RADIATION BIOLOGY
Course Syllabus

Course Number: RADT-0200
OHLAP Credit: No
OCAS Code: None
Course Length: 48 Hours
Career Cluster: Health Science
Career Pathway: Diagnostic Services
Career Major(s): Radiologic Technologist
Pre-requisite(s): Content provides an overview of the principles of the interaction of radiation with living systems. Radiation effects on molecules, cells, tissues and the body as a whole are presented. Factors affecting biological response are presented, including acute and chronic effects of radiation.

Textbooks:
Principles of Radiographic Imaging by Carlton and Adler, 5th Ed. Delmar (2013)

Online resources
Blackboard™

Course Objectives:
1. Differentiate between ionic and covalent molecular bonds.
2. Describe principles of cellular biology.
3. Identify sources of electromagnetic and particulate ionizing radiations.
4. Discriminate between the direct and indirect effects of radiation.
5. Identify sources of radiation exposure.
6. Describe radiation-induced chemical reactions and potential biologic damage.
7. Evaluate factors influencing radiobiologic and biophysical events at the cellular and subcellular level.
8. Identify methods to measure radiation response.
9. Describe physical, chemical and biologic factors influencing the radiation response of cells and tissues.
10. Explain factors influencing radiosensitivity.
11. Recognize the clinical significance of lethal dose (LD).
12. Identify the radiosensitivity of specific cells.
13. Employ dose response curves to study the relationship between radiation dose levels and the degree of biologic response.
14. Examine effects of limited vs. total body exposure.
15. Relate short-term and long-term effects as a consequence of high and low radiation doses.
16. Differentiate between somatic and genetic radiation effects, and discuss specific diseases of syndromes associated with them.
17. Discuss stochastic (probabilistic) and nonstochastic (deterministic) effects.
18. Differentiate between the stochastic (probabilistic) and nonstochastic (deterministic) effects of radiation exposure.
19. Discuss embryonic and fetal effects of radiation exposure.
20. Discuss risk estimates for radiation-induced malignancies.
21. Discuss acute radiation syndrome.

All objectives are taken from the ASRT (American Society of Radiologic Technologists) curriculum © 2017

Teaching Methods:
The class will primarily be taught by the lecture and demonstration method and supported by various media materials to address various learning styles. There will be question and answer sessions over material covered in lecture and media presentations. Supervised lab time is provided for students to complete required projects.

Grading Procedures:
1. Students are graded on theory and lab practice and performance.
2. Each course must be passed with eighty (80%) percent or better.
3. Grading scale: A=90-100%, B=80-89%
4. Career Major grades established during coursework are a major criteria in successfully obtaining certification.

Available Certifications/College Credit:
The student may be eligible to take state, national or industry exam after completion of the program. Tulsa Tech students may be able to earn college credit based on their knowledge gained at Tech. The process of earning credit through Prior Learning Assessment (PLA) will be determined after completion with Tech and based on certification, credential or knowledge of the subject. See program counselor for additional information.

College Credit Eligibility:
All Tulsa Tech students (high school and adult) may have the opportunity to receive college credit upon completion of their program. Our College Relations office will work with students regarding the benefits of Prior Learning Assessments (PLA) toward an Associate of Applied Science (AAS) degree or a technical college certificate at area colleges. For more details call the College Relations office at 918.828.5000.