

**DE 55B Course Outline as of Fall 2019****CATALOG INFORMATION**

Dept and Nbr: DE 55B                      Title: DENTAL RADIOLOGY  
 Full Title: Dental Radiology  
 Last Reviewed: 9/23/2024

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	2.00	Lecture Scheduled	1.00	17.5	Lecture Scheduled	17.50
Minimum	2.00	Lab Scheduled	3.00	17.5	Lab Scheduled	52.50
		Contact DHR	0		Contact DHR	0
		Contact Total	4.00		Contact Total	70.00
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 35.00

Total Student Learning Hours: 105.00

Title 5 Category: AA Degree Applicable

Grading: Grade Only

Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP

Also Listed As:

Formerly: DNA 65B

**Catalog Description:**

Instruction in the advanced imaging techniques of intraoral and panoramic dental radiology. Emphasis is on evaluation and interpretation of intraoral and panoramic images utilizing recognition of anatomical landmarks, dental anatomy, restorations, and disease processes. Patient dental radiological services are provided by students after competency is demonstrated on manikins.

**Prerequisites/Corequisites:**

Course Completion of DE 55A

**Recommended Preparation:****Limits on Enrollment:****Schedule of Classes Information:**

Description: Instruction in the advanced imaging techniques of intraoral and panoramic dental radiology. Emphasis is on evaluation and interpretation of intraoral and panoramic images utilizing recognition of anatomical landmarks, dental anatomy, restorations, and disease processes. Patient dental radiological services are provided by students after competency is

demonstrated on manikins. (Grade Only)

Prerequisites/Corequisites: Course Completion of DE 55A

Recommended:

Limits on Enrollment:

Transfer Credit: CSU;

Repeatability: Two Repeats if Grade was D, F, NC, or NP

## **ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:**

<b>AS Degree:</b>	<b>Area</b>	Effective:	Inactive:
<b>CSU GE:</b>	<b>Transfer Area</b>	Effective:	Inactive:
<b>IGETC:</b>	<b>Transfer Area</b>	Effective:	Inactive:
<b>CSU Transfer:</b>	Transferable	Effective: Fall 1981	Inactive:
<b>UC Transfer:</b>		Effective:	Inactive:

**CID:**

**Certificate/Major Applicable:**

Both Certificate and Major Applicable

## **COURSE CONTENT**

### **Student Learning Outcomes:**

At the conclusion of this course, the student should be able to:

1. Demonstrate an expanded knowledge of oral imaging, including proficiency in basic and advanced exposure techniques and identification skills.
2. Consistently demonstrate comprehension of radiation safety as it relates to the patient and operator.

### **Objectives:**

Upon completion of this course, students will be able to:

1. Demonstrate intraoral and panoramic radiological imaging on manikins utilizing correct safety precautions, positioning, exposure settings, and processing or image capture techniques.
2. Demonstrate intraoral and panoramic radiological imaging on patients utilizing correct infection control, safety precautions, positioning, exposure settings, and processing or image capture techniques.
3. Discuss principles of infection control utilized in operator preparation, film or sensor use, and processing contaminated film.
4. Implement appropriate radiation protective measures for the protection of the operator and the patient utilizing the ALARA (as low as reasonably achievable) principle.
5. Discuss the use of quality control measures to assure the production of diagnostic images.
6. Discuss safety and environmental responsibilities for dental radiography.
7. Demonstrate anatomical film mounting.
8. Discuss the advantages and disadvantage of panoramic radiography.
9. Define the roles of the dental auxiliary and the dentist in image evaluation, interpretation and diagnosis.
10. Evaluate intraoral and panoramic images for errors based on diagnostic image criteria.

11. Identify normal anatomical landmarks of the maxilla and mandible on intraoral and panoramic images.
12. Identify normal dental anatomy.
13. Recognize deviations from normal anatomy resulting from trauma, disease, and developmental conditions.
14. Recognize the classifications of carious lesions on images and the factors that would influence interpretation.
15. Describe the appearance on images of alveolar bone loss associated with periodontal disease.
16. Describe the appearance on images of restorative materials such as amalgam, porcelain, gold, cements, and composites.
17. Describe the appearance on images of calcifications such as calculus, pulp stones, and sialoliths.
18. Describe the purpose and uses of supplemental intraoral imaging techniques.
19. Demonstrate the supplemental imaging techniques of occlusal, buccal object, distal-oblique third molar, vertical bitewings and pedodontic bitewings utilizing correct positioning and exposure settings.
20. Describe the uses of extraoral imaging and the purpose of each of the extraoral projections.
21. Compare and contrast conventional film and digital imaging with respect to radiation exposure, equipment, image capture, maintenance and convenience.
22. Describe modifications in technique for special needs patients, patients with a gag reflex and pedodontic patients.
23. Discuss duplication of films.

