DH R010: ORAL BIOLOGY FOR DENTAL HYGIENE

Originator smcdonald

College

Oxnard College

Discipline (CB01A) DH - Dental Hygiene

Course Number (CB01B) R010

Course Title (CB02) Oral Biology for Dental Hygiene

Banner/Short Title Oral Biology for DH

Credit Type Credit

Start Term Fall 2023

Catalog Course Description

This course focuses on dental embryology, dental histology, the clinical recognition of normal oral structures, the physiological and structural functions of teeth and supporting tissues, and oral anatomy as related to dental hygiene procedures.

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 52.5 Maximum Contact/In-Class Lecture Hours 52.5

Activity

Laboratory

Total in-Class

Total in-Class Total Minimum Contact/In-Class Hours 52.5 Total Maximum Contact/In-Class Hours 52.5

Outside-of-Class

Internship/Cooperative Work Experience

Paid

Unpaid

Total Outside-of-Class

Total Outside-of-Class Minimum Outside-of-Class Hours 105 Maximum Outside-of-Class Hours 105

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 R011 and DH R012 and DH R013 and DH R014 and DH R015

Advisories on Recommended Preparation

BIS R122, 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 must possess an understanding of Anatomy and Physiology in order to relate them to the developmental processes involved in the normal development of both soft and hard oral structures.

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 the key structural features of different human cell and major tissue types.

ANAT R101-Identify and describe the anatomy of the systems 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-Perform stoichiometric calculations using the mole concept to determine weight percent composition, empirical formula, molecular formula, combining weight, theoretical yield, and limiting reactants.

CHEM R110-Identify and give general physical properties of the three states of matter. Describe phase-change between the three states.

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-Differentiate clearly between chemical and physical changes, and among elements, compounds and mixtures.

CHEM R110-Write and evaluate chemical reactions and balance chemical equations.

CHEM R110-Describe atomic structure in terms of protons, neutrons, and electrons using the Bohr model.

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-Identify carbon atoms as primary, secondary, or tertiary, and to compare the chemistry of functional derivatives.

CHEM R112-Describe the nature of hydrogen bond.

CHEM R112-Describe the process of polymerization.

CHEM R112-Explain the concepts of optical activity and optical isomerism and its reactions.

CHEM R112-State whether an organic structure is polar or nonpolar, and use this determination to compare physical properties of various compounds.

CHEM R112-Describe the structural features of carbohydrates.

CHEM R112-Recognize glycosidic linkage.

CHEM R112-State the monosaccharide composition of the disaccharides, such as sucrose, lactose, and maltose.

CHEM R112-Name, describe and write the structural formulas for the organic products formed in the important chemical reactions of the four major classes of biological compounds.

CHEM R112-Describe the structural features of amino acids and proteins.

CHEM R112-Name the components of an enzyme.

CHEM R112-Explain the role of enzyme in bio-transformation.

CHEM R112-Compare and contrast the processes of DNA replication and transcription, RNA translation, and common types of mutations.

CHEM R112-Demonstrate knowledge of major biochemical components in metabolism.

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

COMM R101-Formulate speeches through research, analysis, and organization of research material

DH R001-Correctly define and use a variety of different dental terminology

DH R001-List the types of tooth numbering and employ the principles

DH R001-Identify basic head and neck anatomy

DH R001-Identify basic radiographic landmarks

ENGL R101-Write multiple-page expository and persuasive essays

ENGL R101-Demonstrate college-level control of mechanical elements of writing such as grammar, syntax, spelling, vocabulary, and idiomatic usage

ENGL R101-Write timed essays in class exhibiting acceptable college-level control of mechanics, organization, development, and coherence

ENGL R101H- Demonstrate college-level control of mechanical elements of writing such as grammar, syntax, spelling, vocabulary, and idiomatic usage

ENGL R101H- Research a topic, analyze and synthesize information, and report findings in a properly documented essay ENGL R101H-Demonstrate critical thinking skills and rhetorical awareness in analyzing others' non-fiction writing and in developing essays

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-Write clear, concise and coherent expositions that demonstrate the ability to communicate physiological concepts.

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 R105 or MATH R105H or MATH R100, or MATH R101, or MATH R104, 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 120

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 R011

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

Advisory

Requisite

SPAN R100 OR SPAN R110 OR SPAN R200 OR SPAN R210 OR SPANR220 OR SPAN R220H OR SPAN R230 or SPAN R230H

Requisite Type			
Prereguisite			

Prerequisite

Requisite ANTH R107 OR ETHS R107

Requisite Type

Prerequisite

Requisite

CHST R102

Requisite Type

Prerequisite

Requisite READ R105

READ RIUS

Student Le	Student Learning Outcomes (CSLOs)				
	Upon satisfactory completion of the course, students will be able to:				
1	Describe the histological aspects about odontogenesis				
2	Describe the components in the various types of oral mucosa				
3	List the stages in embryological development				
4	Describe the arrangement of teeth as defined in arches, quadrants and sextants				
Course Objectives					
	Upon satisfactory completion of the course, students will be able to:				
1	Describe the four basic tissue types along with their structure and function				
2	Explain the embryology and histology of the orofacial complex to include the first signs of tooth development, enamel, dentin, and pulp creation, root formation and attachment apparatus, oral mucous membrane and formation of the tongue and salivary glands				
3	Recognize normal oral structures				
4	Compare the physiological and structural functions of teeth and supporting tissues				
5	Define the terms used in dental anatomy nomenclature				
6	Describe the arrangement of the teeth as defined in arches, quadrants, and sextants				
7	State the eruption schedule of the deciduous and permanent dentitions				
8	Identify and describe the characteristics of ideal occlusion and the three occlusal classifications				
9	Demonstrate an understanding of the meaning of overjet, overbite, crossbite, and open bite				
10	Recognize dental anomalies				
11	Recognize and describe the components of the oral cavity				
12	Explain oral anatomy relative to proper dental hygiene procedures				
13	Name and number individual teeth using the Universal System, the Palmer Notation System, and the FDI System				
14	Identify the differences between primary dentition, secondary dentition, and mixed dentition				

