



Course Prefix/Number/Title: DHYG 132 Radiology Lab

Number of Credits: 2

Syllabus Updated for DCB: August 2026

Course Description:

The dental hygiene student will be introduced to techniques for exposing digital intra-oral full mouth series and extra-oral dental radiographs on manikins and classmates and live patients. The student will learn how to evaluate these images for diagnostic quality using the Criteria for Radiographic Acceptability and study the basics of radiographic interpretation. The students will also learn the process for exporting radiographs to other dental healthcare providers. Students will document radiology services on electronic dental software. Appropriate infection control techniques and radiation safety precautions required in a dental setting will be implemented.

Pre-requisites:

- Acceptance into the dental hygiene program
- DENT 116 Dental Anatomy (completed with a "C" or above)

Co-Requisite:

- DENT 119 Radiology Lecture

Course Objectives:

At the end of this course the student will be able to:

1. Demonstrate the correct sensor placement for bitewings (horizontal and vertical), periapical, and occlusal sensors for digital intra-oral radiographs on skulls and manikins, for periapical images, using a variety of film-holding devices.
2. Demonstrate the correct placement of the (position indicating device) PID for digital intra-oral radiographs on skulls or manikins.
3. Identify the correct placement (mounting) of intra-oral radiographs in full mouth series and bite-wing radiographs for both digital and traditional radiographs.
4. Identify factors and principles of diagnostically acceptable dental images.
5. Use critical thinking skills to self-assess images taken and list strategies to correct any errors.
6. Identify normal anatomic structures as recorded in the bitewing, periapical, and extra-oral dental radiographs.
7. Demonstrate panoramic radiography techniques.
8. Accurately document the radiology services in the electronic record.
9. Implement the necessary radiation safety precautions that must be followed in the dental setting.
10. Demonstrate appropriate infection control techniques according to the CDC for Infection Control in the Dental Setting.
11. Be responsible in providing ethical and competent care in the dental radiology clinical setting.

12. Dental Hygiene Student Learning Outcomes addressed in this course

1. Demonstrate clinical competence to provide patient centered, comprehensive, dental hygiene care for diverse population of patients.
2. Demonstrate ethical and professional behavior consistent with professional standards in dental hygiene.
3. Promote oral health through interprofessional community health promotion.
4. Communicate effectively with patients, coworkers, and other healthcare professionals.

Instructor: Kelsey Tate, RDH, BSDH, RF

Office: 209B

Office Hours: Mondays 11am- 12pm, Thursdays 12-1pm, or By Appointment

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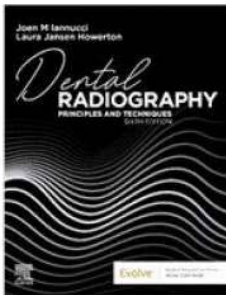
Email: kelsey.tate@dakotacollege.edu

Lab Schedule:

This course meets for two, two-hour lab sessions for 16 weeks for a total of 64 contact hours

Textbooks Required:

Ianucci, J., Howerton, L. (2022). *Dental Radiography: Principles and Techniques*. 6th Ed. St. Louis, MO. Elsevier. ISBN: 978-0-323-69550-3 (same text as DENT 119 Radiology Lecture)



Course Requirements:

Attendance is mandatory in all labs and clinical sessions.

Student must dress in DCB approved clinic attire.

Student must complete this course with a “C” or above to continue in the dental hygiene program.

Tentative Course Outline:

DHYG 132 Radiology Lab

Week	Resources	Topics
Week 1	Dental Radiography Ch. 7, 10, 11, 19, 21	Radiation Health Protection Techniques Processing Procedures Mount x-ray surveys Practice with sensor holding devices Take bitewing surveys- manikin, evaluate, retakes, if necessary, document Xray Notes
Week 2	Dental Radiography Ch. 7, 10, 11, 19, 21	Radiation Health Protection Techniques Processing Procedures

