1. COURSE ID: DENT 763  TITLE: Dental Radiology
   Units: 2.0 units  Hours/Semester: 16.0-18.0 Lecture hours; and 48.0-54.0 Lab hours
   Method of Grading: Letter Grade Only
   Prerequisite: Admission into the Dental Assisting Program

2. COURSE DESIGNATION:
   Degree Credit
   Transfer credit: none

3. COURSE DESCRIPTIONS:
   Catalog Description:
   Designed to meet the standards established by the Board of Dental Examiners for the operation of dental radiographic equipment in California in a one semester format. Offered in the Fall only for students accepted into the dental assisting program.

4. STUDENT LEARNING OUTCOME(S) (SLO'S):
   Upon successful completion of this course, a student will meet the following outcomes:
   1. Demonstrate an understanding of the various uses of dental radiographs.
   2. Describe the biological effects of radiation exposure on the human body.
   3. Explain the basic principle of the paralleling technique.
   4. Expose a 20 film Full Mouth X-ray Survey (FMX) on a live patient within 45 minutes with fewer than 5 retakes.
   5. Properly mount a 20 film Full Mouth X-ray Survey (FMX) in 3 minutes or less with no errors.
   6. Identify all operator errors of each of the 20 films in a Full Mouth X-ray Survey (FMX) and describe the corrective measure for each error identified.

5. SPECIFIC INSTRUCTIONAL OBJECTIVES:
   Upon successful completion of this course, a student will be able to:
   1. Demonstrate an understanding of the various uses of dental radiographs.
   2. Describe the biological effects of radiation exposure on the human body.
   3. Explain the basic principle of the paralleling technique.
   4. Expose a 20 film Full Mouth X-ray Survey (FMX) on a live patient within 45 minutes with fewer than 5 retakes.
   5. Properly mount a 20 film Full Mouth X-ray Survey (FMX) into a mount in 3 minutes or less with no errors.
   6. Identify all operator errors of each of the 20 films in a Full Mouth X-ray Survey (FMX) and describe the corrective measure for each error identified.

6. COURSE CONTENT:
   Lecture Content:
   1. History of Dental Radiography
   2. Infection Control
      A. Strategies of effective infection control
   3. Intraoral Radiographic Techniques
      A. Types of surveys: Bitewings vs. Full mouth x-rays (FMX)
      B. Parallel Techniques
   4. X-ray Properties and the Generation of X-rays
      A. Properties of x-rays
      B. Components of Dental x-ray tube
      C. Production of x-rays
   5. Radiation Protection and Biology
      A. Molecular changes and cellular effects
      B. Short and long term effects of radiation
      C. Units of radiation measurement
      D. Radiation protection for the patient and operator
      E. ALARA, MPD, Film badges, and Dosimeters
   6. X-ray Film Holders
A. Snap-a-ray
B. Styrofoam bite blocks
C. Bitewing tabs
D. XCP-Ring

7. Mounting Techniques
   A. Normal anatomy and film mounting
      a. Teeth and adjacent structures
      b. Mounting procedures
      c. Tips on mounting dental radiographs

8. Film Placement
   A. Vertical angulation
   B. Horizontal angulation
   C. Imaginary lines of the face and cone placement

9. Film Processing and Quality Assurance
   A. Film composition
   B. Latent image formation
   C. Concepts of film processing
   D. Chemical composition of solutions
   E. Care of solutions
   F. Darkroom vs. Automatic processing
   G. Diagnosing processing errors
   H. Duplicating films

10. Extraoral Radiography
    A. Lateral oblique jaw projections
    B. Cephalometric Projections
    C. Temporomandibular joint (TMJ) views
    D. Maxillary sinuses

11. Accessory Radiographic Techniques and Patient Management
    A. Bisecting the angle technique
    B. Occlusal radiographs on adult and pedo patients
    C. Patient management
    D. Patient with disabilities
    E. Anatomic conditions
    F. Radiographic technique as it applies to: edentulous, pedo, and supplemental

12. Principles of Paralleling Technique

13. Operator Errors
    A. Overlapping
    B. Cone cuts
    C. Elongation
    D. Foreshortening
    E. Double exposure
    F. Unexposed film
    G. Film placement

14. Bisecting the Angle Technique
15. Landmarks of the Face
16. Radiographic Presentation of Lesions
    A. Radiographic changes resulting from infection, periodontal disease, and/or dental caries
    B. Radiographic features of dental anomalies
    C. Radiographic features of common oral lesions

17. Image Characteristics
18. Digital Imaging
    A. CCD's and digital imaging

Lab Content:
  1. Infection Control
     A. Universal precautions
  2. Intraoral Radiographic Techniques
     A. Parallel Techniques
     B. Bisecting Technique
  3. X-ray Film Holders
     A. Snap-a-ray
B. Styrofoam bite blocks
C. Bitewing tabs
D. XCP-Ring

4. Film Placement
   A. Vertical angulation
   B. Horizontal angulation

5. Film Processing and Quality Assurance
   A. Care of solutions
   B. Darkroom vs. Automatic processing of films
   C. Overlapping
   D. Cone cuts
   E. Elongation
   F. Foreshortening
   G. Double exposure

7. REPRESENTATIVE METHODS OF INSTRUCTION:
   Typical methods of instruction may include:
   A. Lecture
   B. Lab
   C. Discussion
   D. Observation and Demonstration
   E. Other (Specify): worksheets, homework and reading assignments, hands on demonstrations at the x-ray unit, and slide presentations.

8. REPRESENTATIVE ASSIGNMENTS
   Representative assignments in this course may include, but are not limited to the following:
   Writing Assignments:
     Weekly or bi-weekly lab reports evaluating the radiographs previously taken.
   Reading Assignments:
     Weekly readings from the assigned texts.

9. REPRESENTATIVE METHODS OF EVALUATION
   Representative methods of evaluation may include:
   A. Class Participation
   B. Class Performance
   C. Class Work
   D. Exams/Tests
   E. Homework
   F. Lab Activities
   G. Portfolios
   H. Quizzes
   I. Written examination
   J. Completion of worksheets and homework assignments, completion of radiographic surveys on both dexter mannikins and live patients, participation in lab and lecture sessions, and final examination.

10. REPRESENTATIVE TEXT(S):
    Possible textbooks include:
    Other:
    A. DENT 763 Radiology Reader including Syllabus. Updated Fall 2016. Renee Herold, Instructor

     Origination Date: October 2015
     Curriculum Committee Approval Date: January 2016
     Effective Term: Fall 2016
     Course Originator: Beth LaRochelle