Curriculum proposal number 2007.21

Maui Community College
Curriculum Action Request (CAR) Form
Course

1. Author(s): Rosie Vierra, Nancy Johnson

For Banner use:
___ *SCACRSE*
___ *SCAPREQ*
___ *CAPPs*
___ *WebCT-Detl*
___ *CoReq-Detl*
___ *Equiv-Detl*
___ *Old Inactivated*
___ *Crosslist done*
___ *Another prereq*

2. Department: AH

3. Date submitted to Curriculum Committee: 3/31/08

4. Type of action

Addition	*Modification*	
☒ regular	☐ alpha/number	☐ prerequisite
☐ other, specify:	☐ title	☐ corequisite
	☐ credits	☐ recommended prep
	☐ description	☐ other, specify:

5. Existing course
Alpha & number *Title* *Credits*

6. Proposed new/modified course
Alpha & number DH 150 *Title* Oral Histology and Embryology *Credits* 2

7. Reason for this curriculum action
Content required for American Dental Association Commission on Dental Accreditation (ADACODA) accreditation

8. New course description *(or catalog page of current course description, if unchanged)*
Describes general and oral histology including an overview of oral embryology, a study of the fundamentals of cytology and the normal microscopic anatomy of oral tissues. 2 cr., 1 hr lect/ 2hr. lect./lab

9. Prerequisite(s) – *see Prerequisite Style Sheet for samples*
DENT 165 with a C or better; or consent. ☐ no ☒ yes

10. Corequisite(s): none

11. Recommended preparation: none

12. Cross listed: ☒ no ☐ yes; cite course alpha & number

13. Student contact hours per week:
1 hr. lecture _____ hr. lab 2 hr. lecture/lab _____ hr. other; explain:

14. Grading: ☐ Standard *(Letter, Credit/NoCredit, and Audit options)*
☒ Letter grade only ☐ Credit/NoCredit only ☐ Not for audit

15. Repeatable for credit? ☒ no ☐ yes; maximum is _____ credit or ☐ unlimited.

16. Special fees required? ☐ no ☒ yes; explain: DH Professional Fee

17. Proposed term of first offering: Spring _____ semester of 2009 _____ year.

nj bkg v2

18. List degrees, certificates, prerequisites, and catalog sections *(and their page numbers)* affected by this proposal: DH

19. Maximum enrollment? 12 Rationale, if applicable: DH will be taught in cohort with maximum enrollment of 12 (accreditation standard for maximum lab courses is 6).

20. Special resources *(personnel, supplies, etc.)* required? ☒ no ☐ yes, explain:

21. Course is restricted to particular room type? ☒ no ☐ yes, explain:

22. Special scheduling consideration? ☒ no ☐ yes, explain:

23. Method(s) of delivery appropriate for this course (check all that apply)
☒ Traditional ☐ HITS Interactive TV ☐ Cable TV ☐ Online ☐ Other, explain:

24. Which of the collegewide General Education Academic Skill Standards (CCOWIQs) does this course support? (Check all that apply)

☒ 1 - Written Communications
☐ 2 - Quantitative Reasoning
☒ 3 - Information Retrieval & Technology
☒ 4 - Oral Communication
☒ 5 - Critical Thinking
☐ 6 - Creativity
☐ Other General Education SLOs, such as Ethics, Scientific Inquiry, or Service-Learning, explain:

25 .Which program SLOs does this course support? (List all that apply and explain, if necessary.)

☒ Program SLO 1: Provide comprehensive dental hygiene care to clients of diverse social, economic, and cultural backgrounds Explain: .
☒ Program SLO 2: Demonstrate the academic and clinical knowledge and skills required for the prefession of dental hygiene. Explain:
☐ Program SLO 3: Explain:
☐ Program SLO 4: Explain:
☐ Program SLO 5: Explain:

26. ☒ Course is a requirement for this CTE (Career Technical Education) program degree/certificate: AS Dental Hygiene
☐ Course is an elective for this CTE program degree/certificate:
☐ Course is a general education elective for CTE degrees, fulfilling:
☐ Quantitative ☐ English/Communication ☐ Humanities
☐ Natural Science ☐ Social Science

27. ☐ Course satisfies the following category for the AA degree *(starting Fall 2008)*
☐ Category I - Foundations/Skills
☐ English Communication
☐ Computer/Information Processing and Retrieval
☐ Symbolic Reasoning
☐ Global and Multicultural Perspectives
☐ Category II - Breadth of Understanding and Experience
☐ Human Understanding
☐ The Individual
☐ The Community
☐ Human Expression
☐ Environmental Awareness
☐ Asia/Pacific Perspective
☐ Category III - Focus/Specialization/Area of Interest
☐ Area of Interest Requirement Name:

☐ Electives Name:
☐ Other Graduation Requirements
☐ Writing Intensive
☐ Science Lab
☐ Hawai'i Emphasis

28. Course ☒ increases ☐ decreases ☐ makes no change to number of credits required for program(s) affected by this action.

