

DH R011: ORAL RADIOLOGY FOR DENTAL HYGIENE

Originator
smcdonald

College

Oxnard College

Discipline (CB01A)

DH - Dental Hygiene

Course Number (CB01B)

R011

Course Title (CB02)

Oral Radiology for Dental Hygiene

Banner/Short Title

Oral Radiology for DH

Credit Type

Credit

Start Term

Fall 2023

Catalog Course Description

This course teaches the fundamentals of radiation safety and the operation of dental radiology equipment, along with the clinical application of procedures involved in exposing, processing, mounting and interpreting dental radiographs. This course presents the opportunity to gain certification to legally take dental radiographs.

Taxonomy of Programs (TOP) Code (CB03)

1240.20 - *Dental Hygienist

Course Credit Status (CB04)

D (Credit - Degree Applicable)

Course Transfer Status (CB05) (select one only)

C (Not transferable)

Course Basic Skills Status (CB08)

N - The Course is Not a Basic Skills Course

SAM Priority Code (CB09)

C - Clearly Occupational

Course Cooperative Work Experience Education Status (CB10)

N - Is Not Part of a Cooperative Work Experience Education Program

Course Classification Status (CB11)

Y - Credit Course

Educational Assistance Class Instruction (Approved Special Class) (CB13)

N - The Course is Not an Approved Special Class

Course Prior to Transfer Level (CB21)

Y - Not Applicable

Course Noncredit Category (CB22)

Y - Credit Course

Funding Agency Category (CB23)

Y - Not Applicable (Funding Not Used)

Course Program Status (CB24)

1 - Program Applicable

General Education Status (CB25)

Y - Not Applicable

Support Course Status (CB26)

N - Course is not a support course

Field trips

May be required

Grading method

(L) Letter Graded

Does this course require an instructional materials fee?

No

Repeatable for Credit

No

Is this course part of a family?

No

Units and Hours

Carnegie Unit Override

No

In-Class

Lecture

Minimum Contact/In-Class Lecture Hours

35

Maximum Contact/In-Class Lecture Hours

35

Activity

Laboratory

Minimum Contact/In-Class Laboratory Hours

52.5

Maximum Contact/In-Class Laboratory Hours

52.5

Total in-Class

Total in-Class

Total Minimum Contact/In-Class Hours

87.5

Total Maximum Contact/In-Class Hours

87.5

Outside-of-Class

Internship/Cooperative Work Experience

Paid

Unpaid

Total Outside-of-Class

Total Outside-of-Class

Minimum Outside-of-Class Hours

70

Maximum Outside-of-Class Hours

70

Total Student Learning

Total Student Learning

Total Minimum Student Learning Hours

157.5

Total Maximum Student Learning Hours

157.5

Minimum Units (CB07)

3

Maximum Units (CB06)

3

Prerequisites

DH R001 and READ R105 and MATH R100 or MATH R101 or MATH R104 or MATH R105 or MATH R105H or MATH R106 or MATH R115 or MATH R117 or MATH R120 and ANAT R101 and CHEM R110 or CHEM R120 and CHEM R112 and COMM R101 and ENGL R101 or ENGL R101H and MICR R100 and MICR R100L and PHSO R101 and PSY R101 and SOC R101 and ANTH R102 or ANTH R102H or ANTH R107 or ETHS R107 or ANTH R114 or ETHS R114 or CHST R101 or CHST R102 or ECE R107 or SJS R110 or ETHS R110 or SOC R103 or SOC R108 or CHST R108

Corequisites

DH R010 and DH R012 and DH R013 and DH R014 and DH R015

Advisories on Recommended Preparation

BIS R122 and SPAN R100 or SPAN R110 or SPAN R200 or SPAN R210 or SPAN R220 or SPAN R220H or SPAN R230 or SPAN R230H

Limitations on Enrollment

Current CPR certification for health care provider (American Heart Association) or professional rescuer (American Red Cross)

Current negative TB test or chest x-ray

No acrylic or long nails in clinical settings

No visible tattoos or visible body piercings except single studs in earlobes

Physical examination demonstrating general good health

Proof of freedom from and immunity to communicable diseases

Others (specify)

Other Limitations on Enrollment

Admittance to Dental Hygiene program per application process

Entrance Skills

Entrance Skills

Students need to be proficient in oral and human anatomy.