		Mount x-ray surveys Practice with sensor holding devices Take bitewing surveys- manikin, evaluate, retakes, if necessary, document Xray Notes
Week 3	Dental Radiography Ch. 19, 21	Start FMX on manikin- right side Finish FMX on manikin- left side Take Bitewing surveys- manikin, evaluate, retakes-if necessary, document
Week 4	Dental Radiography Ch. 19, 21	Take FMX on manikin, evaluate, retakes - if necessary, document in record
Week 5	Dental Radiography Ch. 19, 21	Take FMX on manikin, evaluate, retakes - if necessary, document in record Start FMX on pedo manikin
Week 6	Dental Radiography Ch. 19, 21	Take FMX on pedo manikin, evaluate, document in record Start FMX on classmate
Week 7	Dental Radiography Ch. 19, 21	Take FMX on classmate, evaluate, document in record, email to DDS Panoramic Demo, simulate taking a panoramic x-ray
Week 8	Dental Radiography Ch. 19, 21	Panoramic Demo, simulate taking a panoramic x-ray Occlusal x-ray demo Taking Occlusal and Panoramic radiographs, evaluate, document in record
Week 9	Dental Radiography Ch. 19, 21	Taking Occlusal and Panoramic radiographs, evaluate, document in record Timed FMS on Manikin, evaluate, retakes - if necessary, document in record
Week 10	Dental Radiography Ch. 19, 21	Timed FMS on Manikin, evaluate, retakes - if necessary, document in record Start radiology patients
Week 11	Dental Radiography Ch. 19, 21	Radiology patients Practice FMX/ PANO
Week 12	Dental Radiography Ch. 19, 21	Radiology patients Practice FMX/ PANO
Week 13	Dental Radiography Ch. 19, 21	Radiology patients Practice FMX/ PANO
Week 14	Dental Radiography Ch. 19, 21	Radiology patients Practice FMX/ PANO
Week 15	Dental Radiography Ch. 19, 21	Identifying dental restorations and materials on radiographs Identifying dental caries on radiographs
Week 16	Dental Radiography Ch. 19, 21	Interpretation of Periodontal Disease Interpretation of Trauma, Pulpal Lesions, and Periapical Lesions

General Education Competency/Learning Outcome(s) OR CTE Competency/Department Learning Outcome(s):

Employs industry-specific skills for workplace readiness.

Relationship to Campus Focus:

Dakota College Bottineau dental programs are designed to prepare students to meet the needs of communities by applying evidence-based decision making, using cutting-edge technology, and integrating quality and safety competencies into their dental programs. Each course within the program serves as a foundation for clinical practice in the dental assisting and dental hygiene professions. To meet the demands of the ever-changing field of dentistry, students are taught to value life-long learning.

Classroom Policies:

Classroom Etiquette

- Be punctual to lectures, labs and clinics
- Avoid any activity that may cause distraction during class.
- Incivility will not be tolerated
- Use of mobile devices and related applications and cameras are not allowed to be used, unless it is for a class activity.
- Children are not allowed in the classroom.

Active Learning:

In addition to educational strategies such as reading, listening and reflecting, when appropriate this class makes use of learning techniques commonly known as active learning. Students should expect to participate in active learning techniques such as discussions and presentations, small group activities, writing, problem-solving, case studies, role-playing, etc. These activities promote analysis, synthesis, and evaluation of class content in order to improve student learning outcomes.

Course Study Expectations:

Commitment to learning is important to success. For every semester credit you are taking in a class, (e.g., 3 credit course = 9 hours per week) the student should schedule three hours to read, study, and devote to your course, outside of class.

Attendance

Attendance is mandatory at all lectures, labs and clinic sessions. If you must be absent, (e.g., illness) please inform the instructor as soon as possible. It is the student's responsibility to meet with the faculty to find out what was missed. Labs and clinics may not be able to be made up. The instructor will assist you in finding an alternate assignment to learn the material missed.

Grading:

Course and lab/clinic grades are based on a variety of activities and assignments designated by the faculty. The criteria by which grades for each theory and clinical course are included in the course syllabus distributed to students. Students have access to and should review the learning management system grading calculation method.

Students are responsible to know what their grades are during the course. Please review the gradebook frequently. If an assignment or exam in the student's gradebook says the assignment or exam has not been submitted or has not been entered, it is then treated as a fact the student didn't do the

assignment or exam as outlined in the directions. Make sure your assignments are submitted before the due date to assure timely submission. Please see your Dakota Dental Program handbook for grading policies, in addition to the policies listed below.

