**ESSEX COUNTY COLLEGE**

**Nursing and Allied Health Division**

**RTC 101 – Radiographic Positioning Principles I**

**Course Outline**

**Course Number & Name:** RTC 101 Radiographic Positioning Principles I

**Credit Hours:** 4.0 **Contact Hours** 4.0 **Lecture:** 4.0 **Lab:** 3. 0 **Other**: N/A

**Prerequisites:** Acceptance into the Radiography Program

**Co-requisites**: None **Concurrent Courses**: None

**Course Outline Revision Date:**  Fall 2011

**Course Description** This course provides instruction, with related terminology, in radiographic positioning of lower and upper extremities, chests, and abdomens. Lecture is supplemented with demonstrations and opportunities for students to practice the skills in the radiographic room. Critiques of radiographic films are conducted in the classroom/laboratory.

**Course Goals**: Upon successful completion of this course, students should be able to do the following:

1. define and use standard terminology for radiographic positioning and projection;

2. identify all pertinent anatomy of the chest/thorax/upper respiratory system, abdomen, upper extremities, and lower extremities;

3. identify all pertinent positioning for the chest/thorax/upper respiratory system, abdomen, upper extremities, and lower extremities, including topical landmarks; and

4. determine proper technique, IR selection, and central ray position for all radiographic positions, patients, body habitus, and pathology situations.

**Measurable Course Performance Objectives (MPOs):** Upon successful completion of this course, students should specifically be able to do the following:

1. Define and use standard terminology for radiographic positioning and projection:

1.1 *define and use standard radiography terms including* r*adiographic position, projection, view, and anatomical position;*

1.2 *define and use radiography positioning terminology including recumbent, supine, prone, Trendelenburg, Fowlers, decubitus, erect and upright, anterior position, posterior position, and oblique position;*

1.3 *identify and use general plane terminology including sagittal/mid-sagittal, coronal/mid-coronal, transverse/axial, and longitudinal;*

**Measurable Course Performance Objectives (MPOs)** (continued):

1.4 *identify and use terminology describing movement and direction including cephalad/caudad, inferior/superior, proximal/distal, plantar/palmar, pronate/supinate, flexion/extension, abduction/adduction, inversion/eversion, and medial/lateral;* and

1.5 *identify and use terminology for the four types of body habitus*

2. Identify all pertinent anatomy of the chest/thorax/upper respiratory system, abdomen, upper extremities, and lower extremities:

2.1 *identify on a radiography and/or anatomy diagram the following anatomical components: nasopharynx, larynx, thyroid gland, trachea, esophagus, bronchi, lungs, lobes and fissures, thorax, diaphragm, mediastinum; major blood vessels; abdominal quadrants and regions; major and minor abdominal organs; bones and structures associated with fingers, hands, wrist, radius and ulna,elbow joint, humerus, scapula, clavicle, and shoulder joint; bones and structures associated with toes, foot, ankle, tibia, fibula, knee joint, patella, femur, and hip joint;* and

2.2 *define and identify types of joints and articulations found in the skeletal system*

3. Identify all pertinent positioning for the chest/thorax/upper respiratory system, abdomen, upper extremities, and lower extremities, including topical landmarks:

3.1 *identify and demonstrate proper positioning for the following: chest including erect, supine, semierect, and decubitis on both adult and pediatric patients; abdomen including erect, supine, and decubitus on both adult and pediatric patients; all identified upper extremity procedures both trauma and non-trauma; and all identified lower extremity procedures both trauma and non-trauma;* and

3.2 *discuss the use and procedure for bone survey, long bone measurement, bone age, and soft tissue radiography for foreign body localization*

4. Determine proper technique, IR selection, and central ray position for all radiographic positions, patients, body habitus, and pathology situations:

4.1 *accommodate technique and positioning modifications for pertinent pathological conditions;* and

4.2 *accommodate technique and positioning modifications for cast radiography*

**Method of Instruction:** Instruction will consist of lectures, class discussions/participation, PowerPoint slide shows, class activities, radiograph review, and laboratory activities.

**Outcomes Assessment:** Test and exam questions are blueprinted to the course objectives which are based on the minimum standards required by the American Radiology of Radiologic Technologists (ARRT) and the American Society of Radiologic Technologists (ASRT) suggested course curriculum. Note: Tests and exams are primarily structured in multiple-choice formats in conjunction with the ARRT exam. Also, checklist rubrics may be used to evaluate students for the level of mastery of course objectives.