Prerequisite Course Objectives

ANAT R101-Discuss both the gross and macro-anatomical structures and basic functions of the human system using accepted anatomical terms, planes, and points of reference.

ANAT R101-Distinguish the major cell and tissue types based on their morphology and functional characteristics.
 ANAT R101-Predict, explain and analyze which cell or tissue type would be located in a given region based on the known characteristics of cells and tissues.
 ANAT R101-Explain histological processes undertaken in producing prepared slides.
 ANAT R101-Identify and recognize the parts of the human organ systems focusing most intently on the integument, skeletal, muscular, nervous, endocrine, digestive, circulatory, respiratory and uro-genital systems.
 ANAT R101-Relate structure and function at the cellular through system levels of organization of human body systems.
 ANAT R101-Describe structural and anatomical changes that occur in disease, injury, congenital malformation or aging of the human body systems.

Entrance Skills

Students need an understanding of diverse patient populations so students will be better able to incorporate cultural competence into their practice

Prerequisite Course Objectives

ANTH R102-Explain the interconnectedness of the economic, political and sociocultural forces of globalization amongst diverse cultural groups.
 ANTH R102-Analyze and evaluate the ethical issues anthropologists encounter, and professional ethical obligations that must be met in the study of and application in cultural groups different from their own.
 ANTH R102H-Define the scope of anthropology and discuss the role of cultural anthropology within the discipline.
 ANTH R102H-Recognize the methods, theories and perspectives used to study and understand human cultures.
 ANTH R102H-Explain the importance of the ethnographic method in the study of culture.
 ANTH R102H-Employ the relativist perspective while discussing cultural variation.
 ANTH R102H-Demonstrate an understanding of anthropological concepts including ethnicity, gender, political organization, economic systems, kinship, rituals and belief systems.
 ANTH R102H-Explain the interconnectedness of the economic, political and sociocultural forces of globalization amongst diverse cultural groups.
 ANTH R102H-Analyze and evaluate the ethical issues anthropologists encounter, and professional ethical obligations that must be met in the study of and application in cultural groups different from their own.
 ANTH R102H-Independently collect and arrange ethnographic data.
 ANTH R102H-Propose various dynamics or processes by which culture change occurs.
 ANTH R114-Demonstrate a critical understanding of African American culture and experience across time including historical roots and contemporary life.
 ANTH R114-Develop and apply skills in critical thinking and expository writing based on logic, evidence, scholarly discernment and cross-cultural understanding.
 ECE R107-Recognize that student variability exists in many ways including cultural, ethnic, intellectual, linguistic, racial, social, and special needs.
 ECE R107-Critique theories and review the multiple impacts on young children's social identity.
 ECE R107-Analyze aspects of children's experiences as members of families targeted by social bias considering the significant role of education in reinforcing or contradicting such experiences.
 ECE R107-Critically assess the components of linguistically and culturally relevant, inclusive, age-appropriate, anti-bias, approaches in promoting optimum learning and development.
 PHSO R101-Explain the basic concepts of physiology and relate them to clinical situations.
 PSY R101-Recognize and understand the impact of diversity on psychological research, theory and application, including (but not limited to): age, race, ethnicity, culture, gender, socio-economic status, disability, and sexual orientation.
 PSY R101-Demonstrate critical thinking skills and information competence as applied to psychological topics.
 PSY R101-Demonstrate knowledge and understanding of the following nine general domains: (1) biological bases of behavior and mental processes, (2) sensation and perception, (3) learning and memory (4) cognition, consciousness, (5) individual differences, psychometrics, personality, (6) social processes (including those related to socio-cultural and international dimensions), (7) developmental changes in behavior and mental processes that occur across the lifespan, (8) psychological disorders, and (9) emotion and motivation
 SJS R110-Explain how concepts of race and ethnicity are socially and politically constituted and institutionalized
 SJS R110-Compare and contrast the important minority groups in the United States.
 SJS R110-Evaluate the problems facing important minority groups in the United States
 SOC R101-Describe cause and effect relationships between the individual and society.
 SOC R103-Explain the dynamics of various ethnic group experiences in American assimilation.

Entrance Skills

Students must possess basic Biology knowledge in order to identify the bacteria found in the oral cavity and body and the role it plays in disease process.

