



BROWARD COMMUNITY COLLEGE COURSE OUTLINE

LAST REVIEW: 2006-7 **NEXT REVIEW:** 2011-12 **STATUS:** A

COURSE TITLE: Dental Anatomy and Physiology

COMMON COURSE NUMBER: DES 0021

CREDIT HOURS: n/a

CONTACT HOUR BREAKDOWN
(per 16 week term)

CLOCK HOURS: 45

Lecture: 2.8

Lab: n/a

Clinic: n/a

Other: n/a

PREREQUISITE(S): none

COREQUISITE(S): DEA 0025, DEA 0830, DES 0205

COURSE DESCRIPTION : The study of the head and neck anatomy with emphasis placed on the structure, morphology and function of the primary and permanent dentitions.

UNIT TITLES

1. Anatomical Features of the Teeth
2. Fundamental and Preventive Curvatures of the Teeth
3. General Arrangement of the Dentition
4. Supporting Structures of Teeth
5. Oral Mucous Membranes
6. Landmarks of the Oral Cavity
7. General Characteristics of Deciduous Dentition
8. General Characteristics of Permanent Dentition
9. Occlusion
10. Development, Form and Eruption of Teeth
11. Eruption and Shedding of Teeth
12. Osteology



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13. Embryology
14. Embryonic Development of Human Teeth
15. Root Formation and Attachment Apparatus
16. Temporomandibular Joint (TMJ)
17. Salivary Glands
18. Embryonic Development of the Tongue
19. Muscles of Mastication and Facial Expressions
20. Vascular Supply to the Head and Neck
21. Nervous System



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ASSESSMENT:

Four Unit Exams - 65%

Exam One: Units I-V

Exam Two: Units VI-X

Exam Three: Units XI-XV

Exam Four: Units XVI-XXX

Final Exam - 30%

Final Exam: Units I-XXXI

Participation - 5%

The student's letter grade for the course will be determined by the departmental percentage scale:

92 - 100 = A

83 - 91 = B

75 - 82 = C



UNITS

Unit 1 Anatomical Features of Teeth

General Outcome:

1.0 The student shall: Describe the tooth tissues, location within the tooth, chemical composition and function.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

1. List the parts of the tooth.
2. Name the four types of tissues and locate them within the tooth.
3. State the chemical composition and function of each tissue.
4. Discuss how the tooth's function is related to its shape and size.
5. Locate the various surfaces of teeth.
6. Identify the various landmarks of each tooth.
7. List and define all the possible areas of elevation on a tooth/root surface.
8. List and define all possible depressions/concavities on a tooth/root surface.
9. Differentiate between a triangular ridge, a transverse ridge. And an oblique ridge.
10. State all possible combinations of junctions of a tooth surface.
11. Have a working knowledge of the terminology contained in the lecture and reading assignment.



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Unit 2 Fundamental and Preventive Curvatures of the Teeth

General Outcome:

2.0 **The student shall:** Discuss and relate the contours of the dentition and state the location of the tooth surfaces.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 2.1 Discuss how the curvatures of teeth aid in cleansing.
- 2.2 State the benefits of proximal contacts.
- 2.3 Locate the contact areas of anterior teeth, posterior teeth, and maxillary canines.
- 2.4 Differentiate between a contact area and a contact point.
- 2.5 Discuss the benefits of interproximal spaces, and embrasures.
- 2.6 Describe the difference between facial contour and lingual contour on both anterior and posterior teeth.