29. Course is taught at another UH college (go to <http://myuh.hawaii.edu/uhdad/bwckctlg.p_disp_dyn_ctlg>)
☒ no *(Proposed course should use an "open" alpha/no. not used for a different course at other UH colleges).*
Explain why this course is proposed for MCC: only AS in DH in system
☐ yes *(Proposed course should use the same alpha/no. used for a comparable course at another UH college).*
Specify college(s), course, alpha, and number:

30. Course is

not appropriate for articulation at:	☐ UHCC	☐ UH Manoa	☐ UH Hilo	☐ UH WO	☐ Other/PCC
articulated* at:	☐ UHCC	☐ UH Manoa	☐ UH Hilo	☐ UH WO	☐ Other/PCC
appropriate for articulation* at:	☐ UHCC	☒ UH Manoa	☐ UH Hilo	☐ UH WO	☐ Other/PCC

**NOTE: Attach Course Articulation Form if course is already articulate to the General Education Core at UH Manoa or if it is appropriate for articulation.*

Additional Information: Long range goal is articulation with UHM BS in DH. Discussion prior to curriculum development supported this goal once accreditation is obtained from ADACODA.

Maui Community College
Curriculum Action Request (CAR) Signature Page

4/23/08
Proposed by: Author or Program Coordinator *Date*

4/23/08
Checked by: Academic Subject Area Representative to Curriculum Committee *Date*

4/23/08
Requested by Department: Department Chair *Date*

4/15/08
Recommended by: Curriculum Chair *Date*

5/6/08
Approved by Academic Senate: Academic Senate Chair *Date*

5/22/08
Endorsed by: Chief Academic Officer *Date*

7/18/08
Approved by: Chancellor *Date*

Maui Community College
Course Outline

1. Course Title: DH 150
Oral Histology and Embryology

Number Of Credits: Two credits (2)

Abbreviated Course Title: Oral Histology and Embryology

2. Course Description: Describes general and oral histology including an overview of oral embryology, a study of the fundamentals of cytology and the normal microscopic anatomy of oral tissues. 2 cr., 1 hr lect/ 2hr. lect./lab

3. Contact Hours Per Week: 2 cr, 1 hr lect/2hr lect/lab

4. Prerequisites: DENT 165 with a C or better; or consent
Prerequisite may be waived by consent X yes

Corequisite(s): none

Recommended Preparation: none

Approved By _____ Date 7/18/08

RJ 5kg KS

5. General Course Objectives:
   1. Compare the three stages of tooth development, histologically.
   2. Contrast the histological development and composition of enamel with that of dentin and cementum
   3. Compare the histological development and composition of dentin with enamel and cementum.
   4. Contrast the histological development and composition of cementum with that of enamel and dentin.
   5. Differentiate between the cellular and fibrous components of the pulp and periodontal ligament.
   6. Analyze the changes that occur within pulp, enamel, dentin, and the periodontal ligament during aging.
   7. Demonstrate knowledge of cellular histology.
   8. Examine the histology of the oral mucous membrane
   9. Differentiate the cellular and ductal components of the major salivary glands.
   10. Synthesize the histological development of the fibrous and bony components of the temporomandibular joint.

6. Student Learning Outcomes.
   For assessment purposes these are linked to #7 Recommended Course Content and #9 Recommended Course Requirements and Evaluation.

   Upon successful completion of this course students will be able to:

   a. Compare the three stages of tooth development, histologically.
      1.1Describe the stages of tooth development both morphologically and physiologically.
      1.2 Describe the three components of the cap stage and the embryologic tissue they come from.
      1.3 Describe the structures each component of the tooth germ will produce.
      1.4 Describe the cell shape and function of each cell layer in the Bell stage of development.
      1.5 Explain the role of the inner enamel epithelium during the formation process of enamel and dentin.
      1.6 Compare the mineralization process of enamel, dentin and cementum.
      1.7 Describe the formation and function of the reduced dental epithelium and the structures it produces.
      1.8 Describe root development incorporating the role of each of the following:
         a. inner and outer enamel epithelium
         b. Hertwig's root sheath
         c. Rests of Mallessez
   b. Contrast the histological development and composition of enamel with that of dentin and cementum.
      1.1 Describe the six stages in the life cycle of the ameloblast.
      1.2 Explain the importance of dentin to enamel formation.
      1.3 Describe the three relationships which occur at the CEJ between enamel and cementum including incidence.
      1.4 Describe the orientation of enamel rods, their crystalline arrangement, and how their width differs from start to finish.
      1.5 Describe the two stages of enamel mineralization.
      1.6 Define the following:
         a. prismless enamel
         b. terminal bar apparatus
         c. Tomes' process

d. enamelin
e. reduced enamel epithelium
f. Nasmyth's membrane
g. primary enamel cuticle
h. hypoplasia
i. hypocalcification