Students must earn a minimum grade of “C” with a maintained 2.0 GPA or better in all required dental program courses. Students who fail a theory or lab/clinical course will be dismissed from the dental program. A final grade of “D” or “F” is considered to be a failed grade. If a student has unsatisfactory grades, he/she should contact the instructor as soon as possible to discuss remediation.

Assignments/Tests/Labs/Clinics: All assignments must be completed and submitted on time in the manner specified by the faculty. Students may fail the course if all assignments are not completed. If you have questions or need clarification, please reach out to the instructor of the course.

Late/makeup work:

Late work will not be accepted (student will receive a zero) unless previously arranged with the instructor or impacted by extenuating circumstances. With faculty permission, a late assignment must be turned in within one week of the due date and that assignment will have a 5% deduction from the assignment grade. Extenuating circumstances will be evaluated by the faculty for the course.

Late tests:

If a student fails to take a test on time, he/she will need to contact the instructor to arrange a time to take the exam. There will be a 10% deduction from the test grade, for tests taken late. If a test isn’t taken within a week of the test date, you will receive a zero for that test. Extenuating circumstances will be evaluated by the faculty for the course.

Student Email Policy:

Dakota College at Bottineau is increasingly dependent upon email as an official form of communication. A student’s campus-assigned email address will be the only one recognized by the Campus for official mailings. The liability for missing or not acting upon important information conveyed via campus email rests with the student.

Academic Integrity:

According to the DCB Student Handbook, students are responsible for submitting their own work. Students who cooperate on oral or written examinations or work without authorization share the responsibility for violation of academic principles, and the students are subject to disciplinary action even when one of the students is not enrolled in the course where the violation occurred. The Code detailed in the Academic Honesty/Dishonesty section of the Student Handbook will serve as the guideline for cases where cheating, plagiarism or other academic improprieties have occurred.

Disabilities or Special Needs:

Students with disabilities or special needs (academic or otherwise) are encouraged to contact the instructor and Disability Support Services.

Title IX:

Dakota College at Bottineau (DCB) faculty are committed to helping create a safe learning environment for all students and for the College as a whole. Please be aware that all DCB employees (other than those designated as confidential resources such as advocates, counselors, clergy and healthcare providers) are required to report information about such discrimination and harassment to the College

Title IX Coordinator. This means that if a student tells a faculty member about a situation of sexual harassment or sexual violence, or other related misconduct, the faculty member must share that information with the College's Title IX Coordinator. Students wishing to speak to a confidential employee who does not have this reporting responsibility can find a list of resources on the DCB Title IX webpage.

AI Student Policy:

Unless otherwise indicated in the course syllabus, or in individual instructions for course assignments, or in the absence of the express consent of the course instructor, students are not allowed to utilize generative AI to help produce any of their academic work. Any violation of this policy will be considered an act of academic dishonesty as outlined within the Dakota College Code of Student Life.

This course will be evaluated by:

This course will be evaluated by total points earned out of total points. The student must earn a 75% or above to continue in the dental hygiene program.

Graded Items	Points possible	Total Points Possible
Skill Evaluations (6)	1. Assembling XCP Instruments (30 points) 2. Infection Control with digital Sensors (33 points) 3. Preparing the Patient for Digital Imaging (18 points) 4. Preparing to Expose a FMX Paralleling Technique (39 points) 5. Preparing Equipment and Exposing a Panoramic Image (51 points) 6. Occlusal Technique (45 points)	216
Set of 4 BW's (2)	20	40
FMX Surveys (4)	100	400
Pedo Survey (1)	50	50
Timed FMX on Manikin	100	100
FMX on Live Patient (2)	100	200
Panoramic Radiograph on Live Patient (1)	100	100
Total Possible Points		1106

The following grade scale will be used:

