

# Syllabus for DA 155, Dental Radiography

## Course Information

<b>Semester &amp; Year:</b> Fall 2021
<b>Course ID &amp; Section #:</b> DA 155 (E1711) and DA 155 (E1712)
<b>Instructors' names:</b> Hillary Reed, RDAEF, CDA (Lecture), Teresa Moore, RDA, CDA (Labs)
<b>Day/Time:</b> Monday Lab (E1711): 8:30-11:40 Wednesday Lab (E1712): 8:30-11:40 Thursday Lecture (E1711/E1712): 10:45-11:50
<b>Location:</b> AT 112 (Lab)/ AT 115 (Lecture)
<b>Number of units:</b> 2

## Instructor Contact Information

<b>Office location:</b> AT 101
<b>Office hours:</b> Thursdays, Fridays and by appointment
<b>Phone number:</b> 707-476-4250
<b>Program Coordinator phone number:</b> 707-476-4253
<b>Program Coordinator email address:</b> <a href="mailto:Hillary-reed@redwoods.edu">Hillary-reed@redwoods.edu</a>
<b>Absences:</b> In the event of emergency contact 476-4250. To be eligible for alternative exams the absence must be reported ½ hour prior to the beginning of class. Excessive absences will result in Program dismissal.

## Required Materials

<b>Textbook Title:</b> Modern Dental Assisting, 13 <sup>th</sup> Edition with Workbook (ISBN: 978-0-323-62485-5)
<b>Author:</b> Bird and Robinson
<b>Textbook Title:</b> Dental Instruments, 7 <sup>th</sup> Edition (ISBN: 978-0323-67243-6)
<b>Author:</b> Bartolomucci-Boyd
<b>Other requirements:</b> Dental Assisting Program Handbook, Uniform, Personal Protective Equipment, Darby Dental Kit

## Course Description

A basic introduction to radiographic principles as applicable to dental assisting. Implementation of safety measures and skill development in intra-oral imaging are emphasized in exposing diagnostic quality radiographs. Customary duties are practiced in preparation for clinical competency in patient care under the direct supervision of the faculty. Note: Acceptance into the Program is required prior to enrollment. Applications are accepted February – August. Uniform required.

## Course Objective

1. Apply didactic content and demonstrate clinical competence (laboratory) prior to the practical application of basic radiography duties in patient care.

## Course Student Learning Outcomes

1. Demonstrate proper radiation safety techniques using the ALARA concept.
2. Produce diagnostic quality intra-oral images (full-mouth series, bite-wing series, and periapicals) in a safe and efficient manner placing in correct anatomic order for proper viewing and interpretation in patient care.
3. Identify basic anatomic landmarks, pathologies, and restorations on radiographic images.

### **Pre-requisites and Co-requisites**

The Dental Assisting Program is approved by the Dental Board of California (DBC) and Commission on Dental Accreditation as a cohort of classes to fulfill the hour requirements of a minimum of 900 instructional hours at the post-secondary level that includes 300 clinical practice hours. Additionally, didactic, laboratory, pre-clinical, and clinical content must be covered.

The Dental Assisting Program of Study requires the student to successfully complete the requirements of DA 150 prior to enrolling in the fall semester cohort of courses DA 153, DA 154, DA 155, DA 156, and DA 156C. Students are enrolled in these courses concurrently. Curriculum reiterates and combines concepts, information, and proficiencies from other courses to prepare students for the clinical setting.

### **Course Content**

1. Radiation Basics, Safety Compliance and Infection Prevention.
2. Radiography Equipment Operation, Placement and Exposure.
3. Error Identification, Legal Issues and Quality Control.
4. Anatomical Recognition.

### **Specific Didactic Course Skill Sets (Objectives)**

#### **Radiation Basics, Safety Compliance and Infection Prevention:**

1. Name the highlights in the history of dental radiography.
2. Comprehend radiation physics, including what occurs during ionization and the properties of x-ray.
3. Explain the process of ionization and the properties of x-radiation.
4. Identify infection control protocol for dental radiography.
5. Discuss the ALARA concept and methods of protecting the patient and radiographer from excess radiation.

