

SPRINGFIELD TECHNICAL COMMUNITY COLLEGE

ACADEMIC AFFAIRS

Course Number: DHYG 203 Department: Dental Hygiene

Course Title: Oral Anatomy 2 Semester: Spring Year: 1997

Objectives/Competencies

Course Objective	Competencies
<ol style="list-style-type: none">1. Describe the superficial structures of the head and face.2. Describe the principle bones of the skull, points of muscle attachment, foramina, and related blood vessels and nerves.3. Describe the action, innervation, and blood supply of the muscles of mastication.4. Describe the structures and actions related to the temporomandibular joint.5. Describe the major superficial landmarks and blood supply of the brain.6. Describe the location and function of the cranial nerves and their sensory/motor innervation.7. Describe the major branches of the trigeminal, facial, glossopharyngeal, hypoglossal nerves and the functional components.8. Describe the branches of the external carotid artery and the structures of the head, neck which they supply.	<ol style="list-style-type: none">1. Embryology of the Face and Oral Cavity<ol style="list-style-type: none">a. Describe the process of embryogenesis and the formation of the three primary germ layers and the development of the general body form.b. Describe the degree of the development of the forebrain, stomodeum, mandibular arch, maxillary process, frontonasal process and buccopharyngeal.c. Describe the tissues and the organs which arise from the three germ layers.d. Describe the development of the pharyngeal arches, clefts and pouches.e. Describe the structures which arise from the pharyngeal arches, clefts and pouches.f. Outline the steps in the formation of the face, tongue, nose, primary palate, secondary palate.g. Relate formation of the secondary palate to events occurring in the 7th and 8th week of embryonic life.

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<p>9. Describe the structures in the oral cavity relating surface anatomy to underlying muscles, blood vessels, nerves and glands.</p> <p>10. Describe the cerebrospinal circulation and lymphatic drainage of the head and neck .</p> <p>11. Describe the development and histology of the dental and periodontal tissues.</p> <p>12. Describe the development and growth of the face and oral cavity.</p> <p>1. In clinical practice the student will integrate knowledge of head and neck anatomy and oral histology to:</p> <ul style="list-style-type: none"> a. Provide quality care to the patient b. Assume responsibility for decision making c. To modify treatment techniques to accommodate variations from normal. d. Perform in his/her role as a cotherapist in diagnosis and treatment planning. 	<ul style="list-style-type: none"> h. Identify the week of development for the tongue, face, nose, and palate. i. Explain in embryonic terms the reasons for facial malformation and their time of occurrence. j. Explain the following terms: caudal, cephalic, stomodeum, meiosis, embryonic disc, yolk sac. k. Discuss the formation of the neural plate and its importance to the nervous system. l. Discuss the differentiation and migration of neural crest cells as related to the formation of the facial region tissues. m. Identify the period of histodifferentiation and/or morphodifferentiation related to orofacial anomalies. Include discussion of clefts, cysts, fordyce spots, macrostomia, etc. <p>2. Development of the teeth.</p> <ul style="list-style-type: none"> a. Define the dental lamina, its fate and what ebyronic week it is first seen. b. Describe the three components of the tooth bud. (enamel, organ, dental papilla, dental sac). c. Identify the tooth tissue and/or tooth supporting structures which arise from each component of the tooth bud. d. Describe the events that occur during the 5 stages of tooth development – initiation, histodifferentiation, morphodifferentiation, apposition).

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	<ul style="list-style-type: none"> e. Describe the dental anomalies that result during the 5 stages of tooth development. (initiation, proliferation, histodifferentiation, morphodifferentiation and apposition). f. Explain the function of the 4 cellular layers of the enamel organ. g. Define Hertwigs epithelial rests of Malassez. <p>3. Tooth Eruption/Shedding</p> <ul style="list-style-type: none"> a. Name and describe the three phases of tooth eruption. (preeruptive stage, eruptive stage and post eruptive stage). b. Discuss the fate of the epithelial layers covering the crown of the tooth. c. Discuss the forces in tooth eruption, i.e. horizontal trabeculae of bone, cushion hammock ligament, vascular pressures, periodontal ligament and myofibroblasts, reduced enamel epithelium enzymes. d. Discuss the factors which cause exfoliation of primary teeth. Increased forces of mastication, resorption, repair phenomena. e. Describe the origin and position of permanent teeth as compared with the deciduous teeth. <p>4. Enamel</p> <ul style="list-style-type: none"> a. Explain the following terms: <ul style="list-style-type: none"> - Attrition

