College of San Mateo
Official Course Outline

1. **COURSE ID:** DENT 763 **TITLE:** Dental Radiology
   Units: 2.0 units **Hours/Semester:** 16.0-18.0 Lecture hours; 48.0-54.0 Lab hours; and 32.0-36.0 Homework 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 Dental Board of California for the operation of dental radiographic equipment in California in a one semester format. (Fall only.)

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. Expose a 20 film Full Mouth X-ray Survey (FMX) on a live patient within 45 minutes with fewer than 5 retakes.

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. Expose a 20 film Full Mouth X-ray Survey (FMX) on a live patient within 45 minutes with fewer than 5 retakes.

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. Applying Infection Control
   A. Universal precautions
2. Identifying Intraoral Radiographic Techniques
   A. Parallel Techniques
   B. Bisecting Technique
3. Utalizing X-ray Film Holders
   A. Snap-a-ray
   B. Styrofoam bite blocks
   C. Bitewing tabs
   D. XCP-Ring
4. Demonstrating Film Placement
   A. Vertical angulation
   B. Horizontal angulation
5. Demonstrating 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. Exams/Tests
D. Homework
E. Lab Activities
F. Quizzes
G. Written examination
H. Completion of worksheets and homework assignments, completion of radiographic surveys on both dexter manikins and live patients, participation in lab and lecture sessions, and final examination.

10. **REPRESENTATIVE TEXT(S):**
Possible textbooks include:
A. Bird, D and Robinson, D. *Modern Dental Assisting*, 13th ed. Elsevier, 2021
B. Miles, D and VanDis, M. *Radiographic Imaging for the Dental Team*, 4th ed. Saunders Publishing Company, 2009

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Course Originator: Beth LaRochelle