## **Topics and Scope:**

### **I. Intraoral Imaging\***

- A. Equipment preparation
- B. Patient preparation
- C. Infection control
- D. Quality assurance
- E. Safety precautions
- F. Processing or image capture
- G. Evaluation
- H. Interpretation

### **II. Panoramic Images\***

- A. Advantages and disadvantages
- B. Equipment preparation\*
- C. Patient positioning\*
- D. Infection control\*
- E. Quality assurance\*
- F. Safety precautions\*
- G. Processing or image capture\*
- H. Evaluation\*
- I. Interpretation\*

### **III. Infection Control\***

- A. Cross contamination
- B. Disinfection
- C. Sterilization
- D. Barriers

### **IV. Quality Assurance\***

- A. Equipment
- B. Operators

- C. Image receptors
- D. Techniques
- E. Monitoring and record keeping
- F. Facility
- V. Safety and Environmental Responsibilities\*
  - A. Radiation
  - B. Use and disposal of chemicals and lead
- VI. Patient Management\*
  - A. Special needs patients
  - B. Patient management techniques
- VII. Radiographic Landmarks
  - A. Terminology
  - B. Normal landmarks of the skull
  - C. Dental anatomy
- VIII. Image Evaluation\*
  - A. Criteria
  - B. Corrections of errors
- IX. Image Interpretation\*
  - A. Rationale
  - B. Dental caries
  - C. Restorations and dental materials
  - D. Calcifications
  - E. Periodontal disease
  - F. Trauma
  - G. Deviations from normal anatomy
- X. Supplemental Intraoral Techniques\*
  - A. Uses
  - B. Types
- XI. Extraoral Imaging
  - A. Uses
  - B. Types of projections
- XII. Duplicating Films
  - A. Film
  - B. Equipment
- XIII. Digital Radiography
  - A. Equipment
  - B. Types of digital imaging
  - C. Comparison to conventional film

\*These items are introduced in lecture, and the related skill is performed in the lab.

- IX. Laboratory Exercises
  - A. Production of diagnostic images with proper contrast, density, definition, and minimal magnification or anatomic distortion.
  - B. Demonstration of radiographic interpretation to include recognition of anatomic landmarks, dental anatomy, restorations, pathology, and deviations from normal.
  - C. Demonstration of supplemental intraoral techniques.
  - D. Demonstration of panoramic technique.
  - E. Application of infection control techniques for prevention of disease transmission, safety precautions following the ALARA Principle (as low as reasonably achievable), and quality assurance procedures to protect the operator, patient and environment.

## Assignment:

### Lecture

1. Reading from text (10-15 pages per week)
2. Quizzes (4-8,) midterm, final.

### Laboratory

1. Skill demonstrations
  - a. Manikin imaging-supplemental techniques; occlusal, distal-oblique, localization, vertical and pedodontic bitewings
  - b. Panoramic image: student placement and manikin
  - c. Digital survey: student placement and manikin
  - d. Patient images: 4 adult full mouth surveys, 1 pedodontic survey and 1 panoramic survey
2. Problem solving- Evaluation and interpretations (10-15)

## Methods of Evaluation/Basis of Grade:

**Writing:** Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

None, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments and skill demonstrations are more appropriate for this course.

Writing  
0 - 0%

**Problem Solving:** Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Evaluations with interpretations.

Problem solving  
30 - 40%

**Skill Demonstrations:** All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Patient: 4 adult surveys; 1 pedodontic survey; 1 panoramic.  
Manikin images: occlusal, localization, distal-oblique, vertical and pedodontic bitewings, and digital survey.  
Student placement practice.

Skill Demonstrations  
30 - 40%

**Exams:** All forms of formal testing, other than skill performance exams.

Midterm, quizzes, and written and laboratory final.

Exams  
20 - 30%

**Other:** Includes any assessment tools that do not logically fit into the above categories.

None

Other Category  
0 - 0%

**Representative Textbooks and Materials:**

Torres and Ehrlich Modern Dental Assisting, 12th ed. Bird, Doni and Robinson, Debbie. Elsevier. 2018

Dental Radiography, Principles and Techniques, 5th ed. Iannucci, J, Joen and Howerton, Laura. Elsevier. 2017

Dental Radiography, Principles and Techniques, Workbook and Laboratory Manual, 5th ed. Iannucci, Joen and Howerton, Laura. Elsevier. 2017

Instructor prepared materials