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	<ul style="list-style-type: none"> - Mamelons - Perikymata - Gnarled enamel - Hunter shraeger bands - Stripes of retzius - Lamellae - Enamel tufts - Enamel spindles - Neonatal lines - Enamel cuticle/Nasmyths membrane <ol style="list-style-type: none"> b. Identify the cell responsible for the production of enamel. c. Discuss why enamel is not continuously replaced throughout the life of the tooth. d. Discuss the mechanism(s) by which enamel is calcified. e. Describe the chemical composition of enamel. f. Describe the effect of enamel structures on the process of decay. g. Describe the considerations to be made concerning enamel when making a cavity prep. h. Describe the embryonic layer which enamel is derived. i. Describe the morphology of enamel prisms. j. Describe the microscopic appearance of enamel. k. Describe the effect of fluoride on enamel. l. Describe the effect of acid etch techniques and the structure of enamel.

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	<p>m. Describe the process of amelogenesis.</p> <p>5. Dentin</p> <p>a. Explain the following terms:</p> <ul style="list-style-type: none"> - Dentinal tubules - Dentinal fibers - Enamel spindles - Tomes granular layer - Interglobular dentin - Secondary dentin - Reparative dentin - Primary dentin - Sclerotic dentin - Sheath of neuman - Owens lines of contour - Identify the cell responsible for the production of dentin - Describe the process of dentinogenesis - Discuss the mechanism by which dentin is calcified - Describe the chemical composition of dentin - Describe the effect of dentin structure in the process of decay - Describe the embryonic layer from which dentin is derived - Describe the effects of aging on dentin - Give 3 possible explanations for dentinal sensitivity, (nerve fibers in dentinal tubules,

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	<p>conduction by cell body of odontoblast, tissue fluid in dentinal tubule).</p> <ul style="list-style-type: none"> - Hyaline layer of Hopewell-Smith - Predentin - Peritubular dentin - Intertubular dentin - Imbrication lines (Von Ebner) - Tetracycline contours - Korfs fibers - Dead tracts - Enamel spindles <p>6. Pulp</p> <ol style="list-style-type: none"> a. Explain the following terms: <ul style="list-style-type: none"> - Pupal horns - Pulp chamber - Pulp canal - Pulp stones - True denticles - False denticles - Diffuse denticles b. Describe the functions of pulp. c. Describe the anatomy of the pulp. d. Describe the composition of the pulp. e. Describe the structural elements found in the pulp. f. Define the term pulp. g. Describe the changes seen in the pulp caused by age

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	<p>and the clinical significance of the changes.</p> <ul style="list-style-type: none"> h. Apply knowledge of pulp in making professional decisions. i. Explain the terms lateral, accessory, secondary canals and the oroapical ramifications of these. j. Discuss pulpitis. k. Describe the 4 microscopically recognizable layers of the pulp. (Ondontoblastic layer, cell free zone of Weil, cell rich zone and pulp core). l. Define the term Raschkows Plexus. <p>7. Periodontal Ligament</p> <ul style="list-style-type: none"> a. Describe the location and width of the periodontal ligament in relation to the tooth and alveolar bone. b. Identify the tissue components of the periodontal membrane including: <ul style="list-style-type: none"> - amorphous and fibrous intercellular substance - fibroblast - blood vessels - lymph nodes - nerves - cementoblasts - cementicles - osteoclasts - osteoblasts - sharpey's fibers - rests of malassez

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	<ul style="list-style-type: none"> c. Describe the function of the components found in the periodontal ligament. d. Identify by name the principal fibers (Sharpey’s fibers) of the periodontal ligament. e. List the function of each individual fiber. f. Discuss the clinical importance of the periodontal ligament. g. Discuss the function of the periodontal ligament. h. Discuss the development of the periodontal ligament. <p>8. Cementum</p> <ul style="list-style-type: none"> a. Discuss the functions of cementum. b. Compare the chemical composition and physical characteristics of enamel, dentin, cementum. c. State whether or not cementum can be deposited throughout life. d. Differentiates between cellular and acellular cementum. e. Define and describe the term cementoid. f. Explain the function of cementum. g. Explain the terms hypercementosis and aberrant cementum. h. Explain the terms cementicles. i. Explain how coronal cementum is formed. j. Describe the process of cementogenesis, using the terms cementoblast, cementocyte, lacunae and canaliluli.

