



Prepared by: C. Adriano  
Reviewed by: V. Kimbrough  
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Dental Hygiene (DNTL) 1511 Oral Radiology (2.5 Units) CSU  
[formerly Dental Hygiene 11]

Prerequisite: Acceptance into Dental Hygiene Program

Hours and Unit Calculations:

32 hours lecture. 64 Outside of class hours; 32 hours lab (128 Total Student Learning Hours) 2.5 Units

Catalog Description: This course teaches the theory and basic principles of intraoral and extraoral dental radiographic techniques, including both conventional radiographs and digital imaging. Emphasis will be placed on controlling radiation exposure, hazards of radiation, radiation safety, and legal considerations associated with dental radiography. Clinical application includes exposing, processing, mounting and interpreting conventional radiographs and digital images.

Type of Class/Course: Degree Credit

Text:

Iannucci, Joen M., and Laura Jansen Howerton. *Dental Radiography: Principles and Techniques. 5th ed.*, Elsevier/Saunders, 2017.

Additional Required Materials: None

Course Objectives:

By the end of the course, a successful student will be able to:

1. Operate an x-ray unit according to the safety standards of the State and Federal Departments of Public Health and the National Bureau of Standards,
2. Demonstrate the proper method to produce quality intraoral and extraoral radiographs/digital images,
3. Demonstrate proper infection control procedures,
4. Interpret and critique radiographs/digital images for anatomical landmarks, pathological conditions, restorative evaluation, and technique errors
5. Determine the proper frequency and number of radiographs for adults/children based on the selection criteria guidelines,
6. Describe safe handling procedures for radiographic processing chemicals and materials, and
7. Explain the purpose and use of three-dimensional imaging.

Course Scope and Content: (Lecture)

Unit I                      Radiation Basics  
                                  A. Dental Radiography: Historical Perspective and Future Trends

- B. Characteristics and Measurement of Radiation
- C. The Dental X-ray Machine: Components and Functions
- D. Factors Affecting Radiographic Quality

- Unit II            Radiation Biology and Safety
- A. Effects of Radiation Exposure
  - B. Radiation Protection
- Unit III            Dental X-ray Image Receptors and Image Production
- A. Dental X-ray Film and Processing Methods
  - B. Digital Radiography and Image Acquisition
- Unit IV            Dental Radiography Fundamentals
- A. Infection Control
  - B. Legal and Ethical Responsibilities
  - C. Patient Relations and Education
- Unit V             Dental Radiographic Techniques
- A. Introduction to Radiographic Examinations
  - B. The Periapical Examination – Paralleling Technique
  - C. The Periapical Examination – Bisecting Technique
  - D. The Bitewing Examination
  - E. The Occlusal Examination
  - F. The Panoramic Examination
- Unit VI            Radiographic Errors and Quality Assurance
- A. Identifying and Correcting Undiagnostic Radiographs
  - B. Quality Control and Environmental Safety in Dental Radiography
- Unit VII           Viewing and Interpreting Dental Radiographic Images
- A. Image Orientation and Introduction to Interpretation
  - B. Recognizing Normal Radiographic Anatomy – Intraoral Radiographs
  - C. Recognizing Normal Radiographic Anatomy – Panoramic Radiographs
  - D. Radiographic Appearance of Dental Materials and Foreign Objects
  - E. The Use of Radiographs in the Detection of Dental Caries
  - F. The Use of Radiographs in the Evaluation of Periodontal Diseases
  - G. Describing Radiographic Anomalies, Lesions, and Opportunistic Screening
- Unit VIII          Radiographic Techniques for Specific Needs
- A. Pediatric Radiographic Techniques
  - B. Radiographic Techniques for Patients with Special Needs
  - C. Radiographic Techniques for Specific Oral Conditions
- Unit IX            Alternate Imaging Modalities
- A. Supplemental and Extraoral Radiographic Techniques
  - B. Three-dimensional Imaging

Course Scope and Content: (Laboratory)

- Unit I             Introduction to the Radiology Clinic



- A. Radiology equipment and operating procedures
- B. Infection control
- C. Radiation safety

- Unit II            Producing Intraoral Radiographs
- A. Procedures for producing quality radiographs/digital images
  - B. Processing, mounting and interpretation
  - C. Techniques
- Unit III            Producing Extraoral Radiographs
- A. Procedures for producing quality panoramic radiographs/images
  - B. Interpretation
- Unit IV            Assessing a Patient's Radiographic Needs
- A. Radiographs for new patients
  - B. Frequency of Radiographs for patients with previous radiographs

Learning Activities Required Outside of Class:

The students in this class will spend a minimum of 4 hours per week outside of the regular class time doing the following:

1. Independent Reading and Study
2. Critique and interpret radiographs and digital images

Methods of Instruction:

1. Lecture
2. Class discussions
3. Audio-visual presentations
4. Laboratory demonstrations
5. Assigned readings
6. Instructional videos

Methods of Evaluation:

1. Examinations and quizzes, including:
  - a. multiple choice questions
  - b. true/false questions
  - c. identification of anatomy, pathology and restorations on radiographs/digital images
  - d. short answer
2. Expose and process radiographs/digital images on a manikin and on live patients
3. Written radiograph critiques
4. Lab Practicum

Laboratory Category: Extensive Laboratory

Pre delivery criteria: All of the following criteria are met by this lab.

1. Curriculum development for each lab.



2. Published schedule of individual laboratory activities.
3. Published methods of evaluation.
4. Supervision of equipment maintenance, laboratory setup, and acquisition of lab materials and supplies.

During laboratory activity of the laboratory: All of the following criteria are met by this lab.

1. Instructor is physically present in lab when students are performing lab activities.
2. Instructor is responsible for active facilitation of laboratory learning.
3. Instructor is responsible for active delivery of curriculum.
4. Instructor is required for safety and mentoring of lab activities.
5. Instructor is responsible for presentation of significant evaluation.

Post laboratory activity of the laboratory: All of the following criteria are met by this lab.

1. Instructor is responsible for personal evaluation of significant student outcomes (lab exercises, exams, practical's, notebooks, portfolios, etc.) that become a component of the student grade that cover the majority of lab exercises performed during the course.
2. Instructor is responsible for supervision of laboratory clean-up of equipment and materials.

Supplemental Data:

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|-------------------------|--|
| TOP Code:               | 124020: Dental Hygienist               |
| SAM Priority Code:      | C: Clearly Occupational                |
| Distance Education:     | Not Applicable                         |
| Funding Agency:         | Y: Not Applicable (funds not used)     |
| Program Status:         | 1: Program Applicable                  |
| Noncredit Category:     | Y: Not Applicable, Credit Course       |
| Special Class Status:   | N: Course is not a special class       |
| Basic Skills Status:    | N: Course is not a basic skills course |
| Prior to College Level: | Y: Not applicable                      |



|                                 |   |
|---------------------------------|---|
| Cooperative Work Experience:    | N: Is not part of a cooperative work experience education program |
| Eligible for Credit by Exam:    | NO  |
| Eligible for Pass/No Pass:      | NO  |
| Taft College General Education: | NONE  |
| Discipline:                     | Dental Technology   |