Prerequisite Course Objectives

ANAT R101-Discuss both the gross and macro-anatomical structures and basic functions of the human system using accepted anatomical terms, planes, and points of reference.
 ANAT R101-Distinguish the major cell and tissue types based on their morphology and functional characteristics.

ANAT R101-Predict, explain and analyze which cell or tissue type would be located in a given region based on the known characteristics of cells and tissues.
 ANAT R101-Identify and recognize the parts of the human organ systems focusing most intently on the integument, skeletal, muscular, nervous, endocrine, digestive, circulatory, respiratory and uro-genital systems.
 ANAT R101-Describe structural and anatomical changes that occur in disease, injury, congenital malformation or aging of the human body systems.

Entrance Skills

Students must possess knowledge of chemistry to be able to relate it to the use of chemotherapeutic agents and dental materials.

Prerequisite Course Objectives

CHEM R110-Analyze the fundamental features of chemistry including measurement, mathematical conversion of measured physical properties such as mass, volume, density, pressure, temperature, solutions, concentrations, and dilutions.
 CHEM R110-Perform conversions using the technique of dimensional analysis and memorized metric conversion factors.
 CHEM R110-Give the names and symbols of the common elements.
 CHEM R110-Name or give the formulas of simple inorganic compounds.
 CHEM R110-Identify and give general physical properties of the three states of matter. Describe phase-change between the three states.
 CHEM R110-Differentiate clearly between chemical and physical changes, and among elements, compounds and mixtures.
 CHEM R110-Describe atomic structure in terms of protons, neutrons, and electrons using the Bohr model.
 CHEM R110-Relate electron configuration to the periodic table, and use the table to predict or explain variations in size, ionization energy, electronegativity, and metallic or non-metallic character.
 CHEM R110-Describe covalent and ionic bonding in simple terms. Predict molecular shapes and polarities by VSEPR (Valence Shell Electron Pair Repulsion) Theory.
 CHEM R110-Describe and explain the properties of gases in terms of KMT (Kinetic Molecular Theory). Calculate gas properties from the gas laws.
 CHEM R110-Describe the properties of water and other liquids.
 CHEM R110-Categorize the properties of solutions and describe the solution process on a molecular level.
 CHEM R110-Give common concentration units and use them to perform calculations involving solutions.
 CHEM R110-Describe properties of acids and bases, calculate pH, and compare and contrast the behavior associated with acids and bases.
 CHEM R112-Define the types of radioactive decay particles and describe their effects on the human body.
 CHEM R112-Describe properties, bonding and structure of various classes of organic compounds.
 CHEM R112-Describe the nature of hydrocarbons and organic functional groups in terms of bonding, structure, properties, reactions and natural occurrence.
 CHEM R112-Draw structures and give IUPAC (International Union of Pure and Applied Chemistry) names for organic compounds.
 CHEM R112-Describe the nature of hydrogen bond.
 CHEM R112-State whether an organic structure is polar or nonpolar, and use this determination to compare physical properties of various compounds.
 PHSO R101-Safely perform a variety of lab procedures and techniques.
 PHSO R101-Work effectively in laboratory group settings.

Entrance Skills

Communication is a skill needed for discussing radiographic procedures and treatment plans to patients.

Prerequisite Course Objectives

COMM R101-Use proper delivery techniques in speeches
 COMM R101-Use proper vocal range during speeches
 COMM R101-Use proper hand gestures during speeches
 COMM R101-Use authoritative source materials properly in speeches
 COMM R101-Deliver a well-organized speech including an introduction, body, and conclusion
 COMM R101-Evaluate their own progress in public speaking
 COMM R101-Clearly convey a specific message in a public venue
 COMM R101-Explain the basic principles of human communication
 COMM R101-Analyze their communication situation, audience, occasion, purpose, and selection of subject matter
 COMM R101-Demonstrate that they are careful and critical thinkers and communicators, both as speakers and as listeners
 COMM R101-Explain their relationship and ethical responsibilities to others involved in the communication transaction
 DH R001-Correctly define and use a variety of different dental terminology
 DH R001-Identify basic head and neck anatomy

Entrance Skills

Students must have adequate knowledge of dental terminology, infection control, patient education, preventive techniques, importance of vitals and how to take them, sterilization of equipment and instruments, and radiology