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	<p>k. Discuss the mechanism by which cementum is calcified.</p> <p>9. Alveolar Bone</p> <ul style="list-style-type: none"> a. Define alveolar process and its relationship to tooth development. b. Describe the composition of the alveolar process, lamina dura and the supporting alveolar bone. c. Describe the process of osteogenesis using the terms osteoblast, osteocyte, lacunae, canalicular, spicule and hydroxyapatite. d. State the function of osteoclasts and Howships lacunae. e. Describe the difference between endochondral bone formation and intramembraneous bone formation. f. Describe the process of bone resorption. g. Discuss the effect of tension/pressure on bone resorption and position. h. Discuss clinical considerations of alveolar bone. <p>10. Oral Mucosa</p> <ul style="list-style-type: none"> a. Name the three categories of mucosa. b. Name the three stages of keratinization of stratified squamous epithelial and discuss where these different types are found. c. To discuss the factors that affect the mobility of various types of mucosa.

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	<ul style="list-style-type: none"> d. Describe the mucosa covering the dorsal and ventral surfaces of the tongue. e. Describe the typical clinical picture of normal gingiva. f. Describe some of the changes that are seen in diseased gingiva. g. Name the parts of the gingival unit, and describe their histological characteristics. <p>11. Glands of the Head and Neck/Tongue</p> <ul style="list-style-type: none"> a. Classify the glands of the head and neck as endocrine or exocrine glands. b. Locate and discuss function of the thyroid, parathyroid, pituitary (hypophysis) and lacrima gland. c. Describe the difference between major and minor salivary glands. d. Name and locate each of the major and minor salivary glands. e. Classify each of the glands according to its type of secretion. f. Describe the role of the salivary system in maintaining the health of the structures and tissues of the oral cavity. g. Name and describe the papillae found on the tongue. h. Describe the location of the lingual tonsils on the tongue. i. Name and locate the glands of the tongue.

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	<p>12. Bones of the Skull</p> <ol style="list-style-type: none"> a. List the major function of the bones of the skull. b. Classify the bones of the skull, identifying those bones which form the walls of the cranium and those of the facial region. c. Describe the bones of the skull, identifying the major landmarks of each bone including foramens, canals, fossa, sinuses, processes etc. d. Identify suture joints of the skull, and classify the type of articulation. e. Name 5 pairs of bony sinuses in the skull and discuss the function of each and their drainage. f. Given a diagram of a skull will label by name the bones of the skull. g. List the bones of the skull which form the orbital cavity. h. List the components of the TMJ. i. Discuss the 2 distinct movements of T.M.J. using the terms ginglymus arthroidal and diathrosis. j. Discuss the complications and malfunctions of the T.M.J. k. Given a natureal skull will be able to identify by name the bones of the skull and landmarks of each bone. <p>13. Muscles of Mastication, Pharynx and Tongue</p> <ol style="list-style-type: none"> a. List the 4 major muscles of mastication. b. Determine the origins and insertions for the four major

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	<p>muscles of mastication.</p> <ul style="list-style-type: none"> c. Describe the function of suprahyoid and infrahyoid muscles of mastication. d. Identify by name the suprahyoid muscles. e. Identify by name the infrahyoid muscles. f. Describe the role of each major muscle of mastication in the movement of the mandible. g. Identify the embryonic origin of the 4 major muscles of mastication. h. Given a diagram will draw the muscles of mastication by name. i. Given a diagram will label muscles of mastication by name. j. List the muscles of the pharynx and describe their function. k. List and describe the function of the muscles of the tongue. l. Given a diagram of muscles of mastication, pharyngeal muscles or muscles of the tongue will label with the appropriate name. <p>14. Muscles of Facial Expression</p> <ul style="list-style-type: none"> a. Name the various groupings or locations of the muscles of facial expression and their nerve supply. b. Name all the muscles surrounding the mouth, with their origin, insertion, and action. c. Discuss the role of the buccinator muscle in

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	<p>mastication.</p> <p>d. Given a diagram of muscles of facial expression will label with the appropriate name.</p> <p>14. Blood Supply to the Head and Neck Region</p> <p>a. Name the arteries which supply blood to the teeth and tissues of the oral cavity.</p> <p>b. Trace the blood supply from the heart to all areas of the oral cavity.</p> <p>c. Trace the venous drainage from the teeth and oral cavity back to the heart.</p> <p>d. Discuss the spread of infections by way of the veins.</p> <p>e. Define hematomas.</p> <p>f. Discuss the possible problems associated with a posterior superior alveolar infection.</p>