**Course Requirements:** All students are required to:

1. Read the textbook and do the suggested homework problems in a timely manner.

2. Attend and be an active participant in all classes.

3. Take tests/exams in class and adhere to the test/exam schedule.

4. Turn off cell phones while in class.

5. Remain in the classroom during the entire class period.

6. Earn a “C” or better to pass this class. Students who do not earn a “C” or better will be required to withdraw from the Radiography Program as per program policy.

**Methods of Evaluation:** Final course grades will be computed as follows:

**% of**

**Grading Components final course grade**

* 6 or more Tests (dates specified by the instructor)  50%

Tests will be administered regularly throughout the semester to test student mastery of course objectives.

* **Laboratory Competency (33) 20%**

The laboratory competency assessment, in which student performance will be rated by a laboratory competency rubric, will provide evidence of the extent of student achievement of some course goals. (See Required Laboratory Competencies on pages 7 – 8.)

* **Midterm Exam** (date specified by the instructor)  **20%**

The midterm exam format may consist of multiple choice, short answer, and true/false questions and will include material from the readings, homework, lectures, and labs covered throughout the semester. The midterm exam will test the students’ mastery of course objectives and synthesis of course material covered from the beginning through the first half of the semester.

* **Final Exam 40%**

The final exam format may consist of multiple choice, short answer, and true/false questions and will include material from the readings, homework, lectures, and labs covered throughout the semester. The final exam will test the students’ mastery of course objectives and synthesis of course material covered throughout the entire semester.

Note**: Laboratory Competency** includes all 33 required simulated laboratory competency evaluations. Students failing a competency will be remediated and re-evaluated. The grade for remediated competency will be an average of the failure and re-evaluation grades.

**Academic Integrity:** Dishonesty disrupts the search for truth that is inherent in the learning process and so devalues the purpose and the mission of the College. Academic dishonesty includes, but is not limited to, the following:

* plagiarism – the failure to acknowledge another writer’s words or ideas or to give proper credit to sources of information;
* cheating – knowingly obtaining or giving unauthorized information on any test/exam or any other academic assignment;
* interference – any interruption of the academic process that prevents others from the proper engagement in learning or teaching; and
* fraud – any act or instance of willful deceit or trickery.

Violations of academic integrity will be dealt with by imposing appropriate sanctions. Sanctions for acts of academic dishonesty could include the resubmission of an assignment, failure of the test/exam, failure in the course, probation, suspension from the College, and even expulsion from the College.

**Student Code of Conduct:** All students are expected to conduct themselves as responsible and considerate adults who respect the rights of others. Disruptive behavior will not be tolerated. All students are also expected to attend and be on time for all class meetings. No cell phones or similar electronic devices are permitted in class. Please refer to the Essex County College student handbook, Lifeline, for more specific information about the College’s Code of Conduct and attendance requirements.

**Course Content Outline:** based on the text **Radiographic Positioning and Procedures**, all 3 volumes, by E Frank, B Long & B Smith; ISBN # 978-0323073349. The accompanying workbook (ISBN # 973-0323073240) is also required.

**Week Topics covered**

1 Lecture: Standard terminologies for positions and projections; anatomy of the thoracic cavity/respiratory system; radiography of the chest

Lab: Standard terminologies; equipment movement operation; PA and lateral chest

2 **Test 1** on terminologies

Lecture: Anatomy of the thoracic cavity/respiratory system; radiography of the chest (continued)

Lab: Introduce proper patient ID; history taking prior to exam; patient measurement with calipers; techniques selection; routine CXR introduced

3 **Test 2** on chest

Lecture: Anatomy of the abdomen; positioning of the abdomen

Lab: Positioning of the abdomen; practice chest and abdomen

4 **Test 3** on abdomen

Lecture: Anatomy of the upper extremity finger, hand, and wrist; positioning of the upper extremity finger, hand, and wrist

Lab: Positioning of the finger, hand, and wrist

5 **Test 4** on finger, hand, and wrist

Lecture: Anatomy of the forearm (radius/ulna), elbow joint, and humerus; positioning of the forearm (radius/ulna), elbow joint, and humerus

Lab: Positioning of the forearm (radius/ulna), elbow joint, and humerus

6 **Test 5** on forearm (radius/ulna), elbow joint, and humerus

Lecture: Anatomy of the scapula and clavicle; positioning of the scapula and clavicle

Lab: Positioning of the scapula and clavicle

7 **Midterm Exam**

8 Lecture: Anatomy of the shoulder joint, A/C joint, and pediatric upper extremity; positioning of the shoulder joint, A/C joint, and pediatric upper extremity

