contrast studies
      ii. Contrast media
      iii. Adverse reactions to contrast media
      iv. Preparation of intestinal tract
      v. Patient preparation
      vi. Equipment
   3. Essential Projections: Intravenous urography (IVU)
      i. Indications
      ii. Contraindications
      iii. Risk Factors
      iv. Procedure Preparation
v. AP
   1. Positioning Considerations
vi. AP Oblique
   1. Positioning Considerations
vii. Nephrotomography and Nephrourography/ Tomo’s
    1. Positioning Considerations
viii. AP Axial Bladder
    1. Positioning Considerations
ix. . . AP Oblique Baldder
    1. Positioning Considerations

4. Essential Projections: Retrograde Urography (RUG)
i. General Information
ii. RPO Bladder – Male
   1. Positioning Considerations
iii. AP Bladder - Female
   1. Positioning Considerations

5. Essential Projections: Cystography/Cystogram
i. Indications
ii. Contraindications
iii. Without Fluoro:
    1. Scout KUB (Kidney Ureter and Bladder)
iv. During gravity infusion of contrast:
    1. ½ Volume
    2. Full Volume
    3. Drain KUB
v. For Voiding Cystourethrogram (VCUG) only:
    1. Voiding KUB 14 x 17
vi. With Fluoro:
    1. Scout KUB
vii. During gravity infusion of contrast:
    1. Fluoro spot films
i. Voiding:
    1. Drain KUB

IV. METHOD(S) OF INSTRUCTION

This course is taught using a variety of instructional methods, which include but are not limited to interactive lectures, computer presentations, group activities and exercises, videos, supplemental handouts and student presentations. Students are expected to be ACTIVE participants in the learning process. Students are expected to read the assigned readings prior to scheduled class meetings and come to class prepared to actively participate in all activities.
V. REQUIRED TEXTBOOK(S)


VI. REQUIRED MATERIALS

A. A computer with internet access and basic software to include Word and Power Point (available through Jefferson College labs)

B. Course homepage available through Blackboard

C. Index card holder/binder, Binder, paper, pens, pencils with erasers, highlighters

VII. SUPPLEMENTAL REFERENCES

A. Class Handouts

B. Library Resources
   1. Textbooks
   2. Periodicals
   3. Films On Demand Videos

C. Internet Resources
   1. On-line references
   2. Textbook companion website

VIII. METHOD OF EVALUATION (basis for determining course grade)

Assignments will consist of worksheets, textbook reading, review questions and other activities to enhance the learning experience.

GRADES – Grades will be based on the percentage of total points earned out of total points possible for this semester. The assignments will vary in the number of possible points based upon amount of work involved and complexity of material.

A final semester grade of 86% or above must be achieved in both the classroom and lab sections of this course to successfully complete this course.

EXAMS – All exams with scores less than 86% must be retaken until a score of 86% or above is achieved to complete course requirements. The original score will be used to figure the semester grade. The student will be allowed to retake an exam a maximum of two times. If the student has not passed an exam within the three designated attempts, the student will present to the review board and may be dismissed from the program. The student must
contact the instructor prior to any absence to make arrangements for retesting. Until course requirements are met, the final grade will be an incomplete.

If an exam is not taken at the scheduled time and arrangements for a make-up exam have not been made prior to the designated exam time, the grade for that exam will be zero. No make-up exam will be considered unless the instructor is personally notified prior to the absence. If a student arranges to take the exam at other than the scheduled time, 5% will be deducted from the grade on that exam. Make-up exams are scheduled at the convenience of the instructor. Student’s grade will also be based on participation in class and attendance.

ASSIGNMENTS - In order to be prepared for each class meeting, the student should complete each homework assignment prior to the following class meeting. All assignments must be typewritten and are due at the beginning of class on the assigned due dates. Late assignments will not be accepted. In-class quizzes and assignments cannot be made up.

Grading Scale: *(Jefferson College Radiologic Technology Program's)*

- **A** = 100-92%
- **B** = 91.9-86%
- **C** = 85.9-80%
- **D** = 79.9-70%
- **F** = 69.9 and below
- **I** = Incomplete
- **W** = Excused withdrawal from course

IX. ADA AA STATEMENT

Any student requiring special accommodations should inform the instructor and the Coordinator of Disability Support Services (Library; phone 636-481-3169).

X. ACADEMIC HONESTY STATEMENT

All students are responsible for complying with campus policies as stated in the Student Handbook (see College website, http://www.jeffco.edu).

XI. ATTENDANCE STATEMENT

Students earn their financial aid by regularly attending and actively participating in their coursework. If a student does not actively participate, he/she may have to return financial aid funds. Consult the College Catalog or a Student Financial Services representative for more details. Student’s grade will also be based on participation in class and attendance.

XII. OUTSIDE OF CLASS ACADEMICALLY-RELATED ACTIVITIES

The US Department of Education mandates that students be made aware of
expectations regarding coursework to be completed outside the classroom. Students are expected to spend substantial time outside of class meetings engaging in academically-related activities such as reading, studying, and completing assignments. Specifically, time spent on academically-related activities outside of class combined with time spent in class meetings is expected to be a minimum of 37.5 hours over the duration of the term for each credit hour.