Prerequisite Course Objectives

DH R001-Correctly define and use a variety of different dental terminology
DH R001-Describe and duplicate appropriate handwashing technique
DH R001-Explain the use of fluorides, disclosing agents, and sealants in the dental practice
DH R001-Practice the proper set-up and break-down of a dental operator
DH R001-Correctly employ the use of personal protective equipment
DH R001-Practice the basic techniques of infection control in the dental practice
DH R001-Practice the principles of vital taking and recording
DH R001-Employ appropriate techniques for sterilization of dental instruments
DH R001-List the types of tooth numbering and employ the principles
DH R001-Identify basic head and neck anatomy
DH R001-Duplicate the proper mounting of dental radiographs
DH R001-Identify basic radiographic landmarks
DH R001-Discuss the basic differences between a dental assistant, dental hygienist, dentist, and a specialist

Entrance Skills

Students must possess proper command of the English language in order to do literature review

Prerequisite Course Objectives

ENGL R101-Demonstrate college-level control of mechanical elements of writing such as grammar, syntax, spelling, vocabulary, and idiomatic usage
ENGL R101-Research a topic, analyze and synthesize information, and report findings in a properly documented essay
ENGL R101-Demonstrate critical thinking skills and rhetorical awareness in analyzing others' non-fiction writing and in developing essays
ENGL R101H- Demonstrate college-level control of mechanical elements of writing such as grammar, syntax, spelling, vocabulary, and idiomatic usage
ENGL R101H-Demonstrate critical thinking skills and rhetorical awareness in analyzing others' non-fiction writing and in developing essays

Entrance Skills

Students must possess an understanding of Physiology in order to relate it to the radiology process.

Prerequisite Course Objectives

ANAT R101-Discuss both the gross and macro-anatomical structures and basic functions of the human system using accepted anatomical terms, planes, and points of reference.
ANAT R101-Distinguish the major cell and tissue types based on their morphology and functional characteristics.
ANAT R101-Predict, explain and analyze which cell or tissue type would be located in a given region based on the known characteristics of cells and tissues.
ANAT R101-Describe the key structural features of different human cell and major tissue types.
ANAT R101-Identify and describe the anatomy of the systems of the human body.
ANAT R101-Relate structure and function at the cellular through system levels of organization of human body systems.
ANAT R101-Describe structural and anatomical changes that occur in disease, injury, congenital malformation or aging of the human body systems.
CHEM R110-Describe covalent and ionic bonding in simple terms. Predict molecular shapes and polarities by VSEPR (Valence Shell Electron Pair Repulsion) Theory.
CHEM R110-Relate electron configuration to the periodic table, and use the table to predict or explain variations in size, ionization energy, electronegativity, and metallic or non-metallic character.
CHEM R110-Analyze the fundamental features of chemistry including measurement, mathematical conversion of measured physical properties such as mass, volume, density, pressure, temperature, solutions, concentrations, and dilutions.
CHEM R110-Give the names and symbols of the common elements.
CHEM R110-Describe atomic structure in terms of protons, neutrons, and electrons using the Bohr model.
DH R001-Correctly define and use a variety of different dental terminology
DH R001-Identify basic head and neck anatomy
DH R001-Duplicate the proper mounting of dental radiographs
DH R001-Identify basic radiographic landmarks
PHSO R101-Define and recall terms used to describe the physiological processes covered in the course.
PHSO R101-Explain the basic concepts of physiology and relate them to clinical situations.
PHSO R101-Analyze and evaluate the concepts of physiologic theories as they relate to the laws of physics and chemistry.
PHSO R101-Safely perform a variety of lab procedures and techniques.
PHSO R101-Work effectively in laboratory group settings.

Requisite Justification

Requisite Type

Prerequisite

Requisite

DH R001

Requisite Description

Course in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Prerequisite

Requisite

MATH R101 or MATH R104 or MATH R105 or MATH R105H or MATH R106 or MATH R115 or MATH R117 or MATH R120