#### **Radiography Equipment Operation, Placement and Exposure:**

6. Identify the components of the dental x-ray machine and the equipment used for imaging.
7. Discuss proper intra-oral placement and positioning instruments such as beam alignment devices, and snap-a-ray holders.
8. Define mathematical terms used when aligning and positioning.
9. Explain the basic principles and rules of angulation techniques.
10. Describe the effect of the kilovoltage and milliamperage on the quality of the x-ray beam.
11. Discuss the risks versus benefits of dental imaging and the fundamental systems of digital radiography.

#### **Error Identification, Legal Issues and Quality Control:**

12. Describe Consumer-Patient Radiation Health and Safety Act informed consent.
13. Discuss appropriate patient management techniques and applicable responses for ionizing radiation doses.
14. Describe the types of laws and regulations affecting the practicing of dental radiography, including informed consent and identification of who "owns" the dental radiographs.
15. Explain the cause of aligning and positioning errors.
16. Identify corrective techniques.

#### **Anatomical Recognition:**

17. Identify basic anatomical landmarks and a variety of restorations on radiographic images (intra-oral).

### **Specific Pre-Clinical Course Lab Skill Sets (Objectives)**

#### **Radiation Basics, Safety Compliance and Infection Prevention:**

1. Demonstrate radiation health protection techniques and proper infection protection protocol.
2. Identify dental equipment, instruments, materials, and supplies used in dental imaging.
3. Use radiologic terms when communicating with dental professionals and patients.
4. Manage infection prevention and hazard control protocol consistent with published professional guidelines and safety regulations.

**Radiography Equipment Operation, Placement and Exposure:**

5. Distinguish between anatomical landmarks and restorations on radiographic images.
6. Utilize anatomical landmarks and dental restorations as a guide when mounting radiographs.
7. Demonstrate mounting surveys of dental images in 3 minutes or less.
8. Place and expose dental images (including peripapicals and bite-wing images) on manikins using the paralleling and bisecting techniques.
9. Demonstrate scanning procedures using Scan-X for digital radiography and Eaglesoft software.

**Error Identification, Legal Issues and Quality Control:**

10. Identify errors and demonstrate corrective measure techniques.
11. Exhibit proper charting technique and record keeping of radiography images.

**Specific Clinical Course Skill Sets (Objectives)**

1. Demonstrate competence under direct faculty supervision, in exposing diagnostically acceptable full mouth dental images surveys (consisting of bite-wing and periapical images) using the paralleling technique in the Dental Health Center during fall semester.

**Handbook**

All students have signed acknowledgement that they have accessed the Dental Assisting Handbook in Canvas, as well as read and agreed to detailed information provided regarding information, notifications, requirements, policies, rules and disciplinary actions. The Handbook further discusses Student Support Services, Grading Policies, Disruptive Behavior, and Emergency Procedures.

**Canvas Information**

College of the Redwoods Canvas System is used by students and the instructors for grade tracking, referencing handouts (files), and discussion participation. Students can access Canvas at any time, using their college e-mail and password to determine their current grade in the course as well as specific scores for completed participation, assignments, or exams/ quizzes. Instructors enter grades weekly.

Students can access Canvas by going to [CR Home \(redwoods.edu\)](https://redwoods.edu) and then right clicking on Canvas icon on the top of the page. Once in Canvas go to courses to set your Dashboard.

Log into Canvas at <https://redwoods.instructure.com>

Password is your 6 digit birth date

For tech help, email [its@redwoods.edu](mailto:its@redwoods.edu) or call 707-476-4160

Students have the ability to have an alternate first name and pronouns to appear in Canvas. Contact [Admissions & Records](#) to request a change to your preferred first name and pronoun. Your Preferred Name will only be listed in Canvas. It does not change your legal name in our records. See the [Student Information Update form](#).

## Accessibility

College of the Redwoods is committed to making reasonable accommodations for qualified students with disabilities. If you have a disability or believe you might benefit from disability-related services and accommodations, please contact your instructor or [Disability Services and Programs for Students](#) (DSPS). Students may make requests for alternative media by contacting DSPS based on their campus location:

**Eureka: 707-476-4280, student services building, 1<sup>st</sup> floor**

If you are taking online classes DSPS will email approved accommodations for distance education classes to your instructor. In the case of Face-to-face instruction, please present your written accommodation request to your instructor at least one week before the needed accommodation so that necessary arrangements can be made. Last minute arrangements or post-test adjustments usually cannot be accommodated.

