

University of Arkansas - Fort Smith
5210 Grand Avenue
P. O. Box 3649
Fort Smith, AR 72913-3649
479-788-7000

General Syllabus

DHYG 23103 Radiology

Credit Hours: 3

Lecture Hours: 2

Laboratory Hours: 3

Prerequisites: Admission to the Dental Hygiene program and CHEM 10003 Chemical Principles

Corequisites: DHYG 21101 Dental Anatomy and Occlusion, DHYG 24302 Head and Neck Anatomy, DHYG 31002 Pre-Clinical Dental Hygiene, DHYG 31033 Pre-Clinical Hygiene Theory, and DHYG 34102 Oral Embryology and Histology

Effective Catalog: 2018-2019

I. Course Information

A. Catalog Description

Theory and clinical practice of oral radiographic methods. Topics include properties and uses of x-radiation, radiation hygiene, exposing and developing radiographs (intraoral, extra-oral, panoramic, and digital), mounting films, identification of radiographic anatomical landmarks, and radiographic interpretation.

B. Additional Information-None

II. Student Learning Outcomes

A. Subject Matter

Upon completion of this course, the student will:

1. Discuss the history of radiography and dental radiography. (C11)
2. Discuss the nature, production, and principles of radiographic image formation.
3. Discuss the components of the dental x-ray unit including the tube head, control panel, and position indicating device.
4. Discuss basic electrical physics of the x-ray machine.
5. Discuss the biological effects of ionizing radiation on human tissue.

6. Demonstrate proper criteria for exposure of dental radiographs in a safe and efficient manner following the As Low As Reasonably Achievable (ALARA) principle.
7. Discuss and demonstrate the proper use of exposure protection devices including leaded apron, radiation barriers, and monitoring badges.
8. Discuss and demonstrate proper infection control procedures as they relate to dental radiography including the preparation of the operator, the radiographic exposure, post operator disinfection, and processing procedures.
9. Identify radiographic landmarks of the maxilla and mandible as viewed on intraoral and extraoral images.
10. Discuss factors that affect the diagnostic quality of dental radiographs.
11. Demonstrate proper placement of dental radiographs on children, adolescents and adults.
12. Demonstrate proper film mounting technique.
13. Compare and contrast the paralleling technique with the bisecting the angle technique.
14. Compare and contrast types of radiographic techniques including traditional, direct digital, and indirect digital imaging.
15. Identify the appearance of normal anatomy, caries, periodontal disease and dental restorations on a dental radiographic image.
16. Discuss radiographic exposure guidelines for children, adolescents, adults and individuals with special needs.
17. Identify operator and processing errors.
18. Discuss special imaging techniques including occlusal radiographs, localization techniques, TMJ projections and three dimensional imaging.
19. Discuss quality assurance and legal aspects of dental radiographs
20. Discuss proper documentation of radiographic exposures in the patient dental record.

Refer to *Graduate Competencies* in the Policy and Procedures Manual available online. These objectives increase knowledge in competencies listed above.

B. University Learning Outcomes

This course enhances student abilities in the following areas:

Communication Skills (written and oral)

Students will practice communication skills through discussions and patient interaction scenarios to educate a patient about their oral tissues as represented in dental radiographs.

Analytical Skills

Critical Thinking Skills: Students will apply the principles of radiation characteristics and radiographic image formation and interpretation. Students will assess and evaluate the value and use of dental radiographs. The

development of a radiographic request form will demonstrate individual patient needs.

Ethical Decision Making

Students will recognize the ethical dilemmas involved with using x-radiation in the dental practice setting. The accepted standard of care for the exposure of dental radiographs will be evaluated based upon current American Dental Association guidelines.

III. Major Course Topics

- A. History of radiography
- B. Production of radiation
- C. Infection control protocols
- D. Image processing techniques
- E. Overview of equipment
- F. Radiation biology
- G. Radiologic health and protection
- H. Techniques for exposing radiographic images on children, adolescents, adults and individuals with special needs
- I. Diagnostic quality of dental radiographs
- J. Proper placement of dental radiographs
- K. Intraoral radiography techniques: paralleling method
- L. Intraoral radiography techniques: bisecting angle technique
- M. Film mounting techniques
- N. Radiographic anatomy
- O. Analysis of errors and artifacts
- P. Self-assessment using clinic radiographic evaluation forms
- Q. Panoramic radiography: technique and errors
- R. Common technique errors
- S. Digital imaging
- T. Patient assessment, communication and education
- U. Quality assurance and legal aspects
- V. Radiographic interpretation: caries and periodontal disease
- W. Radiographic interpretation: pulpal and periapical lesions
- X. Radiographic interpretation: bone and other lesions
- Y. Special techniques: localization, occlusal radiographs and TMJ projections, and three dimensional digital imaging