Requisite Description

Course not in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Prerequisite

Requisite

ANAT R101

Requisite Description

Course not in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Prerequisite

Requisite

CHEM R110 or CHEM R120

Requisite Description

Course not in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Prerequisite

Requisite

CHEM R112

Requisite Description

Course not in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Prerequisite

Requisite

COMM R101

Requisite Description

Course not in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Prerequisite

Requisite

ENGL R101 or ENGL R101H

Requisite Description

Course not in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Prerequisite

Requisite

MICR R100

Requisite Description

Course not in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Prerequisite

Requisite

MICR R100L

Requisite Description

Course not in a sequence

Level of Scrutiny/Justification

Closely related lecture/laboratory course

Requisite Type

Prerequisite

Requisite

PSY R101

Requisite Description

Course not in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Prerequisite

Requisite

SOC R101

Requisite Description

Course not in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Prerequisite

Requisite

ANTH R102 or ANTH R102H

Requisite Description

Course not in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Prerequisite

Requisite

ANTH R114 or ETHS R114

Requisite Description

Course not in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Prerequisite

Requisite

CHST R101

Requisite Description

Course not in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Prerequisite

Requisite

ECE R107

Requisite Description

Course not in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Prerequisite

Requisite

SJS R110 or ETHS R110

Requisite Description

Course not in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Prerequisite

Requisite

SOC R103

Requisite Description

Course not in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Prerequisite

Requisite

SOC R108 or CHST R108

Requisite Description

Course not in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Corequisite

Requisite

DH R010

Requisite Description

Course in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Corequisite

Requisite

DH R012

Requisite Description

Course in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Corequisite

Requisite

DH R013

Requisite Description

Course in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Corequisite

Requisite

DH R014

Requisite Description

Course in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Corequisite

Requisite

DH R015

Requisite Description

Course in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Prerequisite

Requisite

ANTH R107 or ETHS R107

Requisite Type

Prerequisite

Requisite

CHST R102

Requisite Type

Advisory

Requisite

SPAN R100 OR SPAN R110 OR SPAN R200 OR SPAN R210 OR SPAN R220 SPAN R220H OR SPAN R230 or SPAN R230H

Requisite Type

Advisory

Requisite

BIS R122

Requisite Type

Prerequisite

Requisite

READ R105

Student Learning Outcomes (CSLOs)**Upon satisfactory completion of the course, students will be able to:**

- | | |
|---|-----------------------------------------------------------------------------|
| 1 | List five factors that contribute to the diagnostic quality radiographs |
| 2 | Describe the process by which x-rays are produced |
| 3 | Describe the ionization process and explain its significance |
| 4 | Identify the components of the x-ray machine and their individual functions |

Course Objectives**Upon satisfactory completion of the course, students will be able to:**

- | | |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Follow the rules of radiation safety for the protection of both patient and operator |
| 2 | Explain the characteristics of radiation, physics, ionization, the electromagnetic spectrum, and the association of x-rays with matter |
| 3 | Identify the components of x-ray beams |
| 4 | Identify the components of the x-ray machine and their individual functions |
| 5 | Describe the technical aspects of radiations production and the effects of adjusting the current voltage, and/or exposure time in the production of quality dental radiographs |
| 6 | Identify the parts of the dental films packet and correctly manipulate it |
| 7 | Use the different sizes and types of dental-x-ray film, and explain their individual uses |
| 8 | Use the dark room facilities and automatic processors in the development of dental x-ray film |
| 9 | Utilize different position indicating devices (PIDs) when taking intraoral dental x-rays, using both of the paralleling techniques |
| 10 | Identify and correct errors in film placement, using the rules of shadow casting and the inverse square law |
| 11 | Manage the taking of diagnostic dental x-rays |
| 12 | Identify anatomical landmarks, anomalies, restorations, caries, periapical lesions, and other possible pathological defects in a formal written critique of each full mouth survey of radiographs |

Course Content**Lecture/Course Content**

1. Introduction to history of radiology and radiation safety
 - a. The progress of radiology from its discovery to the present
 - b. The pioneers of radiography and identify their contributions
 - c. The theories of biological damage and the possible effect of radiation on somatic and genetic cells
 - d. The body cells in the order of their radio sensitivity
 - e. The factors that determine radiation injuries
 - f. The sequence of events that may follow exposure to radiation
 - g. The effects of oral radiation