A	92 - 100
B	84 – 91
C	75– 83
D	67 – 74
F	Below 67

DHYG 132 Radiology Lab Topic Schedule

The student must dress in clinic attire for every lab

This course will be taught in the clinic or biomaterials lab

Week and Course Objectives	Specific Instructional Objectives: Upon completion of each session the student will be able to:	Student Preparation, Learning Experiences and Evaluation Methods
Monday- Group 1, Tuesday- Groups 1 & 2, Thursday- Group 2		
Week 1	NO LAB THIS WEEK	Prior to lab review: - Dental Radiography Ch. 7, 9, 10, 11, 19, 20, & 21 Monday: NO LAB Tuesday: NO LAB Thursday Radiation Health Protection Techniques - ALARA concept - Lead apron and thyroid collars - Dosimeter badges - Get acquainted with x-ray machine in the operatory - Identify components of the x-ray machine - Set up the computer to take an x-ray - Choosing and connecting a digital sensor - Have each student create a new patient in Eagle soft with the name of their choosing for their Manikin- this patient chart is to be used throughout the semester for any radiographs taken on their manikin. - Practice assembling sensor holding devices
Week 2 Course Objectives:	1. Set up x-ray machine and computer for taking digital intraoral x-rays	Prior to lab review:

1 – 6, 8 – 11	2. Connect and disconnect x-ray sensors 3. Accurately document radiology treatment in electronic dental record 4. Follow radiation health protection techniques and infection control 5. Assemble sensor holding devices correctly for each area of the mouth 6. Create profiles for manikins 7. Take bitewing surveys on a manikin 8. Expose a FMX on half mouth 9. Correctly mount FMX 10. Locate normal anatomy on dental images	• Dental Radiography Ch. 7, 9, 10, 11, 19, 20, & 21 Monday Syllabus overview Radiation Health Protection Techniques • ALARA concept • Lead apron and thyroid collars • Dosimeter badges • Get acquainted with x-ray machine in the operatory • Identify components of the x-ray machine • Set up the computer to take an x-ray • Choosing and connecting a digital sensor • Have each student create a new patient in Eagle soft with the name of their choosing for their Manikin- this patient chart is to be used throughout the semester for any radiographs taken on their manikin. • Practice assembling sensor holding devices • Take bitewing surveys- manikin, evaluate, retakes, if necessary, document • Practice mounting x-ray surveys Tuesday • Take bitewing surveys- manikin, evaluate, retakes, if necessary, document • Practice mounting x-ray surveys Thursday • Take bitewing surveys- manikin, evaluate, retakes, if necessary, document • Practice mounting x-ray surveys
Week 3 Course Objectives:	1. Expose a FMX on half mouth 2. Correctly mount FMX	Prior to lab review:

1 – 11	3. Locate normal anatomy on dental images 4. Take 4 Bitewing survey	- Dental Radiography Ch. 19, 20, 21 Monday NO LAB- LABOR DAY Tuesday - FMX on manikin- left side - Evaluate images, retakes, if necessary, document in record - Review normal anatomy on the images Thursday - Assembling XCP Instruments Skill Evaluation - FMX on manikin- right side - Evaluate images, retakes, if necessary, document in record - Review normal anatomy on the images
Week 4 Course Objectives: 1 – 6, 8 - 11	1. Expose a FMX on a manikin 2. Correctly mount FMX 3. Locate normal anatomy on dental images	Prior to lab review: - Dental Radiography Ch. 19, 20, 21 Monday - Assembling XCP Instruments Skill Evaluation - FMX on manikin- right side - Evaluate images, retakes, if necessary, document in record - Review normal anatomy on the images Tuesday - Infection Control with digital Sensors skill evaluation - Take FMX on manikin (1/2 class as operator, 1/2 class as peer assistant)

		- Evaluate images, retakes, if necessary, document in record - Review normal anatomy on images Thursday - Preparing the Patient for Digital Imaging skill eval - Take FMX on manikin (1/2 class as operator, 1/2 class as peer assistant) - Evaluate images, retakes, if necessary, document in record - Review normal anatomy on images
Week 5 Course Objectives: 1 – 6, 8 - 11	- Expose a FMX on a manikin - Correctly mount FMX - Locate normal anatomy on dental images	Prior to lab review: - Dental Radiography Ch. 19, 20, 21 Monday - Preparing the Patient for Digital Imaging skill eval - Take FMX on manikin (1/2 class as operator, 1/2 class as peer assistant) - Evaluate images, retakes, if necessary, document in record - Review normal anatomy on images Tuesday - Preparing to Expose a FMX Using the Paralleling Technique skill eval - Take FMX on manikin (1/2 class as operator, 1/2 class as peer assistant) - Evaluate images, retakes, if necessary, document in record - Review normal anatomy on images Thursday - Take FMX on pedo manikin (1/2 class as operator, 1/2 class as peer assistant) - Evaluate images, retakes, if necessary, document in record - Review normal anatomy on images

