RADIATION PRODUCTION AND CHARACTERISTICS
Course Syllabus

Course Number: RADT-0111  
OHLAP Credit: No

OCAS Code: None
Course Length: 30 Hours
Career Cluster: Health Science
Career Pathway: Diagnostic Services
Career Major(s): Radiologic Technologist

Pre-requisite(s):

Course Description: Content establishes a basic knowledge of atomic structure and terminology. Also presented are the nature and characteristics of radiation, x-ray production and the fundamentals of photon interactions with matter.

Textbooks:


Online resources
Blackboard™

Course Objectives:

1. Describe fundamental atomic structure.
2. Explain the processes of ionization and excitation.
3. Describe the electromagnetic spectrum.
4. Describe wavelength and frequency and how they are related to velocity.
5. Explain the relationship of energy, wavelength and frequency.
6. Explain the wave-particle duality phenomena.
7. Identify the properties of x-rays.
8. Describe particulate radiation.
9. Differentiate between ionizing and nonionizing radiation.
10. Describe radioactivity and radioactive decay in terms of alpha, beta and gamma emission.
11. Compare the production of bremsstrahlung and characteristic radiations.
12. Describe the conditions necessary to produce x-radiation.
13. Describe the x-ray emission spectrum.
14. Explain the factors that affect the x-ray emission spectrum.
15. Discuss various photon interactions with matter.
16. Discuss relationships of wavelength and frequency to beam characteristics.
17. Discuss the clinical significance of the photoelectric and modified scattering (Compton) interactions in diagnostic imaging.

I. All objectives are taken from the ASRT (American Society of Radiologic Technologists) curriculum © 2017
RADIATION PRODUCTION AND CHARACTERISTICS

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%, C=70-79%, D=60-69%, F=50-59%.
4. Students wanting to take advantage of college credit/alliance agreements must maintain an 80% in their coursework.
5. Career Major grades established during coursework are a major criteria in successfully obtaining certification.

Description of Classroom, Laboratories, and Equipment: Tulsa Technology Center campuses are owned and operated by Tulsa Technology Center School District No. 18. All programs provide students the opportunity to work with professionally certified instructors in modern, well-equipped facilities.

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.