- h. The terms used to measure radiation
 - i. The various radiation monitoring devices
 - j. The different areas of the x-rays area and their specific utilizations
 - k. The duties of the Radiology Assistant
2. The dental x-ray machine; the technical production of x-rays; bitewing x-rays
- a. The types of x-ray machines and their major parts and components
 - b. The functions of the electric circuits, the parts of the x-rays tube and control devices of x-ray machines
 - c. The factors involved in x-ray generation.
 - d. The constant potential and varying potential x-ray machines
 - e. The basic requirements of an acceptable diagnostic radiograph
3. Dental x-ray film, film processing, and asepsis in radiology
- a. The difference between direct-exposure and indirect-exposure
 - b. The parts and identification marks on dental x-ray film packets
 - c. The various intra-oral films according to size, customary usage, and film speed
 - d. Differentiate between intra-oral and extra-oral films
 - e. The parts and intended use of the extra-oral cassette
 - f. The correct methods of film handling and storage
 - g. The sequence and the steps in processing radiographs
 - h. The items of darkroom equipment, the compartments of processing equipment
 - i. The major ingredients in processing solutions and explain the functions of each ingredient
 - j. The three problem areas in quality control during processing
 - k. The bitewing-taking x-rays in the mouth of clinic partners
 - l. The exposure, mounting and critiquing of bitewings x-rays surveys on DXTR
 - m. The rules of asepsis
4. Anatomical landmarks
- a. The importance of recognizing and identifying normal anatomical landmarks of the face and head
 - b. Recognizing and identifying the facial and cranial bones
 - c. The anatomical landmarks of the maxilla and the mandible
 - d. Differentiating between the terms radiopaque and radiolucent
 - e. Differentiating, radiograph ally, between cortical and cancellous bone
 - f. Recognizing and describing the radiographic appearance normally seen on radiographs of the maxillary arch and the mandibular arch
 - g. Determining whether a periapical radiograph is of the right or left side
 - h. Identifying periapical radiographs according to location in the maxilla or mandible and describing how to position it on a film mount.
5. Intra-oral radiology
- a. Identifying the three basic intraoral procedures
 - b. Comparing the principles of the paralleling and bisecting technique
 - c. Locating the points of entry on the face
 - d. Differentiating between the methods used to obtain proper horizontal and vertical angulations
 - e. Identifying the advance preparation required before radiographs are exposed
6. Periapical radiology
- a. Selecting the type and number of films required to make a complete periapical survey
 - b. Identifying, assembling and positioning film holders (XCP) or snap-a-ray for the paralleling technique
 - c. Differentiating between conventional periapical film placement and endodontic film placement
7. Interpretation of dental radiographs
- a. Differentiating between preliminary interpretation and diagnosis of the radiograph
 - b. Identifying all radiopaque and radiolucent-appearing restorative materials
 - c. Identifying the radiographic appearance of dental caries
 - d. Describing the radiographic appearance of dental injuries
 - e. Identifying two methods used to localize objects in the mouth by applying the buccal-object rule
 - f. Placing, exposing, mounting and critiquing periapical x-rays taken with the snap-a-ray
8. Identifying and correcting Faulty Radiographs
- a. Identifying the types of radiographic errors caused by faulty exposure techniques
 - b. Identifying the types of radiographic errors caused by incorrect film placement and angulation of the central ray
 - c. Identifying the types of radiographic errors caused by faulty processing techniques
 - d. Identifying the conditions that cause radiographic to be fogged
 - e. Identifying the importance of quality control during chair-side film positioning

9. Occlusal and extraoral radiology
 - a. Identifying the reasons for making an occlusal survey
 - b. Comparing the topographical with the cross-sectional exposure method
 - c. Positioning the film packet and establish horizontal and vertical angulation for maxillary and mandibular areas
 - d. Identifying the types of film used in extraoral radiography
 - e. Identifying three reasons for making extraoral exposures
 - f. Identifying the types of surveys that can be performed extraorally
 - g. Identifying and locating the listed cephalometric landmarks and planes on a cephalometric tracing
10. Radiography for children and edentulous patients, and education of patients about radiography
 - a. Showing the importance of making radiographic examination on children
 - b. Identifying the factors that determine when radiographs on children should be made and what type of film is best suited in each instance
 - c. Differentiating the procedures involved in exposing radiographs on children and adults
 - d. Explaining the importance for making the survey of edentulous areas
 - e. Identifying the film requirements used for making an edentulous survey
 - f. Explaining the necessity for patient education in radiology
 - g. Describing several methods by which the patient can be educated to appreciate the value of dental radiology
 - h. Identifying goals of the dental radiographer
 - i. Placing, exposing, mounting and critiquing a full mouth series on a child and edentulous patient
11. Panoramic radiology
 - a. Differentiating between a conventional a panoramic x-ray machine
 - b. Identifying the main factor that determines the width of the focal trough
 - c. Identifying the major factors that affect the geometry of the image
 - d. Identifying in sequence the basic steps in operating a panoramic versus intraoral radiographic surveys
 - e. Identifying five major head positioning errors that result in faulty panoramic radiographs