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Unit 3 General Arrangement of the Dentition

General Outcome:

3.0 The student shall: Code teeth using the Universal System, the Palmer notation system and the FDI system.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 3.1** Differentiate between primary, dentition, mixed dentition, and permanent dentition.
- 3.2** Define succedaneous, nonsuccedaneous.
- 3.3** Discuss the Universal System.
- 3.4** Discuss the Palmer Notation System
- 3.5** Discuss the FDI System



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Unit 4 Supporting Structures of the Teeth

General Outcome:

4.0 The student shall: Explain the role of the periodontium and how physiological tooth form can serve as a protective mechanism.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 4.1** Differentiate between free gingiva and attached gingiva.
- 4.2** Define the mucogingival junction.
- 4.3** State the characteristics of healthy gingiva.
- 4.4** Describe gingival papilla (interdental papilla).
- 4.5** Discuss Sharpey's fibers.
- 4.6** Discuss periodontal fibers.
- 4.7** List the functions of the periodontal ligament.
- 4.8** Describe the appearance of alveolar bone.
- 4.9** Identify the layers of alveolar bone.



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Unit 5 Oral Mucous Membranes

General Outcome:

5.0 **The student shall:** State the various types of mucous membranes found in the oral cavity.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 5.1 Describe the characteristics of stratified squamous epithelium.
- 5.2 Differentiate between specialized mucosa, masticatory mucosa, and lining mucosa.
- 5.3 State reasons that may cause a change in the color of oral mucosa.



Common Course Number: DES 0021

Unit 6 Landmarks of the oral cavity

General Outcome:

- 6.0 **The student shall:** Identify the boundaries of the oral cavity including the landmarks of the vestibular area, hard and soft palate and the floor of the mouth.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 6.1 Differentiate between the vestibule and the oral cavity proper.
- 6.2 Locate and describe the various landmarks found in the vestibular area.
- 6.3 Differentiate between the hard palate and the soft palate.
- 6.4 Identify the landmarks on both the hard palate and the soft palate.
- 6.5 Discuss the importance of the tongue.
- 6.6 Describe the landmarks on the tongue and floor of the mouth.



Unit 7 **Common Course Number: DES 0021**
General Characteristics of the Deciduous Dentition

General Outcome:

7.0 **The student shall:** Describe the primary dentition.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 7.1 List the functions of primary dentition.
- 7.2 Discuss the number of centrals, canines, and molars found in deciduous dentition.
- 7.3 Differentiate between maxillary and mandibular, central and lateral incisors.
- 7.4 Describe the appearance of deciduous canines.
- 7.5 State the major characteristics of the maxillary first molars.
- 7.6 State the major characteristics of the mandibular first molars.



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Unit 8 General Characteristics of the Permanent Dentition

General Outcome:

8.0 The student shall: State the function and general characteristics of each tooth and its root in the permanent dentition.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 8.1 State the functions of incisors.
- 8.2 Differentiate between the maxillary and mandibular central and lateral incisors.
- 8.3 State the functions of canines.
- 8.4 Discuss why the canines are the most stable teeth in the mouth.
- 8.5 Differentiate between the maxillary and mandibular canines.
- 8.6 State the functions of premolars.
- 8.7 Identify the various landmarks on both maxillary and mandibular premolars.
- 8.8 State the functions of molars.
- 8.9 Discuss the root morphology of both maxillary and mandibular teeth.
- 8.10 List the characteristics of the maxillary first molar, maxillary second molar, and the maxillary third molar.
- 8.11 List the characteristics of the mandibular first molar, mandibular second molar, and mandibular third molar.
- 8.12 Identify extracted teeth as a class assignment.
- 8.13 Draw designated permanent teeth and label prescribed landmarks.



Unit 9 Occlusion

General Outcome:

9.0 The student shall: Define normal occlusion, the three classes of malocclusion and specified malrelations of groups and individual teeth.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 9.1 Discuss the relationship of the tongue, cheeks, and lips to occlusion.
- 9.2 Define intercuspation.
- 9.3 List the factors that influence malocclusion.
- 9.4 Differentiate between the Curve of Spee, Curve of Wilson, and the Sphere of Monson.
- 9.5 Describe the teeth in relation to their vertical alignment.
- 9.6 Define Class I occlusion (mesognathic).
- 9.7 Define Class II occlusion (retrognathic).
- 9.8 Define Class III occlusion (prognathic).
- 9.9 List and define the malrelations of groups of teeth.
- 9.10 List and define the malpositions of individual teeth.
- 9.11 Discuss what is meant by lateral mandibular glide (lateral excursion).
- 9.12 State possible problems that could result from trauma to the occlusion.



