**Course Title** – Radiation Biology and Protection  
**Course Prefix and Number** – RADR 2313  
**Department** – Radiologic Technology  
**Division** – Allied Health  

**Course Type:** (check one)  
☐ Academic General Education Course (from ACGM – but not in WCJC Core)  
☐ Academic WCJC Core Course  
☒ WECM course (This course is a Special Topics or Unique Needs Course:  Y ☐ or N ☒)  

**Semester Credit Hours # : Lecture Hours# : Lab/Other Hours #**  
3:3:0  

**Equate Pay hours for course** - 3  

**Course Catalog Description** – Effects of radiation exposure on biological systems. Includes typical medical exposure levels, methods of measuring and monitoring radiation, and methods for protecting personnel and patients from excessive exposure.  

**Prerequisites/Co requisites** - RADR 2309, 2217, 2431, and 2266 with a C or better.

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**Prepared by** Allyson Matheaus  
**Date** 02/07/2014

**Reviewed by Department Head** Sharla Walker  
**Date** 02/10/14

**Accuracy Verified by Division Chair** Carol Derkowski  
**Date** 7/24/14

**Approved by Dean or Vice President of Instruction** Amy LaPan  
**Date** 6/30/2014

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**Purpose:** It is the intention of this Administrative-Master Syllabus to provide a general description of the course, outline the required elements of the course and to lay the foundation for course assessment for the improvement of student learning, as specified by the faculty of Wharton County Junior College, regardless of who teaches the course, the timeframe by which it is instructed, or the instructional method by which the course is delivered. It is not intended to restrict the manner by which an individual faculty member teaches the course but to be an administrative tool to aid in the improvement of instruction.
I. Topical Outline – Each offering of this course must include the following topics (be sure to include information regarding lab, practicum, clinical or other non-lecture instruction):

I. Biological Aspects of Radiation
   A. Radiosensitivity
   B. Somatic Effects
   C. Acute Radiation Syndrome
   D. Embryonic and Fetal Risks
   E. Genetic Impact
   F. Photon Interaction with matter

II. Minimizing Patient Exposure
   A. Exposure Factors
   B. Shielding
   C. Beam Restriction
   D. Filtration
   E. Exposure Reduction
   F. Image Receptors
   G. Grids
   H. Fluoroscopy

III. Personnel Protection
   A. Sources of Radiation
   B. Basic methods of protection
   C. Protective Devices
   D. Special considerations

IV. Radiation Exposure and Monitoring
   A. Units of Measurement
   B. Dosimeters
   C. NCRP Recommendations for Personnel Monitoring

II. Course Learning Outcomes

<table>
<thead>
<tr>
<th>Learning Outcomes</th>
<th>Methods of Assessment</th>
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<tbody>
<tr>
<td>Upon successful completion of this course, students will: Describe the biophysical mechanisms of radiation damage on humans; recall typical dose ranges for routine radiographic procedures; describe basic methods and instruments for radiation monitoring, detection, and measurement; and apply appropriate radiation protection practices.</td>
<td>End of unit examinations Final examination</td>
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</table>
III. Required Text(s), Optional Text(s) and/or Materials to be Supplied by Student.


RADTUTOR online review program.

Calculator

IV. Suggested Course Maximum - 18

V. List any specific spatial or physical requirements beyond a typical classroom required to teach the course.

Radiology Classroom

VI. Course Requirements/Grading System – Describe any course specific requirements such as research papers or reading assignments and the generalized grading format for the course

1. End of Unit Exams 75%
2. Comprehensive Final Exam 25%
   total 100%

Grading Scale:
92 - 100% = A
83 - 91% = B
75 - 82% = C
74.9 and below = F

VII. Curriculum Checklist

☐ - Academic General Education Course (from ACGM – but not in WCJC Core)
   No additional documentation needed

☐ - Academic WCJC Core Course
   Attach the Core Curriculum Checklist, including the following:
   • Basic Intellectual Competencies
   • Perspectives
   • Exemplary Educational Objectives

☒ - WECM Courses
   If needed, revise the Program SCANS Matrix & Competencies Checklist.