## Lecture and Lab Preparation

Students are to have read assigned chapters prior to arriving to lecture and lab. The lecture and lab activities are designed to assist the students in comprehending the content and preparing for the clinical setting.

Each week the student will participate in activities designed to reinforce the information discussed in lecture. A "Preclinical Competency Tracking Sheet" is used to determine participation and preparedness. Step-by-step procedures in the textbook include illustrations, the equipment and supplies needed, icons, and the rationale behind certain steps. These step-by-step procedures are used to practice in the lab setting to prepare for RDA Skills Competency Tests required prior to performing the function in the clinical setting. The step-by-step procedures are provided in the MDA 13<sup>th</sup> Edition Workbook.

## Lecture Examinations

All lecture examinations will be administered in the beginning of class. The exam will consist of multiple choice, true/false, fill in the blank, short answer, and identification questions. Please refer to your course syllabus for exam times, dates, and chapters covered.

## Practical Examinations

Practical examinations provide assessment for participation in the clinical setting. Students must earn a minimum of 75% on all RDA Skills Competency Tests and Instrument Identifications/Tray Set-up Exams to participate in the clinical setting. Students are allowed two attempts. The grade earned on the first attempt will be the grade recorded in Canvas. Students scoring below a 75% will require remediation, allowing for the second attempt. Remediation allows the student to score a 75% or above on the second attempt, allowing for participation in the clinical setting.

After remediation, if the student continues to score 74% or below on the second attempt the student will not be able to participate in the clinical setting due to unpreparedness and safety concerns in patient care. Likewise students requiring more than 2 remediation contracts throughout the semester will not be able to participate in the clinical setting and will be dropped from the course.

## **Clinical Labs**

Prior to exposing dental images on patients, students must demonstrate competence in the following:

- Radiation health and safety protection techniques
- Scanning/processing procedures and darkroom protocol
- Identifying anatomical landmarks
- Mounting
- Placing and exposing dental images on manikins

Prior to the end of the fall semester the students must demonstrate competence, under direct faculty supervision by the radiography instructor, in exposing diagnostically acceptable full-mouth dental images on Dexter manikin and fellow students due to Covid-19. Patient care may not occur until spring semester.

To accommodate the CODA requirement of having a minimum of two acceptable full-mouth dental images on a minimum of two patients during the fall semester some DA 155, Dental Radiography labs students will be taking images on each other under direct supervision of the instructor.

All clinical radiography performance will be evaluated by the radiography instructor in DA 155, Dental Radiography or DA 156C, Dental Assisting Fundamentals Clinical Laboratory Experience, no exceptions. Student will be timed, are required to self-evaluate, and will be evaluated by the dental radiography instructor.

## **Work Readiness Points**

To be successful in the workforce, students have to develop skill sets and healthy work habits necessary for lasting employment.

Students are awarded five Pay Day Points for full participation in the activities and tasks assigned to each class session (lab and lecture), where all requirements, policies, and rules are followed as stated in the Program Handbook. Students begin the course with zero Pay Day Points. Pay Day points will be factored into the course grade.

Students not participating in activities or tasks or not following requirements, policies, and rules or who are absent will not acquire any Pay Day Points for that class session(s). This includes those that are tardy or leave early.

Additionally disciplinary action (as outlined in the Program Handbook) for the second, third, and fourth offense will affect the final course grade negatively.

## **Special Note**

The course instructor(s) and/or the Program Coordinator have the right to at any time for any reason alter any content of the course syllabus. Course content alterations can only be done by faculty at their discretion.

## Dental Assisting Program Grading Scale

The Commission on Dental Accreditation and the Dental Board of California require the lecture and lab grade to be 75% or better. The Dental Assisting Program courses are sequential and have co-requisites. Students not passing with a 75% or better in the course cannot continue.

