

DE 55A Course Outline as of Fall 2011**CATALOG INFORMATION**

Dept and Nbr: DE 55A Title: INTRO DENTAL RADIOLOGY
 Full Title: Introduction to Dental Radiology
 Last Reviewed: 11/14/2022

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 65A

Catalog Description:

Instruction in the basic principles of radiology including history, physics, characteristics, biological effects, equipment, film and digital imaging, infection control and safety. The techniques of film or sensor placement, mounting films and evaluation of images will be covered.

Prerequisites/Corequisites:

Course Completion or Current Enrollment in DE 51

Recommended Preparation:**Limits on Enrollment:**

Acceptance to the Allied Dental Program

Schedule of Classes Information:

Description: Instruction in the basic principles of radiology including history, physics, characteristics, biological effects, equipment, film and digital imaging, infection control and safety. The techniques of film or sensor placement, mounting films and evaluation of images will be covered. (Grade Only)

Prerequisites/Corequisites: Course Completion or Current Enrollment in DE 51

Recommended:

Limits on Enrollment: Acceptance to the Allied Dental Program

Transfer Credit: CSU;

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

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	Area	Effective:	Inactive:
CSU GE:	Transfer Area	Effective:	Inactive:

IGETC:	Transfer Area	Effective:	Inactive:
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CSU Transfer:	Transferable	Effective:	Fall 1981	Inactive:
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UC Transfer:		Effective:		Inactive:
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CID:

Certificate/Major Applicable:

Both Certificate and Major Applicable

COURSE CONTENT

Outcomes and Objectives:

1. Describe the basic principles and concepts of radiation.
2. List the component parts and functions of the dental x-ray machine and describe the production of x-rays.
3. Explain the factors affecting the quality and quantity of the x-ray beam and how these factors affect the radiographic image.
4. Describe film composition, basic digital imaging components, and latent image formation.
5. Discuss film speed, sizes, types, digital image receptors and proper storage and protection.
6. Describe the effects of ionizing radiation on living tissue.
7. List radiation protection procedures for the operator and patient.
8. Describe intraoral techniques for bite-wings, and parallel and bisecting periapical radiographs.
9. Produce radiographic images of acceptable diagnostic quality with proper contrast, density, definition and minimal magnification or anatomic distortion.
10. Explain the techniques of proper film handling, manual and automatic processing and mounting of radiographs.
11. Explain the techniques of digital imaging processing.
12. Describe the chemicals used in processing and the proper disposal techniques, as it relates to dental imaging.
13. State diagnostic procedures to produce quality assurance, relating to diagnostic radiographs.
14. Critically evaluate radiographic images to assess errors and indicate proper methods for correction.
15. Adapt radiographic techniques to meet patient needs.

Topics and Scope:

- A. Radiation History
 1. Discovery
 2. Pioneers

3. Uses of dental radiographs
- B. Equipment Description and Application
 1. Major components of the dental x-ray machine, tubehead and operator
 2. Settings and function of control panel
 3. Mannequins
 4. Additional equipment
- C. Imaging Media
 1. Film
 - a) speed
 - b) size
 - c) composition
 - d) parts
 2. Digital Sensors
- D. Processing Theory and Application
 1. Digital
 - a) equipment
 - b) technique
 - c) processing
 - d) errors
 2. Film
 - a) equipment
 - b) technique
 - c) processing
 - d) errors
- E. Physics
 1. Ionizing radiation
 2. Electromagnetic waves
 3. Properties of radiation
 4. X-ray production
- F. Film Mounting
 1. Film handling and storage
 2. Type of mounts
 3. Film orientation
 4. Procedure
- G. Exposure Factors:
 1. Kilovoltage
 2. Milliamperage
 3. Exposure time
 4. Intensity
 5. Distance
 6. Density, contrast, magnification and sharpness
 7. Assessment of exposure and control factors
- H. Radiation Biology and Protection Description and Application
 1. Radiation monitoring devices
 2. Regulatory agencies.
 3. ALARA (As Low As Reasonably Achievable) concept.
 4. Biological response
 5. Protection
 - a) operator
 - b) patient
 - c) state requirements
 6. Radiation Risk vs. Benefit of Diagnosis.

- I. Intraoral Procedures
 - 1. Examinations
 - 2. Film positioning
 - 3. Positioning Indicating Device (PID) positioning
 - 4. Bite-wing technique
 - 5. Paralleling technique
 - 6. Bisect Angle technique
 - 7. Angulation
- J. Exposure and Technique Errors
 - 1. Film and Digital
 - a) angulation
 - b) exposure factors
 - c) centering
- K. Professionalism
 - 1. Appearance
 - 2. Safety regulations
 - 3. Attitude towards patient and staff
 - 4. Time management
 - 5. Acceptance of constructive criticism
 - 6. Cooperation
- L. Adaptive procedures for Special Populations
 - 1. Anatomical variances
 - 2. Age
 - 3. Children and the Elderly

Assignment:

- 1. Reading from text and syllabus (20-30) pages a week.
- 2. 6-10 student film placement proficiencies.
- 3. 1-2 film mounting proficiencies.
- 4. 2 bitewing series (BTW) using film, mannequin.
- 5. Digital surveys exposures and evaluations on mannequin.
- 6. 4 Full Mouth Series (FMX) using film, mannequin.
- 7. A minimum of 6 -8 quizzes.
- 8. 2 lecture midterms.
- 9. 1 laboratory midterm.
- 10.1 lecture final.
- 11.1 laboratory final.
- 12. California Radiation Health and Safety Test.

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.

6-8 homework assignments.

Problem solving
5 - 10%

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

Film or sensor placement techniques; lab competencies; produce FMX series.

Skill Demonstrations
45 - 60%

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

2 midterms, final exams, and California Radiation Health and Safety Test.

Exams
30 - 45%

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

None

Other Category
0 - 0%

Representative Textbooks and Materials:

Dental Radiography Principles and Techniques, Haring, Joan Iannucci, Howerton, Laura Jansen, 3rd Ed, 2010, Elsevier Publisher

Modern Dental Assisting, Bird D., and Robinson, D., 10th Edition, 2011, W. B. Saunders