Print Date: 4/29/20

Course Objectives/Course Outline
Spokane Community College

Course Title*: Introduction to Dental Radiology*
Prefix and Course Number: DENT 114

Course Learning Outcomes:

By the end of this course, a student should be able to:

1. Identify the role of the dental assistant through demonstration of knowledge of the discovery and development of radiation, how radiation is produced, safety procedures, x-ray unit identification, types of film, patient positioning, film placement, cone angulation, exposing and processing techniques, mounting and documentation.
2. Use dental nomenclature relating to dental radiology equipment and procedures orally and in writing.
3. Define and spell terminology used in this unit.
4. Identify when and where to use personal protective equipment prior to, during and after treatment following OSHA/WISHA standards.
5. Be familiar with Washington State Department of Health Scope of Practice as related to radiology procedures allowable in Washington State.
6. Demonstrate professional interpersonal communication both verbal and nonverbal with instructors and peers.

Course Outline:

Discovery and development of radiology:

a) Identify the roles of Wilhelm Roentgen, William Robbins, Edmund Kells, and W.D. Coolidge played in the development of radiology.

What radiation is and how it is produced

a) List basic principles of radiograph physics.
b) List four conditions which must exist for x-rays to be produced.
c) Describe the principles of x-ray production from the moment the x-ray machine is turned on until exposure is made.

Safety Procedures:

a) Define cumulative effect of radiation.
b) Describe possible results of overexposure to radiation to the reproductive organs.
c) Describe the likely reactions to radiation exposure.
d) Identify and describe maintaining safe radiation standards with use of lead aprons and dosimeters.
e) Describe ALARA.

Dental X-ray Unit

a) Identify, describe and define parts of the x-ray equipment:
   i) Tube and control panel
   ii) Kilovoltage
   iii) Milliamperage
   iv) Electronic time and mechanical timer
   v) Cone
   vi) Operation

Radiology Terminology:

a. Define the following terminology:

i. short and long scale contrast, radiolucent, radiopaque, primary beam, useful beam, secondary radiation, scatter radiation, leakage radiation, filter, filtration, add filtration, total filtration, collimator, collimation, protection barrier, structured shielding.

ii. anode, cathode, cathode stream, focusing cup, target, focal spot, radiation, aperture, porthole, voltage, amperage, alternating current, auto transfer, step-up transformer, step-down transformer, millimeter, voltmeter, timer.

X-ray Film:

a) Describe and identify composition of dental radiographic film and state purposes for the lead backing in dental films.
b) Identify the speeds, size and types of radiographs
c) Describe purchasing and storage of radiographs

X-ray Film Image Qualities

a) Identify and describe radiopaque, radiolucent, density, contrast and detail.
b) Identify and describe horizontal and vertical angulation and film placement.

Processing Exposed Film:

a) Identify various methods of processing film.
   i) Dip tanks (Time and Temperature)
   ii) Automatic processor
b) List factors affecting the life span of processing solutions.
c) List the components of the developer and fixer.
d) Describe the function of washing film.
e) Identify dark room equipment parts and functions, describe processing and explain maintenance.
f) Identify steps of processing in the dark room.
g) Identify automatic processor parts and functions, describe processing and explain maintenance.
h) Identify steps in use automatic processor.
i) Identify and describe infection control when preparation of the film before developing

Film placement and patient position

a) List the sequence of the procedure of exposing radiographs achieving optimum patient and operator safety and film quality.
b) Explain the effects of variation in milliamperage, exposure time, kilovoltage and distance has on final film quality.
c) Explain the importance of interproximal exposure.
d) Identify and explain the rationale of exposing a periapical exposure.
e) Identify correctly mounted film.

Angulation of the X-ray cone

a) Differentiate (+), (-), and (0) angulation of the central beam.
b) Understand the parallel technique in exposing radiographs.

Professionalism

a) Describe professionalism relating to the patient, dentist and other auxiliaries.
b) Describe the importance of reviewing medical and dental histories, obtaining consent forms prior to exposure of patients.
c) Describe how to document procedures correctly in-patient charts.