

LABETTE COMMUNITY COLLEGE BRIEF SYLLABUS

SPECIAL NOTE:

This brief syllabus is not intended to be a legal contract. A full syllabus will be distributed to students at the first class session.

TEXT AND SUPPLEMENTARY MATERIALS USED IN THE COURSE (if any):

Please check with the LCC bookstore <http://www.labette.edu/bookstore> for the required texts for this class.

COURSE NUMBER: DNAS 118

COURSE TITLE: DENTAL RADIOLOGY I

SEMESTER CREDIT HOURS: 3

DEPARTMENT: Dental Assistant

DIVISION: Health Science

PREREQUISITES: Acceptance into Dental Assistant Program

REVISION DATE: February 2016

COURSE DESCRIPTION:

Students will learn the basic principles of diagnostic radiography, including: radiography equipment, radiation characteristics, radiation biology, protective measures, regulations, bisecting angle and paralleling techniques, extra oral radiology, and anatomical landmarks. Instruction and laboratory techniques include: exposure, processing, mounting, and evaluation of dental films using manikins.

COURSE OUTCOMES AND COMPETENCIES:

Students who successfully complete this course will be able to:

1. Summarize the characteristics of radiation, the principles of radiation safety, use and importance of dental imaging, describe radiography equipment and describe the methods utilized in protecting the patient and operator during exposure.

- Discuss the highlights in the history and discovery of x-radiation.
- Explain what happens during ionization.
- Describe the properties of x-radiation and how x-rays are produced.
- Differentiate between primary, secondary and scatter radiation.
- Discuss the different effects of radiation exposure on the human body and identify critical organs that are sensitive to radiation.

- Analyze the risks versus benefits of dental imaging.
- Summarize the importance of educating patients about the use and importance of dental radiographs.
- Explain the ALARA concept.
- Discuss with the dental patient radiation protection steps used before, during and after x-ray exposure.
- Describe the importance of film handling and processing.
- Describe measures used to protect the operator from excess radiation.
- Discuss maximum permissible dose and state the MPD for occupational and non-occupational workers.
- Label the parts of the dental x-ray unit.

2. Discuss, compare and contrast basic concepts of digital radiography, conventional x-ray film and processing techniques.

- Describe the purposes and uses of digital radiography.
- List and describe the advantages and disadvantages of digital radiography.
- Explain the fundamental systems of digital radiography and identify advantages and disadvantages of each system.
- List and describe the equipment necessary for digital radiography.
- Identify the types of dental image receptors.
- Describe the composition of a dental x-ray film.
- Discuss how a latent image becomes a visible image.
- Discuss the importance of film speed.
- Identify the five basic sizes of intraoral dental film.
- Describe the care and maintenance of the processing solutions, equipment, and equipment accessories used in manual and automatic film processing.
- List and identify the component parts of manual and automatic processors.
- Describe common time and temperature errors during film processing.
- Describe chemical contamination errors during film processing.
- Describe film handling errors than can occur during film processing.
- Describe some common lighting errors during film processing.
- Identify three types of intraoral x-ray exams: periapicals, bitewings, and panoramic.
- Explain the purpose of an intensifying screen.
- Describe the process for digitizing radiographs using a scanner.
- Duplicate a set of dental radiographs.
- Process dental radiographs using a manual tank.
- Process dental radiographs using a daylight loader.

3. Discuss and summarize legal issues, quality assurance and infection prevention while exposing dental images.

- Describe the components of informed consent with regard to dental imaging.
- Describe the laws that affect the practice of dental radiography.
- Identify the individual who legally owns the dental images.
- Name the annual tests recommended for x-ray equipment.

- Describe the components of a quality assurance program.
- Describe quality control tests for processing solutions.
- Explain the infection control requirements for preparing radiography operator.
- Describe the possible routes of disease transmission.
- Implement the Centers for Disease Control and Prevention (CDC) guidelines for infection control in dental radiology.
- Describe and demonstrate appropriate infection control protocol when making exposures using phosphate storage plates, digital sensors and conventional dental x-ray film.
- Perform infection control practices required for all dental imaging techniques.
- Perform infection control measures when using a daylight loader in processing dental films.

4. Describe, compare, contrast and demonstrate techniques utilized in the production of diagnostic quality radiographs.

- Describe and demonstrate how to prepare a patient for dental imaging.
- Name the two primary types of projections used in an intraoral technique and describe the differences.
- Explain the advantages and disadvantages of the paralleling and bisecting techniques.
- Explain the basic principle of and the five basic rules of the paralleling technique.
- Label, identify and demonstrate assembly of the Rinn XCP instruments.
- Explain recommended vertical angulation and basic rules for all bitewing exposures.
- Describe the appearance of opened and overlapped contact areas on a dental image.
- Recognize and correct problems with vertical and horizontal angulation errors.
- Explain the procedural principles of the bisecting technique.
- Identify the types of image receptor holders that can be used with the bisecting technique.
- Explain the technique for exposing occlusal radiographs.
- Describe techniques for managing the patient with a hypersensitive gag reflex.
- Describe techniques for managing patients with physical and mental disabilities.
- Expose a full series of images using the paralleling technique and bisecting technique with both dental film and sensors.
- Expose a series of bitewing images using both dental film and sensors.
- Expose a maxillary and a mandibular occlusal radiograph using dental film.
- Mount and label a full series of dental radiographs.

5. Compare and contrast extraoral imaging techniques and their advantages and disadvantages.

- Describe the purpose and uses of panoramic imaging.
- Describe the purpose and uses of cone beam computed tomography (CBCT).
- Discuss the advantages and disadvantages of CBCT.
- Describe the equipment used in panoramic imaging.
- Describe the steps for patient preparation and positioning in panoramic imaging and describe the errors that may occur during this procedure.
- Describe the equipment used in extraoral imaging.

- Describe the purposes and uses of extraoral imaging.
- Describe the advantages of three-dimensional (3D) imaging.
- Prepare the equipment and the patient for a panoramic procedure and produce an image.

6. Identify and discuss anatomical landmarks for proper mounting of radiographs as required by the dentist.

- Describe why it is important to recognize and identify normal anatomical landmarks of the face and head.
- Recognize and identify the facial and cranial bones.
- Determine whether a periapical or bitewing radiograph is of the right or left side on the patient.
- Identify any given periapical or bitewing radiograph in relationship to its location in the maxilla or mandible.
- Demonstrate the ability to mount radiographs in the appropriate position in a film mount.
- Differentiate between cortical and cancellous bone.
- Differentiate between radiolucent and radiopaque objects on a film.
- Define the general terms that describe prominences, spaces, and depressions in bone.

7. Demonstrate a working knowledge of film mounting and viewing procedures.

- List five reasons to use a film mount.
- Describe the importance of the identification dot in relationship to film orientation.
- List and describe two methods of film mounting and identify the preferred method.
- List and describe the necessary equipment for film mounting and viewing