1.7 Describe the following structural features of enamel and their causes:
a. enamel lamellae
b. microlamellae
c. enamel tufts
d. enamel spindles
e. Striae of Retzius
f. incremental cross striations
g. neonatal line
h. imbrication lines and perikymata
i. Hunter-Schreger bands
j. gnarled enamel

1.8 Explain how fluoride and acid etching work.
1.9 Explain the cause of enamel solubility.
1.10 List the major inorganic constituents of enamel and their percentages.

c. Compare the histological development and composition of dentin with enamel and cementum.

1.1 Describe dentinogenesis from the late Bell Stage to eruption including the following:
a. enamel spindles
b. odontoblastic process
c. dentinal tubule
d. predentin
e. peritubular dentin
f. intertubular dentin
g. mantle dentin
h. interglobular dentin
i. Tome's granular layer
j. Von Korff's fibers
k. incremental lines of von Ebner
l. contour line of Owen

1.2 Define the following types of dentin: primary, secondary, reparative, and sclerotic.
1.3 State %'s of organic vs. inorganic components of dentin.
1.4 Describe the makeup of the organic matrix.
1.5 Explain the three theories of dentin hypersensitivity.

d. Contrast the histological development and composition of cementum with that of enamel and dentin.

1.1 Describe cementogenesis including the roles of Hertwig's epithelial root sheath, cementoblasts, cementoid & resting lines.
1.2 State whether or not cementum can be deposited throughout life.
1.3 Define and describe cementum including its composition and function.
1.4 Compare cementum to enamel, dentin and bone in inorganic content, vascularity, remodeling capacity and resistance to resorption.
1.5 Compare cellular and acellular cementum in regard to location and structural makeup.
1.6 Describe the histologic structure of cementum, including lamellae, cementocyte processes, canaliculi and lacunae.
1.7 State the importance of Sharpey's fibers to cementum and the PDL.

1.8 Define cementicles and hypercementosis.

e. Differentiate between the cellular and fibrous components of the pulp and periodontal ligament.
1.1 Define periodontium.
1.2 List and define the four fiber groups found in the lamina propria of the attached gingiva.
1.3 Describe the formation of the periodontal ligament.
1.4 List the cell types found in the PDL and the pulp and their functions.
1.5 Describe the five groups of principal fibers found in the PDL.
1.6 List and define four functions of the PDL and the pulp.
1.7 State the significance of ground substance in the PDL.
1.8 Describe the blood and nerve supply to the PDL and the pulp.
1.9 List the four zones of the pulp.
1.10 State the purpose of undifferentiated mesenchymal cells in the pulp.
1.11 Describe the extracellular components of the PDL and the pulp, and state their functions.
1.12 State the significance of alterations in fluid pressure within the pulp during dental procedures.
1.13 Apply knowledge of histology to the following procedures.
a. free gingival graft
b. pellicle graft
c. guided tissue regeneration
d. sulcular curettage

f. Analyze the changes that occur within pulp, enamel, dentin, and the periodontal ligament during aging.
1.1 Describe the three classifications of pulp stones and explain their significance.
1.2 Describe four changes that occur within the pulp with increasing age.
1.3 Explain how bacteria can enter a tooth and its effect upon the pulp.
1.4 Discuss the significance of devitalization upon a tooth's function.

g. Demonstrate knowledge of cellular histology.
1.1 Describe the components of the cell, the cell membrane, cytoplasm, organelles, and inclusions.
1.2 Describe the extra cellular materials surrounding the cell and the cell's intercellular junctions.
1.3 Describe cell division and the phases of mitosis that are involved.