Grade	Percentage	Definition
A	96-100	Outstanding progress
A-	90-95	Outstanding progress
B+	87-89	Above average progress
B	84-86	Above average progress
B-	81-83	Average Progress
C+	78-80	Satisfactory Progress
C	75-77	Lowest acceptable Progress
D	65-74	No progression,
F	<65	Failure
W	N/A	Official Withdrawal

## Course Requirements

### Overall Course Grade Calculation:

The overall course grade is weighted and determined by an average. Students cumulative scores on quizzes (15%), written exams (35%), practical (lab) exams (35%), lab assignments (10%), and participation (5%) are averaged together to generate a percentage determining the overall course grade.

Participation Portion:	Weighted 5% of total grade
Pay Day - Work Readiness Points 5 points per lecture and 5 points per lab	
Quiz Portion:	Weighted 15% of total grade
3 Quizzes (40 points each)	
Written Exam Portion:	Weighted 35% of total grade
1 Written Exams ( 150 points)	
1 Written Final Exam (300 points)	
Lab Assignment Portion:	Weighted 10% of total grade
1 Charted FMX Project (60 points)	
2 Lab Assignment Bitewing Series Evaluations Dexter (20 points each)	
1 Lab Assignment Full Mouth Series Evaluations Dexter(100 points)	
Practical (Lab) Exams:	Weighted 35% of total grade
2 Practical Exams ( 50 points each)	
3 RDA Skills Competency Tests (50 points each)	
1 Practical Lab Exam (300 points)	

## Course Schedule of Activities and Assignments

### Week 1

**Unit: Radiation Basics, Safety Compliance and Infection Prevention**

#### **Monday, August 23 (Lab) or Wednesday, August 25 (Lab)**

*Textbook Procedure Competencies:* Infection control protocols in X-Ray Rooms and Darkroom 40.2, 40.4, 40.5, 41.1, 41.2, Equipment Identification.

*Dental Instrument Pocket Guide, 7<sup>th</sup> Edition, Chapter 20 Dental Imaging and Diagnostic Equipment:* Basic Equipment Identification and familiarity (Tube-head, Extension Arm, Control Panel, Position Indication Device, Exposure Button, Machine Settings, Aluminum Filtration, Collimator, Scan-X Digital Imaging System, Rinn XCP Assembly, One Ring and Arm Positioning System, Lead Apron and thyroid collar, Radiation Monitor).

#### **Thursday, August 26 (Lecture)**

*Textbook reading assignment in preparation for lecture class:*

Chapter 38 Foundations of Radiography, Radiographic Equipment, and Radiation Safety

Chapter 40 Infection Prevention (pages 583-587, 588-594)

Chapter 41 Paralleling Technique, Patient Preparation, Bitewing Technique (pages 596-597,613)

### Week 2

**Unit: Radiation Basics, Safety Compliance and Infection Prevention**

#### **Monday, August 30 (Lab) or Wednesday, September 1 (Lab)**

*Textbook Procedure Competencies:* Infection control protocols in X-Ray Rooms and Darkroom, 40.2, 40.4, 40.5, 41.1, 41.2, Equipment Identification.

*Dental Instrument Pocket Guide, 7<sup>th</sup> Edition, Chapter 20 Dental Imaging and Diagnostic Equipment:* Basic Equipment Identification and familiarity (Tube-head, Extension Arm, Control Panel, Position Indication Device, Exposure Button, Machine Settings, Aluminum Filtration, Collimator, Scan-X Digital Imaging System, Rinn XCP Assembly, One Ring and Arm Positioning System, Lead Apron and thyroid collar, Radiation Monitor).

#### **Thursday, September 2 (Lecture)**

*Textbook reading assignment in preparation for lecture class:*

Chapter 38 Foundations of Radiography, Radiographic Equipment, and Radiation Safety

Chapter 40 Infection Prevention (pages 583-587, 588-594)

Chapter 41 Paralleling Technique, Patient Preparation, Bitewing Technique (pages 596-597,613)

### Week 3

**Unit: Radiation Basics, Safety Compliance and Infection Prevention**

#### **Monday, September 6 (Holiday) or Wednesday, September 8 (Lab)**

*Textbook Procedure Competencies:* Infection control protocols in X-Ray Rooms and Darkroom, 40.4, 40.5, 41.1, 41.2 continue with equipment identification. Bitewing demonstration.