Week 6 Course Objectives: 1 – 6, 8 - 11	1. Expose a FMX on a pedo manikin 2. Correctly mount FMX 3. Locate normal anatomy on dental images	Prior to lab review: • Dental Radiography Ch. 19, 20, 21 Monday • Take FMX on pedo manikin (1/2 class as operator, 1/2 class as peer assistant) • Evaluate images, retakes, if necessary, document in record • Review normal anatomy on images Tuesday • Take FMX on pedo manikin (1/2 class as operator, 1/2 class as peer assistant) • Evaluate images, retakes, if necessary, document in record • Review normal anatomy on images Thursday VOLUNTEER FOR 1 PERSON TO SWITCH CLASSES • Take FMX on classmate (1/2 class as operator, 1/2 class as patient) • Evaluate images, retakes, if necessary, document in record • Review normal anatomy on images • Record radiography procedure in dental record • Send digital FMX to patient's dentist
Week 7 Course Objectives: 1 – 6, 8 - 11	1. Expose a FMX on a classmate 2. Correctly mount FMX 3. Take a panoramic radiograph 4. Evaluate images 5. Locate normal anatomy on dental images 6. Record radiography procedure in dental record 7. Email FMX to patient's dentist	Prior to lab review: Dental Radiography Ch. 19, 20, 21, 25, and 23 Monday • Take FMX on classmate (1/2 class as operator, 1/2 class as patient) • Evaluate images, retakes, if necessary, document in record • Review normal anatomy on image • Record radiography procedure in dental record

		• Send digital FMX to patient's dentist Tuesday • Panoramic Demo, simulate taking a panoramic x-ray • Take PANO on Manikin • Evaluate images, retakes, if necessary, document in record • Review normal anatomy on image • Record radiography procedure in dental record Thursday • Panoramic Demo, simulate taking a panoramic x-ray • Take PANO on Manikin • Evaluate images, retakes, if necessary, document in record • Review normal anatomy on image • Record radiography procedure in dental record • Preparing Equipment and Exposing a Panoramic Image Skill Evaluation
Week 8 Course Objectives: 1 – 16	1. Take a panoramic radiograph 2. Take an occlusal radiograph 3. Record radiography procedure in dental record	Prior to lab review: Dental Radiography Ch. 25 and 23 Monday • Panoramic Demo, simulate taking a panoramic x-ray • Take PANO on Manikin • Evaluate images, retakes, if necessary, document in record • Review normal anatomy on image • Record radiography procedure in dental record • Preparing Equipment and Exposing a Panoramic Image Skill Evaluation

		Tuesday • Occlusal x-ray demo • Taking Occlusal radiographs, evaluate, document in record Thursday • Occlusal x-ray demo • Taking Occlusal radiographs, evaluate, document in record • Taking an Occlusal Radiograph on a manikin skill evaluation
Week 9 Course Objectives: 1 - 6	1. Complete recordkeeping according to DCB protocols 2. Expose radiographs according to DCB protocols	Prior to lab review: • Dental Radiography Ch. 19, 20, 21 Monday • Occlusal x-ray demo • Taking Occlusal radiographs, evaluate, document in record • Taking an Occlusal Radiograph on a manikin skill evaluation Tuesday • Practice taking images on manikin you have difficulty with. Review placement techniques. Thursday • Timed FMX on manikin, evaluate images, retakes - if needed, document in patient record ○ Time limit - 45 minutes. You must earn a 75% or above to pass this competency.
Week 10	1. Complete recordkeeping according to DCB protocols	Prior to lab review:

FIRST DAYS WITH LIVE PATIENTS! Course Objectives: 1 – 6	2. Expose radiographs according to DCB protocols 3. Identify restorations, dental materials and foreign objects on radiographs	• Dental Radiography Ch. 19, 20, 21 Monday • Timed FMX on manikin, evaluate images, retakes - if needed, document in patient record ○ Time limit - 45 minutes. You must earn a 75% or above to pass this competency. Tuesday 1. Take FMX on patients, includes self-evaluation, any retakes, documentation Thursday 1. Take FMX on patients, includes self-evaluation, any retakes, documentation
Week 11 Course Objectives: 1 – 6	1. Complete recordkeeping according to DCB protocols 2. Expose radiographs according to DCB protocols 3. Identify restorations, dental materials and foreign objects on radiographs	Prior to lab review: • Dental Radiography Ch. 19, 20, 21 Monday 1. Take FMX on patients, includes self-evaluation, any retakes, documentation Tuesday 1. Take FMX on patients, includes self-evaluation, any retakes, documentation Thursday 1. Take FMX on patients, includes self-evaluation, any retakes, documentation
Week 12	1. Complete recordkeeping according to DCB protocols 2. Expose radiographs according to DCB protocols	Prior to lab review: • Dental Radiography Ch. 19, 20, 21

Course Objectives: 1 – 6	3. Interpret caries on radiographs for confirmation by DDS	Monday 1. Take FMX on patients, includes self-evaluation, any retakes, documentation Tuesday 2. Take FMX on patients, includes self-evaluation, any retakes, documentation Thursday 1. Take FMX on patients, includes self-evaluation, any retakes, documentation
Week 13 Course Objectives: 1 – 6	1. Complete recordkeeping according to DCB protocols 2. Expose radiographs according to DCB protocols 3. Interpret caries on radiographs for confirmation by DDS	Prior to lab review: Dental Radiography Ch. 19, 20, 21 Monday 1. Take PANO on patients, includes self-evaluation, any retakes, documentation Tuesday 1. Take PANO on patients, includes self-evaluation, any retakes, documentation Thursday 1. Take PANO on patients, includes self-evaluation, any retakes, documentation
Week 14 Course Objectives: 1 – 6, 8 - 11	1. Complete recordkeeping according to DCB protocols 2. Expose radiographs according to DCB protocols 3. Interpret periodontal disease on radiographs for confirmation by DDS	Prior to lab review: Dental Radiography Ch. 19, 20, 21 Monday 1. Take PANO on patients, includes self-evaluation, any retakes, documentation Tuesday

		1. MAKE-UP PATIENTS AS NEEDED- Take FMX/PANO on patients, includes self-evaluation, any retakes, documentation Thursday NO CLASS- THANKSGIVING BREAK
Week 15 Course Objectives: 1 – 6	1. Complete recordkeeping according to DCB protocols 2. Expose radiographs according to DCB protocols 3. Interpret Trauma, pulpal lesions and periapical lesions on radiographs for confirmation by DDS	Prior to lab review: 1. Dental Radiography Ch. 28, 29, 32, 33, 34, 35 Monday 2. Class activity on Identification of Normal Anatomy: Intraoral Images (resource Ch. 28 Radiology Text book) 3. Class activity on Identification of Normal Anatomy: Panoramic Images (resource Ch. 29 Radiology Text book) Tuesday 4. 1/2 class activity on identification of Restorations, Dental Materials, and Foreign Objects (resource Ch. 32 Radiology Textbook) 5. 1/2 class activity on Interpretation of Dental Caries (resource Ch. 33 Radiology Text book) Thursday 6. Class activity on Identification of Normal Anatomy: Intraoral Images (resource Ch. 28 Radiology Text book) 7. Class activity on Identification of Normal Anatomy: Panoramic Images (resource Ch. 29 Radiology Text book) 8. Class activity on Interpretation of Periodontal Disease (resource Ch. 34 Radiology Text book) 9. Class activity on Interpretation of Trauma, Pulpal Lesions, and Periapical

		Lesions (resource Ch. 35 Radiology Text book)
Week 16 Course Objectives: 1 – 6	1. Complete recordkeeping according to DCB protocols 2. Expose radiographs according to DCB protocols 3. Interpret caries, periodontal disease, restorations, trauma on radiographs	Prior to lab review: 1. Dental Radiography Ch. 34 and 35 Monday 2. Class activity on Interpretation of Periodontal Disease (resource Ch. 34 Radiology Text book) 3. Class activity on Interpretation of Trauma, Pulpal Lesions, and Periapical Lesions (resource Ch. 35 Radiology Text book) Tuesday Participate in class activity regarding image interpretation Thursday 1. NO CLASS