Lab: Positioning of the shoulder joint, A/C joint, and pediatric upper extremity

9 **Test 6** on scapula, clavicle, A/C joint, and pediatric upper extremity

Lecture: Anatomy of the toes, foot, calcaneous, and ankle joint; positioning of the toes, foot, calcaneous, and ankle joint

Lab: Positioning of the toes, foot, calcaneous, and ankle joint

**Week Topics covered**

10 **Test 7** on toes, foot, calcaneous, and ankle joint

Lecture: Anatomy of the tibia, fibula, knee joint, and patella; positioning of the tibia, fibula, knee joint, and patella

Lab: Positioning of the tibia, fibula, knee joint, and patella

11 **Test 8** on tibia, fibula, knee joint, and patella

Lecture: Anatomy of the femur and pediatric lower extremity; positioning of the femur, pediatric lower extremity, and trauma lower extremity

Lab: Positioning of the femur, pediatric lower extremity, and trauma lower extremity

12 **Test 9** on femur, pediatric lower extremity, and trauma lower extremity

Lecture & Lab: Complete all outstanding lab competencies

13 Lecture: Types of joints and articulations, casts, pathology considerations

Lab: Complete all outstanding lab competencies

14 Review for Final Exam

Lab: Complete all outstanding lab competencies

15 **Final Exam**

**ESSEX COUNTY COLLEGE RADIOGRAPHY PROGRAM**

**Fall Semester – RTC 101 Required Laboratory Competencies** revised 12/2010

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| **BODY PART** | **POSITION/S REQUIRED** | **VIEWS** |
| **Chest** | Routine (PA/LAT)  Lordotic: Lindbloom and CR angle | 4 |
| Stretcher and wheelchair  AP and left lateral | 4 |
| R & L decubitus and  Both obliques | 4 |
| **Pediatric Chest** | AP/ LAT supine and erect | 4 |
| **Abdomen** | AP (KUB) and erect | 2 |
| Dorsal decubitis and lateral decubitis | 2 |
| **Pediatric Abdomen** | AP supine, AP erect, and lateral | 3 |
| **Pediatric Soft Tissue Neck** | Supine AP and left lateral | 2 |
| **Fingers and Thumb** | PA entire hand  AP and lateral thumb  Lateral and oblique finger | 5 |
| **Hand** | PA, oblique, and fan lateral | 3 |
| **Wrist** | PA, oblique, left lateral, ulna deviation, carpal canal (Stecher View) | 5 |
| **Radius and Ulna**  **(Forearm)** | AP and lateral | 2 |
| **Elbow** | AP, lateral, both obliques | 4 |
| **Elbow Trauma** | AP partial flexion (when elbow cannot be extended)  Trauma axial lateral (Coyle view) | 3 |
| **Humerus** | AP and lateral  Erect or recumbant | 2 |
| **Humerus Trauma** | AP neutral  Transthoracic lateral | 2 |
| **Clavicle** | AP, AP 15-30 degree cephalic, and  PA 15 – 30 degree caudal | 3 |
| **Shoulder** | AP internal, external, and neutral  Posterior oblique (Grashey) and axial (Lawrence) | 5 |
| **Shoulder Trauma** | AP NEUTRAL  Transthoracic lateral,  Scapular Y-view | 3 |
| **Scapula** | AP, and  AP or PA lateral oblique | 2 |
| **AC Joint** | Bilateral AP W/ WO Weight Bearing | 2 |
| **BODY PART** | **POSITION/S REQUIRED** | **VIEWS** |
| **Pediatric Upper Extremity** | AP and lateral entire infant arm | 2 |
| **Toes** | AP entire foot 10 – 15\* angle towards calcaneus, oblique, and lateral (no angle) | 3 |
| **Foot** | AP (10\* angle), oblique, lateral | 3 |
| **Ankle** | AP, oblique, left lateral, and mortise | 4 |
| **Calcaneus** | AP plantodorsal axial and lateral-mediolateral | 2 |
| **Tibia/Fibula (Lower**  **Leg)** | AP and lateral | 2 |
| **Knee** | AP, lateral, both obliques | 4 |
|  | Intercondylar Fossa  Holmblad (kneeling position, 60\* - 70\* flexion),Camp Coventry (prone 40\* - 50\* flexion), and  Beclere Method (AP axial 40\* flexion, 40\* CR angle) | 3 |
| **Patella** | Merchant view (supine, flexion 40\*),  Settegast (prone, flexion 90\*), and Hughston view (prone, flexion 55\*) | 3 |
| **Femur** | AP and lateral | 2 |
| **Trauma lower extremity** | AP and lateral ankle with body part in 45\* rotation | 2 |
| **Pediatric Lower Extremity** | AP and lateral entire infant leg | 2 |