#### **Thursday, September 9 (Lecture)**

#### **Quiz #1 (Chapters 38, 40, and 41)**

*Textbook reading assignment in preparation for lecture class:*

Chapter 38 Foundations of Radiography, Radiographic Equipment, and Radiation Safety

Chapter 40 Infection Prevention (pages 583-587, 588-594)

Chapter 41 Paralleling Technique, Patient Preparation, Bitewing Technique (pages 596-597,613)

## **Week 4**

**Unit: Radiation Basics, Safety Compliance and Infection Prevention**

**Monday, September 13 (Lab) or Wednesday, September 15 (Lab)**

**PRACTICAL EXAM #1 - Infection Prevention, Safety, and Equipment Identification**

**PRACTICAL EXAM #2 – Patient Preparation and XCP Assembly**

**Thursday, September 16 (Lecture)**

*Textbook reading assignment in preparation for lecture class:*

Chapter 38 Foundations of Radiography, Radiographic Equipment, and Radiation Safety

Chapter 39 Digital Imaging (pages 555-561)

Chapter 41 Paralleling Technique, Patient Preparation, Bitewing Technique (pages 596-605)

## **Week 5**

**Unit: Radiation Equipment Operation, Placement and Exposure**

**Monday, September 20 (Lab) or Wednesday, September 22 (Lab)**

*Textbook Procedure Competencies:* 41.5 (Dexter), 41.7(digital sequencing/ traditional mounting), and Identify tooth numbers and surfaces on radiographs.

**Thursday, September 23 (Lecture)**

*Textbook reading assignment in preparation for lecture class:*

Chapter 39 Digital Imaging (pages 555-561)

Chapter 41 Intra-oral Imaging (pages 596-605)

## **Week 6**

**Unit: Radiation Basics, Safety Compliance and Infection Prevention**

**Monday, September 27 (Lab) or Wednesday, September 29 (Lab)**

*Textbook Procedure Competencies:* 41.5 (Dexter), 41.7 (digital sequencing/ traditional mounting), and Identify tooth numbers and surfaces on radiographs.

**Thursday, September 30 (Lecture)**

*Textbook reading assignment in preparation for lecture class:*

Chapter 39 Digital Imaging (pages 555-561)

Chapter 41 Intra-oral Imaging (pages 609-631)

## **Week 7**

**Unit: Radiation Basics, Safety Compliance and Infection Prevention**

**Monday, October 4 (Lab) or Wednesday, October 6 (Lab)**

**Bitewing Series (BWV) Evaluation #1 on Dexter Due**

**Bitewing Series (BWV) Evaluation #2 on Dexter Due**

*Textbook Procedure Competencies:* 41.3 (Dexter), 41.7 (digital sequencing/ traditional mounting), and Identify tooth numbers and surfaces on radiographs, Recording radiographs in the patient chart.

**Thursday, October 7 (Lecture)**

**Quiz #2 (CHAPTERS 38, 39, 40, 41)**

*Textbook reading assignment in preparation for lecture class:*

Chapter 41 Intraoral Imaging (pages 609-631)



## **Week 8**

**Unit: Radiation Basics, Safety Compliance and Infection Prevention**

**Monday, October 11 (Lab) or Wednesday, October 13 (Lab)**

### **RDA SKILLS COMPETENCY TEST #1- Bitewing Exposures**

*Textbook Procedure Competencies:* Demonstrate Anterior Periapicals for 41.3 (Dexter), 41.7(digital sequencing/traditional mounting), and Identify tooth numbers and surfaces on radiographs, Recording radiographs in the patient chart.

**Thursday, October 14 (Lecture)**

*Textbook reading assignment in preparation for lecture class:*

- Chapter 40 Legal Issues, Quality Assurance, and Infection Prevention
- Chapter 41 Intraoral Imaging

## **Week 9**

**Unit: Error Identification, Legal Issues and Quality Control**

**Monday, October 18 (Lab) or Wednesday, October 20 (Lab)**

*Textbook Procedure Competencies:* Students Practice Anterior Periapicals for 41.3 (Dexter), 41.7(digital sequencing/traditional mounting) and Identify tooth numbers and surfaces on radiographs, Recording radiographs in the patient chart.

