

## HCTC/SKCTC Regional Radiography Program

### IMG Course Descriptions and Student Learning Outcomes

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#### 1<sup>st</sup> Semester - Fall

#### IMG 100 Radiography I

##### **Catalog Course Description:**

Emphasizes the historical perspective, professional ethics, introductory imaging, x-ray tube, patient management, and the role of the radiographer as a member of the health care team. Applies the principles of human anatomy to the study of fundamental radiographic procedures (exposure factors and patient positioning) used for different age groups. Covers procedures of the chest, abdomen, extremities, shoulder girdle, bony thorax, and pelvic girdle.

**Components:** Lecture: 6 credits (90 contact hours). Lab: 1 credit (30 contact hours).

**Co-requisite:** IMG 101

##### **Course Competencies**

Upon completion of this course, the student can:

1. Identify fundamental principles of radiation protection.
2. Define the role of a radiographer in the health care delivery system.
3. Explain the fundamental principles underlying the production of diagnostic radiographs.
4. Explain the fundamental principles of safety in radiography department.
5. Describe the legal, ethical, moral, historical, and cultural aspects or factors which influence and control the practice of radiologic technology.
6. Demonstrate competency in basic patient care skills.
7. Describe and discuss the use of medical devices used in patient care.
8. Demonstrate communication with patients, healthcare providers and families.
9. Apply proper body mechanics and transfer techniques.
10. Apply basic principles of radiographic procedures to produce radiographs of the chest, abdomen, extremities, shoulder girdle and bony thorax.
11. Compare radiographic procedures used for patients of different ages.
12. Explain radiographic procedures to patients.
13. Perform mathematical calculations to determine specific exposure factors.
14. Describe factors which influence and control radiographic qualities of density, contrast, recorded detail and distortion.

**Assessment measure:** All competencies assessed by lecture exams, quizzes, written assignments, lab skill exams, and the co requisite clinical assignment. Achievement will be determined by the student attaining a 75% or greater overall course grade.

## **IMG 101 Clinical I**

### **Catalog Course Description:**

Provides experience in equipment operation, patient care technical factors for radiographic exposures, and in positioning patients accurately for radiographic exams.

**Components:** Clinical: 4 credits (240 contact hours)

**Pre-requisite:** AAS: Admission to the Radiography Program. BIO 139 and current CPR certification.

**Co-requisite:** IMG 100

### **Course Competencies**

Upon completion of this course, the student can:

1. Demonstrate progression in the performance of clinical skills; and
2. Critique radiographs.

**Assessment measure:** All competencies will be evaluated by successful completion of clinical documentation forms and film critique evaluation. Achievement will be determined by the student attaining a 75% or greater overall course grade.

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## **2<sup>nd</sup> Semester – Spring**

## **IMG 110 Radiography II**

### **Catalog Course Description:**

Emphasizes radiographic imaging, related technical factors, and accessories. Applies human anatomy principles to basic radiographic procedures. Includes study of tomography and procedures used for the basic and complex skulls, vertebral column, alimentary canal, and the biliary and urinary systems. Considers special radiographic examinations and equipment.

**Components:** Lecture: 6 credits (90 contact hours). Lab: 1 credit (30 contact hours)

**Pre-requisite:** IMG 100 with a grade of "C" or greater.

**Co-requisite:** IMG 111

### **Course Competencies**

Upon completion of this course, the student can:

1. Apply basic principles of radiographic procedures of skull, vertebral column, pelvic girdle, alimentary canal, biliary system and urinary system as well as mobile and surgical procedures.
2. Compare Radiographic procedures used for patients of different ages.
3. Explain radiographic procedures to patients.
4. Describe procedural considerations for special studies.
5. Perform and/or assist with radiographic procedures which require contrast media.
6. Describe the side and toxic effects of contrast media.
7. Identify and define the rights of drug safety.
8. Apply basic principles of computerized tomography of the head, thorax and abdomen.
9. Discuss and apply the principles accessory equipment in terms of purpose, principles and material as it affects image quality.
10. Describe the criteria used to evaluate a finished radiograph;
11. Describe procedures and equipment used for image acquisition using film screen, digital, and computed radiography.
12. Identify and describe PACS, HIS, and RIS.

**Assessment measure:** All competencies assessed by lecture exams, quizzes, written assignments, lab skill exams, and the co requisite clinical assignment. Achievement will be determined by the student attaining a 75% or greater overall course grade.

## **IMG 111 Clinical II**

### **Catalog Course Description:**

Continues IMG 101 to provide experience with equipment operation, patient care, and procedures for accurate radiographic exposures. Encourages increasing responsibility and autonomy as students build on previously-learned procedures.

**Components:** Clinical: 4 credits (240 contact hours)

**Pre-requisite:** IMG 101 with a grade of "C" or greater

**Co-requisite:** IMG 110

### **Course Competencies**

Upon completion of this course, the student can:

1. Demonstrate progression in the performance of clinical skills; and
2. Critique radiographs.

**Assessment measure:** All competencies will be evaluated by successful completion of clinical documentation forms and film critique evaluation. Achievement will be determined by the student attaining a 75% or greater overall course grade.

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## 3<sup>rd</sup> Semester - Summer

### **IMG 201 Clinical III**

#### **Catalog Course Description:**

Continues IMG 111 to provide experience with equipment operation, application of patient care, set-up of correct technical factors for radiographic exposures, and positioning patients accurately for radiographic exams. Provides opportunities for more responsibility and independence with previously learned procedures. Requires performance of a critical evaluation of finished radiograph with emphasis on acceptable technical exposure factors and accurate patient and anatomical position.