Unit 10

**Common Course Number: DES 0021
Development Formation, Eruption of Teeth and Shedding of Teeth**

General Outcome:

10.0 The student shall: State the scheduled eruption date of each tooth in the primary and permanent dentitions.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 10.1** Discuss the development of deciduous dentition.
- 10.2** Define calcification and explain when it occurs in both deciduous and permanent dentition.
- 10.3** Identify the various locations of developmental lobes and cusps for both anterior and posterior teeth.
- 10.4** State the problems that could occur if deciduous teeth are lost prematurely.
- 10.5** Define the meaning of resorption.
- 10.6** State the scheduled eruption date of each tooth in the deciduous and permanent dentitions.
- 10.7** Explain why the roots of deciduous molars have an exaggerated flare.
- 10.8** List the essential differences between deciduous and permanent dentition.
- 10.9** Discuss what is meant by mesial drift, and eruptive force.



Common Course Number: DES 0021

Unit 11 Eruption and Shedding of Teeth

General Outcome:

11.0 **The student shall:** Describe the preeruptive, eruptive and shedding states.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 11.1 State the two types of tooth movements that occur during preeruptive stage.
- 11.2 Discuss the eruptive stage.
- 11.3 List and define the reasons that are believed to cause teeth to erupt.
- 11.4 Describe the shedding/exfoliation of primary teeth.
- 11.5 List and define the problems that could occur during the shedding of teeth.



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Unit 12

Osteology

General Outcome:

12.0 The student shall: Identify specified bones, landmarks, foramen, suture lines and fontanelles of the human skull.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 12.1** Name and locate the eight bones that make up the neurocranium.
- 12.2** Name and locate the fourteen bones that make up the viscerocranium.
- 12.3** Name and locate the various bones and landmarks which make up the skull.



Common Course Number: DES 0021

Unit 13

Embryology

General Outcome:

13.0 The student shall: Describe the development of the oral cavity.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 13.1** List the items formed by the ectoderm layer of cells.
- 13.2** List the items formed by the mesoderm layer of cells.
- 13.3** List the items formed by the entoderm, (endoderm) layer of cells.
- 13.4** Differentiate between the five branchial arches of facial development.
- 13.5** Specify the cause of a cleft lip.
- 13.6** Specify the cause of a cleft palate.



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Unit 14 Embryonic Development of Human Teeth

General Outcome:

14.0 The student shall: Describe the development of the dentition.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 14.1** Define the term "dental lamina".
- 14.2** List and describe the three stages of development.
- 14.3** State the five stages of the life cycle of a tooth.
- 14.4** State the chemical composition of enamel.
- 14.5** Differentiate between the first stage and the second stage of enamel development.
- 14.6** Describe "Nasmyth's membrane".
- 14.7** List and define abnormalities of enamel.
- 14.8** State the chemical composition of dentin.
- 14.9** Differentiate between the dentinal tubule, peritubular dentin and intertubular dentin.
- 14.10** Differentiate between primary dentin and secondary (reparative) dentin.
- 14.11** List and define abnormalities of the dentin.
- 14.12** State the functions of the pulp.
- 14.13** Discuss the pulp defense mechanisms.
- 14.14** List and define abnormalities of the pulp.