Laboratory or Activity Content

1. Infection control protocols
2. Radiation safety protocols
3. Developing of exposed films
4. Exposing BW films
5. Exposing PA films
6. Mounting films
7. Determining diagnostic quality
8. Documentation of radiographic findings
9. Intro. to digital radiography

Methods of Evaluation

Which of these methods will students use to demonstrate proficiency in the subject matter of this course? (Check all that apply):

Written expression
Problem solving exercises
Skills demonstrations

Methods of Evaluation may include, but are not limited to, the following typical classroom assessment techniques/required assignments (check as many as are deemed appropriate):

Clinical demonstration
Essay exams
Laboratory activities
Quizzes
Role playing
Simulations
Skills demonstrations
Skills tests or practical examinations
Essays
Projects

Instructional Methodology

Specify the methods of instruction that may be employed in this course

Audio-visual presentations
 Class discussions
 Clinical demonstrations
 Demonstrations
 Distance Education
 Instructor-guided interpretation and analysis
 Instructor-guided use of technology
 Laboratory activities
 Lecture

Describe specific examples of the methods the instructor will use:

- 1) **AV Presentations:** Instructors will utilize manufacturer instructional videos and AV materials for the safe operation of proprietary hardware and software.
- 2) **Class Discussions:** Instructors will utilize smaller laboratory formats to encourage discourse on the setup and usage of the equipment, and the efficacy of one instrument usage over another.
- 3) **Clinical Demonstrations/Demonstrations:** Laboratory instructors will demonstrate the proper radiological technique in both the pre-clinical and clinical settings. By using mannequins and typodonts, instructors will be able to demonstrate and provide feedback to students prior to reaching the clinical setting.
- 4) **Instructor guided interpretation and analysis:** Utilizing standard of care landmarks for radiographs, instructors will be able to help students self analyze their work and more importantly help guide them how to improve their clinical skills.
- 5) **Instructor guided use of technology:** After the didactic introduction to the radiology equipment, laboratory instructors will provide students a hands on familiarization and proper use of the equipment and software required to ensure safe and effective usage. In addition, instructors will demonstrate the proper infection control aspects of the advanced technology utilized in radiology.
- 6) **Laboratory activities:** Students will be required to accomplish 52,5 hours of laboratory time during which they will be required to demonstrate competence on a mannequin prior to being allowed to continue in a clinical setting. Successful completion of this course will require competency in multiple radiographic procedures.
- 7) **Lecture:** Students are required 35 hours of didactic lectures which include Audio visual presentations, demonstrations and traditional lecture format.

Representative Course Assignments

Writing Assignments

1. Written self-evaluation of radiographs taken by the student

Critical Thinking Assignments

1. Students will be tasked on utilizing core skills learned and apply them to safely and effectively obtaining radiographs from abnormal situations.
2. Students will be tasked to identify and apply which principles of physics needed to improve the diagnostic image created during the radiographic process.
3. Using the ALARA principle, students must be able to determine the minimum number of retakes required to achieve a diagnostic set of radiographs.

Reading Assignments

1. Student will spend a minimum of 4 hours per week outside of regular class time reading and reviewing assigned radiology topics, such as ALARA

Skills Demonstrations

1. Students will demonstrate the proper assembly of radiographic instruments
2. Students will also demonstrate proper placement of radiograph film on mannequins
3. Students will also demonstrate the proper infection control protocols required for radiographic procedures.

Problem-Solving and Other Assignments (if applicable)

1. Visual self-evaluation of radiographs taken by the student
2. Students will be required to properly mount traditional analog x-rays

Outside Assignments

Representative Outside Assignments

1. Identify anatomical landmarks, anomalies, restorations, caries, periapical lesions, and other possible pathological defects in a formal written critique of each full mouth survey of radiographs
2. Recognize technique errors and identify the necessary corrective measures of film placement, using the rules of shadow casting and the inverse square law.
3. Understand the characteristics of radiation, physics, ionization, the electromagnetic spectrum, and the association of x-rays with matter and how they apply to the science of radiology.