**Components:** Clinical: 3 credits (180 contact hours)

**Pre-requisite:** IMG 111 with a grade of C or greater.

#### **Course Competencies**

Upon completion of this course, the student can:

1. Demonstrate progression in the performance of clinical skills.
2. Apply technical principles necessary for image quality and patient/part positioning.
3. Critique radiographs.

**Assessment measure:** All competencies will be evaluated by successful completion of clinical documentation forms and film critique evaluation. Achievement will be determined by the student attaining a 75% or greater overall course grade.

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## 4<sup>th</sup> Semester – Fall

### **IMG 210 Radiography IV**

#### **Catalog Course Description:**

Covers theories and principles involved in the production, control, and application of ionizing radiation in radiography. Emphasizes the development of a quality assurance program, quality control testing of radiographic equipment, and image intensification.

**Components:** Lecture: 3 credits (45 contact hours). Laboratory: 1 credit (30 contact hours)

**Pre-requisite:** IMG 201 with a grade of C or greater.

## **Course Competencies**

Upon completion of this course, the student can:

1. Describe and discuss the elements of image processing.
2. Describe the principles involved in production of x-rays.
3. Describe the interactions that occur between ionizing radiation and matter.
4. Describe the nature and behavior of electromagnetic radiation.
5. Describe the elements of the x-ray circuit to include the difference between single and three phase power and high frequency generators.
6. Describe the principles of rectification.
7. Describe how a quality assurance/management program is established.
8. Identify and discuss the quality management tests that are performed to insure that diagnostic radiographic equipment meets federal and state standards.
9. Describe the theories and principles involved in image intensified fluoroscopy.

**Assessment measure:** All competencies assessed by lecture exams, quizzes, written assignments, lab skill exams, and the co requisite clinical assignment. Achievement will be determined by the student attaining a 75% or greater overall course grade.

## **IMG 211 Clinical IV**

### **Catalog Course Description:**

Continues IMG 201 to provide experience with equipment operation, application of patient care, set-up of correct technical factors for radiographic exposures, and positioning patients accurately for radiographic exams. Provides opportunities for more responsibility and independence with previously learned procedures.

**Components:** Clinical: 6 credits (360 contact hours)

**Pre-requisite:** IMG 201 with a grade of C or greater.

## **Course Competencies**

Upon completion of this course, the student can:

1. Demonstrate progression in the performance of clinical skills; and
2. Critique radiographs.

**Assessment measure:** All competencies will be evaluated by successful completion of clinical documentation forms and film critique evaluation. Achievement will be determined by the student attaining a 75% or greater overall course grade.

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## 5<sup>th</sup> Semester – Spring

### **IMG 220 Radiography V**

#### **Catalog Course Description:**

Introduces equipment and advanced modalities used to complement diagnostic radiology. Includes principles of radiation biology, radiation protection, pathology and the systematic classifications of disease. Provides for a discussion of professional and legal standards.

**Components:** Lecture: 3 credits (45 contact hours) Lab: 1 credit (30 contact hours)

**Pre-requisite:** IMG 210 with a grade of C or greater.

**Co-requisite:** IMG 221

#### **Course Competencies**

Upon completion of this course, the student can:

1. Identify drugs according to classification, nomenclature, categories and general pharmacologic principles.
2. Identify common drugs and their use in the radiology department.
3. Identify and define the rights of drug safety.
4. List the dose limits using NCRP recommendations.
5. Discuss the principles of radiation protection for personnel and patient protection.
6. Identify and define radiation units of measurement.
7. Describe the current regulatory/advising agencies and regulations for radiation protection.
8. Discuss NCRP recommendations for the design of radiation protection in equipment and construction.
9. Describe the effects of, and responses to, radiation on the molecular, cellular and systems level.
10. Classify acute or chronic effects of radiation.
11. Define and describe radio-sensitivity and response to ionizing radiation.
12. Describe legal, ethical, moral, and cultural aspects or factors which influence and control the practice of radiologic technology.
13. Recognize and describe common radiographic pathology.
14. Identify and apply terminology, classification, and cause of disease to common radiographic pathology.
15. Describe the use of specialized diagnostic imaging and therapy to include the equipment and operations.
16. Describe patient safety in specialized diagnostic imaging and therapy.
17. Demonstrate Venipuncture.
18. Perform registry review exercises.

**Assessment measure:** All competencies assessed by lecture exams, quizzes, written assignments, lab skill exams, and the co requisite clinical assignment. Achievement will be determined by the student attaining a 75% or greater overall course grade.

## **IMG 221 Clinical V**

### **Catalog Course Description:**

Continues IMG 211 to provide experience with equipment operation, application of patient care, set-up of correct technical factors for radiographic exposures, and positioning patients accurately for radiographic exams. Provides opportunities for more responsibility and independence with previously learned procedures.

**Components:** Clinical: 6 credits (360 contact hours)

**Pre-requisite:** IMG 211 with a grade of C or greater.

**Co-requisite:** IMG 220

### **Course Competencies**

Upon completion of this course, the student can:

1. Demonstrate progression in the performance of clinical skills; and
2. Critique radiographs.

**Assessment measure:** All competencies will be evaluated by successful completion of clinical documentation forms and film critique evaluation. Achievement will be determined by the student attaining a 75% or greater overall course grade.