

**Hazard Community and Technical College (HCTC)/  
Southeast Kentucky Community and Technical College (SKCTC)  
Regional Radiography (IMG) Program**

**IMG Course Descriptions and Student Learning Outcomes**

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

**IMG 100**

**Radiography I**

**7 Credits**

**Description:**

Emphasizes the historical perspective, professional ethics, introductory imaging equipment, patient care, interpersonal communications and the role of the radiographer as the member of the healthcare team. Applies the principles of human anatomy to the study of fundamental radiographic procedures (exposure factors and patient positioning) used for diverse populations. 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).

**Pre-requisite:** Admission to the Radiography Program and BIO 139 with a minimum grade of "C".

**Co-requisite:** IMG 101

**Implementation:** Fall 2018

**Competencies/Student Outcomes:**

*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. 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 diverse populations.
12. Explain radiographic procedures to patients.
13. Perform mathematical calculations to determine specific receptor exposure factors.
14. Describe factors which influence and control radiographic qualities of density/brightness, contrast, spatial resolution, dynamic range, and exposure latitude.
15. Discuss basic knowledge in radiographic, fluoroscopic, and mobile equipment.

**IMG 101****Clinical I****4 Credits****Description:**

Focus on the application and evaluation of radiography in the clinical setting. Integrates concepts and knowledge of anatomy, pathology, procedures, patient care, and imaging principles. Develops technical and procedural knowledge through observation and participation in radiographic studies

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

**Pre-requisite:** Admission to the Radiography Program and BIO 139 with a minimum grade of "C".

**Co-requisite:** IMG 100

**Implementation:** Fall 2018

**Competencies/Student Outcomes:**

*Upon completion of this course, the student can:*

1. Demonstrate patient care, procedural and technical skills in the performance of radiographic procedures.
2. Demonstrate progression in the performance of clinical skills.
3. Critique image analysis.

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**2<sup>nd</sup> Semester – Spring****IMG 110****Radiography II****7 Credits****Description:**

Emphasizes radiographic imaging, related technical factors, and accessories. Includes procedures for the basic and complex skulls, vertebral column, abdomen/GI studies and Urological studies. Considers special radiographic examinations and equipment. Concludes with a detailed discussion of digital imaging and associated topics.

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

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

**Co-requisite:** IMG 111

**Implementation:** Fall 2018

**Competencies/Student Outcomes:**

*Upon completion of this course, the student can:*

1. Apply basic principles of radiographic produces of skull, vertebral column, abdomen/GI studies and urological studies.
2. Compare radiographic procedures used for patients of diverse populations.
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. Define the rights of drug safety.
8. Discuss and apply the principles accessory equipment in terms of purpose, principles and material as it affects image quality.

9. Describe the criteria used to evaluate a finished radiograph.
10. Describe procedures and equipment used for image acquisition using digital radiography.
11. Describe imaging informatics (DICOM, PACS, HIS, RIS, EMR/EHR).

**IMG 111      Clinical II      4 Credits**

**Description:**

Continues IMG 101 by focusing on the application and evaluation of radiography in the clinical setting. Integrates concepts and the knowledge of anatomy, pathology, procedures, patient care, and imaging principles. Develops technical skills and procedural knowledge through observation and participation in radiographic studies with opportunities for more responsibility and independence with previously learned procedures.

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

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

**Co-requisite:** IMG 110

**Implementation:** Fall 2018

**Competencies/Student Outcomes:**

*Upon completion of this course, the student can:*

1. Demonstrate patient care, procedural and technical skills in the performance of radiographic procedures.
2. Demonstrate progression in the performance of clinical skills.
3. Critique image analysis.

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**3<sup>rd</sup> Semester – Summer**

**IMG 201      Clinical III      3 Credits**

**Description:**

Continues IMG 111 by focusing on the application and evaluation of radiography in the clinical setting. Integrates concepts and the knowledge of anatomy, pathology, procedures, patient care, and imaging principles. Emphasizes on radiographic mobile studies and image analysis. Develops technical skills and procedural knowledge through observation and participation in radiographic studies with opportunities for more responsibility and independence with previously learned procedures.

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

**Pre-requisite:** IMG 111 with a minimum grade of "C".

**Implementation:** Fall 2018

**Competencies/Student Outcomes:**

*Upon completion of this course, the student can:*

1. Demonstrate patient care, procedural and technical skills in the performance of radiographic procedures.
  2. Demonstrate progression in the performance of clinical skills.
  3. Critique image analysis.
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## 4<sup>th</sup> Semester – Fall

### **IMG 210      Radiography IV      4 Credits**

**Description:**

Covers radiographic imaging methods examining the imaging process as a sequence of events of x-ray production through hard copy processing. Discussion of the image equipment in terms of function, influences on the image, and the impact of alterations on image characteristics. Emphasizes on fluoroscopic equipment and QC/QA. Enhances and complements the concurrent clinical experiences of the student.

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

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

**Co-Requisite:** IMG 211

**Implementation:**            Fall 2018

**Competencies/Student Outcomes:**

*Upon completion of this course, the student can:*

1. Discuss the elements of image informatics.
2. Describe the principals 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 the quality management tests that are performed to insure that diagnostic radiographic equipment meets federal and state standards.
9. Describe the theories and principals involved in image intensified and digital fluoroscopy.

### **IMG 211      Clinical IV      6 Credits**

**Description:**

Continues IMG 201 by focusing on the application and evaluation of radiography in the clinical setting. Integrates concepts and the knowledge of anatomy, pathology, procedures, patient care, and imaging principles. Develops technical skills and procedural knowledge through observation and participation in radiographic studies with opportunities for more responsibility and independence with previously learned procedures.

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

**Pre-requisite:** IMG 201 with a minimum grade of “C”.

**Co-requisite:** IMG 210

**Implementation:**            Fall 2018

## Competencies/Student Outcomes:

*Upon completion of this course, the student can:*

1. Demonstrate patient care, procedural and technical skills in the performance of radiographic procedures.
  2. Demonstrate progression in the performance of clinical skills.
  3. Critique image analysis.
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## 5<sup>th</sup> Semester – Spring

**IMG 220      Radiography V      4 Credits**

### **Description:**

Re-introduces advanced modalities used to complement diagnosis images. Covers the principles of radiation biology, radiation protection, pathology, pharmacology principles and systemic classification of diseases. Continues the discussion of professional and legal standards needed to practice by reviewing radiographic topics in preparation for a career as an imaging professional.

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

**Pre-requisite:**    IMG 210 with a minimum grade of "C".

**Co-requisite:**    IMG 221

**Implementation:**      Fall 2018

## Competencies/Student Outcomes:

*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 radiosensitivity 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 advanced competency in patient care skills.
18. Perform registry review exercises.

**IMG 221      Clinical V      6 Credits**

**Description:**

Continues IMG 211 by focusing on the application and evaluation of radiography in the clinical setting. Integrates concepts and the knowledge of anatomy, pathology, procedures, patient care, and imaging principles. Develops technical skills and procedural knowledge through observation and participation in radiographic studies with opportunities for more responsibility and independence with previously learned procedures.

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

**Pre-requisite:**    IMG 211 with a minimum grade of "C".

**Co-requisite:**    IMG 220

**Implementation:**      Fall 2018

**Competencies/Student Outcomes:**

*Upon completion of this course, the student can:*

1. Demonstrate patient care, procedural and technical skills in the performance of radiographic procedures.
2. Demonstrate progression in the performance of clinical skills.
3. Critique image analysis.