h. Examine the histology of the oral mucous membrane.
1.1 Describe oral epithelium.
a. differentiate among keratinized, parakeratinized, and non-keratinized epithelium
b. describe each cell layer based on its microscopic features and function
1.2 Describe the lamina propria.
1.3 Describe the submucosa.
1.4 Describe histologically the lining mucosa covering the lip, vermillion border, soft palate, ventral surface of tongue, cheek and floor of the mouth.
1.5 Describe histologically the masticatory mucosa covering the gingiva and hard palate.
1.6 Describe histologically the four types of papillae found on the dorsal surface of the tongue, and a taste bud.
1.7 Define nonkeratinocyte and describe the following cells: Langerhan's cells, Merkel's cells, melanocytes, lymphocytes.
1.8 Describe the composition, development and turn over of the dentogingival junction tissues.

i. Differentiate the cellular and ductal components of the major salivary glands.
1.1 Describe and give the function of exocrine gland, serous, mucous and seromucous endpieces.
1.2 Describe the histological structure of the three major salivary glands, whether they are

serous, mucous, or mixed, and the names of their ducts and where they open in the oral cavity.

1.3 Define minor salivary gland and list six of these and whether they are serous, mucous, or mixed.

1.4 Define intercalated ducts, striated ducts, terminal secretory ducts, and myoepithelial cells.

1.5 List the components of saliva.

1.6 Describe the innervation of the salivary glands and the effects that the salivary glands and the effects that the sympathetic and parasympathetic innervation have on the salivary flow.

j. Synthesize the histological development of the fibrous and bony components of the temporomandibular joint.

1.1 Describe the formation of the mandible by endochondral and intramembranous ossification.

1.2 Diagram the adult TMJ including the glenoid fossa, condylodiscal cavity, articular disc, temporal distal cavity, head of the condyle, articular capsule and tubercle, and the external auditory meatus.

1.3 Describe the histology of the articulating surfaces of the condyle and glenoid fossa.

7. Recommended Course Content and Approximate Time Spent
Linked to #6, Student Learning Outcomes

Week 1 Overview of Prenatal Development a, b, g
Week 2 Development of the Face and Neck a, b, c
Development of Orofacila Structure a, b, c
Week 3 Tooth development and Eruption a, b, c, d
Week 4 Exam I
Week 5 Overview of the Cell, Basic Tissues f, g
Week 6 Oral Mucosa, salivary glands h,i
Week 7 Gingival and Dentogingival Junctional Tissues g, h
Week 8 Exam II
Week 9 Head and Neck Structures j
Week 10 Enamel b, c, d, f
Week 11 Dentin and Pulp b, c, d, f
Week 12 Exam III
Week 13 Periodontium: Cementum, Alveolar bone, Periodeontal Ligament b, c, d, e
Week 14 TMJ, Regeneration of Oral Tissues j
Week 15 Review a-j
Final Exam

8.Text and Materials
Required:
Bath-Balogh, Fehrenbach, Dental Embryology, Histology, and Anatomy, 2nd Ed., Elsevier, 2006
Bath-Balogh, Fehrenbach, Dental Embryology, Histology and Anatomy Wookbook, 2nd Ed., Elsevier, 2006 (WB)
Recommended:
Nanci, A., Ten Cate's Oral Histology: Development, Structure, and Function, 6th Ed., Mosby, 2003

9. Course Requirements and Evaluation
Linked to #6 Student Learning Outcomes.

60-70%	examinations including written quizzes, midterm(s) and/or a final covering lectures, discussions, media presentations, lab activities, field trips, guest speakers, and reading assignments (a,b,c,d,e,f,g,h)
5-10%	punctuality, attendance, participation in class discussions (a,b,c,d,e,f,g,i);
10-20%	group projects, reports (m, n, o, p, q, r, s)

10.Methods of Instruction

Instructional methods will vary considerably with instructors. Specific methods will be at the discretion of the instructor teaching the course and might include, but are not limited to

exams and quizzes with feedback and discussion;
field and lab practical exams and species identification;
lectures and class discussions;
problem solving;
narrated 35-mm slide and/or PowerPoint presentations;
videos, DVDs, CD-ROMs with detailed viewing guides and discussion questions;
field trips including field notes, activities, observations, and data collection;
guest speakers and attendance at public lectures;
group activities;
oral reports and other student presentations;
games and simulations;
homework assignments such as
- reading, or watching, and writing summaries and reactions to environmental issues in the media including broadcast television, newspapers, video, magazines, journals, lectures, web-based material, and other sources;
- mapping various environmental features and habitat distribution;
- reading text and reference materials and answering discussion questions;
- researching environmental issues and problems;

web-based assignments and activities;
reflective journals;
group and/ or individual research projects with reports or poster presentations;
study logs and study groups;
Service-Learning, community service, and/or civic engagement projects; and
other contemporary learning techniques (such as problem-based learning, investigative case-based learning, co-op, internships, self-paced programs, etc.)