Course Content

Lecture/Course Content

- 1. Oral Anatomy
 - a. Introduction to dental structures
 - b. Introduction to oral structures
- 2. Dental and General Histology
 - a. Tissue Types
 - i. Structures
 - ii. Functions
- 3. General Embryology
 - a. Overview of human fetal development
- 4. Oral Embryology
 - a. Tooth development
 - b. Enamel development
 - c. Dentin development
 - d. Pulp development
 - e. Root formation
 - f. Attachment apparatus development
 - g. Oral mucous membrane development
 - h. Tongue formation
 - i. Salivary gland formations
 - j. Temporomandibular joint formation
- 5. Dental Anatomy (permanent and deciduous dentition)
 - a. Physiological functions of teeth
 - b. Physiological functions of periodontium
 - c. Structural functions of teeth
 - d. Structural functions of periodontium
 - e. Dental anatomy nomenclature
- 6. Tooth Development & Eruption Sequences
- a. Primary dentition
 - b. Secondary dentition
 - c. Mixed dentition
- 7. Arrangement and Naming of Teeth
 - a. Arrangement
 - i. Arches
 - ii. Quadrants
 - iii. Sextants
 - b. Nomenclature of teeth
 - i. Names of teeth
 - ii. Numbering teeth
 - Universal system
 Palmer Notation system
 - 2. Paimer Notation syst
 - 3. FDI system
- 8. Developmental Disturbances
- 9. Occlusion
 - a. Occlusal classifications
 - b. Ideal occlusion
 - c. Overjet
 - d. Overbite
 - e. Crossbite
 - f. Openbite
- 10. Dental Embryology
 - a. Overview of prenatal development
 - b. Development of the face and neck
 - c. Development of orofacial structures
 - d. Tooth development and eruption
- 11. Dental histology

- a. Overview of the cell
- b. Basic tissues
- c. Oral mucosa
- d. Gingival and dentogingival junctional tissue
- e. Head and neck structures
- f. Enamel
- g. Dentin and pulp
- h. Periodontium: cementum, alveolar bone, periodontal ligament
- 12. Dental anatomy
 - a. Overview of the dentitions
 - b. Permanent anterior teeth
 - c. Permanent posterior teeth
 - d. Primary dentition
 - e. Tooth morphology

Laboratory or Activity Content

None

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

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):

Individual projects Objective exams Quizzes Reports/papers Essays Projects

Instructional Methodology

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

Audio-visual presentations Class activities Class discussions Collaborative group work Distance Education Group discussions Instructor-guided interpretation and analysis Internet research Lecture Small group activities

Describe specific examples of the methods the instructor will use:

1. Each Chapter will begin with introductory lecture utilizing a Critical Thinking Approach to learning ie Principle/Concepts, Purpose/ Objectives, Essential Terminology, Guidance on Informational Content, and Questions. PowerPoint is utilized where appropriate for Instructor-guided interpretation. Students come to class with assigned Active Learning Assignments completed for use in collaborative group work and small group activities. Class discussions are used to share learning relevant to the Chapter.

Representative Course Assignments

Writing Assignments

- 1. Students may write an essay demonstrating critical thinking and understanding of topics presented in the lecture, such as the interaction between the components of oral mucosa
- 2. Students may take notes on assigned textbook reading

Critical Thinking Assignments

- 1. Students may write an essay, short paper or synopsis demonstrating critical thinking and understanding of topics presented in the lecture and/or reading assignment.
- 2. Students may write a short paper demonstrating the relationships between and among principles and concepts they recognized in the reading.

Reading Assignments

1. Student will spend a minimum of 6 hours per week outside of the regular class time reading and reviewing assigned oral biology topics, such as oral embryology

Outside Assignments

Representative Outside Assignments

1. Student will spend a minimum of 6 hours per week outside of the regular class time reading and reviewing assigned oral biology topics, such as oral embryology

Articulation

Attach Syllabus DH10Syll19.doc

- **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

Fehrenbach, M.J., & Popowics, T. (2016). Illustrated Dental Embryology, Histology, and Anatomy (4th). W.B. Saunders.

Resource Type

Other Instructional Materials

Description Laminated illustrations of oral structures.

Resource Type Other Instructional Materials Description

Typodonts.

Library Resources

Sufficient Library Resources exist Yes

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		
Other DE (e.g., recorded lectures)	Students are to do all reading assignments prior to viewing recorded lectures evidenced by submitting an outline of the Chapter and answers to review questions. Then and only then will recorded lectures be made available on Canvas. Questions will be submitted to me on Canvas and discussed during video conferences. Edited PowerPoint slides will be posted for instructional guidance.		
Hybrid (51%–99% online) Modality:			
Method of Instruction	Document typical activities or assignments for each method of instruction		
Video Conferencing	Video conferences will be utilized to present my introductory lecture for the Chapt. for instructural guidance and later for discussion and clarification.		
100% online Modality:			
Method of Instruction	Document typical activities or assignments for each method of instruction		
Video Conferencing	Video conferences will be utilized to present my introductory lecture for the Chapt. for instructural guidance and later for discussion and clarification.		

Examinations

Hybrid (1%-50% online) Modality Online

Hybrid (51%–99% online) Modality Online

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 CCC000200727

DOE/accreditation approval date MM/DD/YYYY