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Unit 15 Root Formation and Attachment Apparatus

General Outcome:

15.0 The student shall: Describe the development and function of the cementum.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 15.1** Discuss the formation of roots.
- 15.2** Describe the function of the epithelial diaphragm.
- 15.3** State the chemical composition of cementum.
- 15.4** Discuss the development of cementum.
- 15.5** State the three possible relationships of cementum to enamel.
- 15.6** Differentiate between primary cementum and secondary cementum.
- 15.7** State the functions of cementum.
- 15.8** List and define the abnormalities of cementum.
- 15.9** State the chemical composition of alveolar bone.
- 15.10** Locate the three layers of alveolar bone.
- 15.11** When a tooth is extracted state the three possible bone changes.



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Unit 16

Temperomandibular Joint

General Outcome:

16.0 **The student shall:** Locate and state the structure and function of the temporomandibular joint, including the ligaments, articular capsule, movements and possible related problems.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 16.1 Describe the structure of the temporomandibular joint.
- 16.2 Define and locate the articular disc, "meniscus".
- 16.3 Describe synovial fluid and where it is located.
- 16.4 Discuss the function of the temporomandibular ligament.
- 16.5 State the two types of movement of the temporomandibular joint.
- 16.6 Define "subluxation".
- 16.7 Discuss possible problems related to the temporomandibular joint.



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Unit 17

Salivary Glands

General Outcome:

17.0 The student shall: Locate and describe the differences between each of the major and minor salivary glands.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 17.1** Differentiate between exocrine and endocrine glands.
- 17.2** State the function of major salivary glands.
- 17.3** Identify and locate the three major salivary glands.
- 17.4** State the function of minor salivary glands.
- 17.5** Name and locate the five minor salivary glands.



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Unit 18 Embryonic Development of the Tongue

General Outcome:

18.0 The student shall: Describe the formation of the tongue as it relates to the germ layer and branchial arch origin.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 18.1** Discuss the formation of the tongue.
- 18.2** List and identify the four groups of intrinsic muscles of the tongue.
- 18.3** Explain the contraction of the intrinsic muscles of the tongue.
- 18.4** Discuss extrinsic muscles, identify and state the responsibility of these muscles.
- 18.5** Describe and locate the four types of papillae found on the tongue.
- 18.6** State and locate the four types of taste buds.



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Unit 19

Muscles of Mastication and Facial Expressions

General Outcome:

19.0 The student shall: Describe and locate the muscles of facial expression and mastication to include the origin, insertion, action and nerve and blood supply.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 19.1** Differentiate between voluntary and involuntary muscles.
- 19.2** Have working knowledge of the terms: origin, insertion and action of muscles.
- 19.3** Locate and describe the functions of the four muscles of mastication.
- 19.4** Locate and describe the functions of the suprahyoid muscles.
- 19.5** Locate and discuss the importance of the sternocleidomastoid muscle in an extraoral exam.
- 19.6** List and locate the muscles of facial expression involving the mouth.



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Unit 20

Vascular Supply to the Head and the Neck

General Outcome:

20.0 The student shall: Trace the vascular supply and drainage of the major structures of the face and various areas of the dentition to include the names of the major arteries and branches.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 20.1** Differentiate between pulmonary arteries and pulmonary veins.
- 20.2** Locate and name the three external carotid arteries.
- 20.3** Locate and describe the blood supply of the three external carotid arteries.
- 20.4** Locate and describe the blood supply of the three branches of the maxillary artery.
- 20.5** List and locate the four veins that drain blood from the oral cavity.



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Unit 21

Nervous System

General Outcome:

21.0 **The student shall:** Identify the twelve cranial nerves and compare their general functions.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 21.1 Differentiate between the central nervous system and the peripheral nervous system.
- 21.2 Name the three branches of the trigeminal nerve.
- 21.3 State the location and the nerve supply of the four branches of the maxillary nerve.
- 21.4 State the location and the nerve supply of the two branches of the infraorbital nerve.
- 21.5 State the location and the nerve supply of the three branches of the mandibular nerve.
- 21.6 Locate the areas for mandibular/maxillary injections.
- 21.7 Name the twelve cranial Nerves
- 21.8 Describe the general function of each of the twelve cranial nerves