**Thursday, October 21 (Lecture)**

*Textbook reading assignment in preparation for lecture class:*

- Chapter 40 Legal Issues and Quality Assurance
- Chapter 41 Intraoral Imaging

## **Week 10**

**Unit: Error Identification, Legal Issues and Quality Control**

**Monday, October 25 (Lab) or Wednesday, October 27 (Lab)**

### **RDA SKILLS COMPETENCY TEST #2 – Periapical Exposures (Anterior)**

*Textbook Procedure Competencies:* Demonstrate Posterior Periapicals for 41.3 (Dexter), Troubleshooting, Recording radiographs in the patient chart.

**Thursday, October 28 (Lecture)**

**EXAM #1 [CH. 38, 39 (digital), 40, 41]**

*Textbook reading assignment in preparation for lecture class:*

- Chapter 40 Legal Issues and Quality Assurance
- Chapter 41 Intraoral Imaging

## **Week 11**

**Unit: Error Identification, Legal Issues and Quality Control**

### **Monday, November 1 (Lab) or Wednesday, November 3 (Lab)**

Students Practice Posterior Periapicals for 41.3 (Dexter), 41.7(digital sequencing/ traditional mounting) and Identify tooth numbers and surfaces on radiographs, Recording radiographs in the patient chart.

*Textbook Procedure Competencies:* 41.3 (Dexter), Troubleshooting, Identifying errors and landmarks (pages 610--611). Identify oral conditions such as periodontal disease, caries, amalgam, composite, gold, PFM, full porcelain, liners, bases as a resource to assist in charting.

### **Thursday, November 4 (Lecture)**

*Textbook reading assignment in preparation for lecture class:*

Chapter 40 Legal Issues and Quality Assurance

Chapter 41 Intraoral Imaging

## **Week 12**

**Unit: Error Identification, Legal Issues and Quality Control**

### **Monday, November 8 or Wednesday, November 10**

*Textbook Procedure Competencies:* Students Practice FMX 41.3 (Dexter), Troubleshooting, Identifying errors and landmarks (pages 610-611). Identify oral conditions such as periodontal disease, caries, amalgam, composite, gold, PFM, full porcelain, liners, bases as a resource to assist in charting.

### **Thursday, November 11 (Lecture) (Holiday)**

### **Quiz #3 (Chapter 41)**

*Textbook reading assignment in preparation for lecture class:*

Chapter 40 Legal Issues and Quality Assurance

Chapter 41 Intraoral Imaging

## **Week 13**

**Unit: Error Identification, Legal Issues and Quality Control**

### **Monday, November 15 or Wednesday, November 17 (Lab)**

### **RDA SKILLS COMPETENCY TEST #3- Periapical Exposures (Posterior)**

*Textbook Procedure Competencies:*

41.3 (Dexter), Troubleshooting, Identifying errors and landmarks (pages 663-665).

### **Thursday, November 18 (Lecture)**

*Textbook reading assignment in preparation for lecture class:*

Chapter 40 Legal Issues and Quality Assurance

Chapter 41 Intraoral Imaging

## **Week 14**

### **Monday, November 22 – Friday, November 26**

***Thanksgiving Holiday Week – No School***

**Week 15**

**Unit: Error Identification, Legal Issues and Quality Control**

**Monday, November 29 (Lab) or Wednesday, December 1 (Lab)**

*Textbook Procedure Competencies:* Students Practice FMX 41.3 (Dexter), Troubleshooting, Identifying errors and landmarks (pages 610-611). Identify oral conditions such as periodontal disease, caries, amalgam, composite, gold, PFM, full porcelain, liners, bases as a resource to assist in charting.

**Thursday, December 2 (Lecture)**

*Textbook reading assignment in preparation for lecture class:*

*Written Final Review*

**Week 16****Monday, December 6 (Lab) or Wednesday, December 8 (Lab)**

**FULL MOUTH SERIES (FWX) EVALUATION ON DEXTER DUE**

**Thursday, December 9 (Lecture)**

**FINAL WRITTEN EXAM - RADIOGRAPHY**

**Week 17****Monday, December 13 (Lab) or Wednesday, December 15 (Lab)**

**FINAL CUMULATIVE PRACTICAL EXAM**

**Thursday, December 18 (Lecture)**

**CHARTED FMX PROJECT DUE**