District General Education

A. Natural Sciences

B. Social and Behavioral Sciences

C. Humanities

D. Language and Rationality

E. Health and Physical Education/Kinesiology

F. Ethnic Studies/Gender Studies

CSU GE-Breadth

Area A: English Language Communication and Critical Thinking

Area B: Scientific Inquiry and Quantitative Reasoning

Area C: Arts and Humanities

Area D: Social Sciences

Area E: Lifelong Learning and Self-Development

Area F: Ethnic Studies

CSU Graduation Requirement in U.S. History, Constitution and American Ideals:

IGETC

Area 1: English Communication

Area 2A: Mathematical Concepts & Quantitative Reasoning

Area 3: Arts and Humanities

Area 4: Social and Behavioral Sciences

Area 5: Physical and Biological Sciences

Area 6: Languages Other than English (LOTE)

Textbooks and Lab Manuals

Resource Type

Textbook

Description

Johnson, O. and Thomson, E.M (2018). *Essentials of Dental Radiography for Dental Assistants and Hygienists* (10th). Prentice Hall.

Resource Type

Other Instructional Materials

Description

Dental radiographs.

Resource Type

Other Instructional Materials

Description

DXTTR.

Resource Type

Other Instructional Materials

Description

RINN kits and other positioning devices.

Distance Education Addendum**Definitions****Distance Education Modalities**

Hybrid (1%–50% online)
 Hybrid (51%–99% online)
 100% online

Faculty Certifications

Faculty assigned to teach Hybrid or Fully Online sections of this course will receive training in how to satisfy the Federal and state regulations governing regular effective/substantive contact for distance education. The training will include common elements in the district-supported learning management system (LMS), online teaching methods, regular effective/substantive contact, and best practices.

Yes

Faculty assigned to teach Hybrid or Fully Online sections of this course will meet with the EAC Alternate Media Specialist to ensure that the course content meets the required Federal and state accessibility standards for access by students with disabilities. Common areas for discussion include accessibility of PDF files, images, captioning of videos, Power Point presentations, math and scientific notation, and ensuring the use of style mark-up in Word documents.

Yes

Regular Effective/Substantive Contact**Hybrid (1%–50% online) Modality:**

Method of Instruction	Document typical activities or assignments for each method of instruction
Asynchronous Dialog (e.g., discussion board)	Topics presented for discussion board with the opportunity to provide feedback on responses
Other DE (e.g., recorded lectures)	Zoom utilized to lecture on course material and to demonstrate lab assignments
Video Conferencing	Any real-time instruction will be recorded and available to students through the LMS

Hybrid (51%–99% online) Modality:

Method of Instruction	Document typical activities or assignments for each method of instruction
Asynchronous Dialog (e.g., discussion board)	Topics presented for discussion board with the opportunity to provide feedback on responses
Other DE (e.g., recorded lectures)	Zoom utilized to lecture on course material and to demonstrate lab assignments

100% online Modality:

Method of Instruction	Document typical activities or assignments for each method of instruction
Video Conferencing	Any real-time instruction will be recorded and available to students through the LMS

Examinations**Hybrid (1%–50% online) Modality**

Online

Hybrid (51%–99% online) Modality

On campus

Primary Minimum Qualification

DENTAL TECHNOLOGY

Additional local certifications required

Dental Hygiene faculty members must comply with the requirements set by the Commission on Dental Accreditation (CODA). CODA requires that program faculty member providing didactic instruction must have earned at least a baccalaureate degree in a discipline-related field. All dental hygiene faculty members must have current knowledge of the specific subjects they are teaching and documented background in educational methodology consistent with their teaching assignments. Dentists and dental hygienists who supervise students' clinical procedures should have qualifications which comply with the state dental or dental hygiene act. Individuals who teach and supervise dental hygiene students in clinical enrichment experiences should have qualifications comparable to faculty who teach in the dental hygiene clinic and are familiar with the program's objectives, content, instructional methods and evaluation procedures.

Review and Approval Dates**Department Chair**

10/28/2022

Dean

10/28/2022

Technical Review

11/09/2022

Curriculum Committee

11/09/2022

Curriculum Committee

11/23/2022

Control Number

CCC000024135

DOE/accreditation approval date

MM/DD/YYYY