

Dental Anatomy DH 103 Date revised and approved: April 2022			
Academic Level 01	Course Type Theory	Total Classroom Hours	Educators Catherine Grater-Nakamura Dip DA, RDH, AEC, BDS(c)(DH), MEd(DE) Email: cgraternakamura@cadh.ca
Course Pre-requisites none		Course Co-requisites All level 1 courses	

Course Description

This course is designed to provide the student with foundational knowledge related to the basic principles of dental anatomy. Students are introduced to the anatomy of the teeth and the surrounding tissues. Students focus on learning the terminology and features of normal primary and adult teeth, as well as any anomalies. In addition, students learn to identify the teeth using the Universal, Palmer Notation, and Federation Dentaire Internationale coding systems.

Students, it is your responsibility to retain course outlines for possible future use to support applications for transfer of credit to other educational institutions or to substantiate specific educational learning outcomes for professional recognition.

Learning Resources

Required Texts and Documents

Fehrenbach MJ, Popowics T. Illustrated Dental Embryology, Histology, and Anatomy, 5th ed. St. Louis, Missouri: Elsevier Saunders; 2021.

Bowen, DM and Pieren, JA. Darby and Walsh Dental Hygiene Theory and Practice, 5th ed. St. Louis, MO: W.B. Saunders Co.; 2020.

Faculty resources

Teaching/Learning Methods and Activities

During this course you are likely to experience lectures, discussions, and interactive activities.

Staff/student ratio: 1/42

Class Attendance and Participation Expectations

The acquisition of dental hygiene theory is important for sound dental hygiene practice. Therefore, **attendance is mandatory**, and students are expected to participate in a mature and respectful manner during all classroom activities. There are no unexcused absences. Students unable to attend should immediately (at least one hour prior to the start of the session) notify CADH at **905-278-2794**. This number provides a 24-hour message system. A **medical certificate** is required for absences and must be provided to the Director of Admissions and faculty member upon your return to school.

Students that miss more than ten percent of any course must meet with the course instructor to review their progress in the course. A student that exceeds the maximum number of allowed absences will **fail** the course and must repeat that course, regardless of the quality of the work they have demonstrated in the course.

Missed Course Activities

Students are expected to complete all classroom activities (tests, labs, presentations, assignments, exams, etc.) at the scheduled time. A score of zero will be given for any missed work unless there are exceptional situations. The faculty member responsible for the course will decide whether the student merits the opportunity to make up the missed activity. Please refer to the student handbook under “Policy Regarding Missed Course Activities” to review the details of this policy.

Accessing Course Materials through the Learning Management System

CADH utilizes a Learning Management System (LMS) to provide students with course materials. A course will be set up for each subject that the student is expected to take in the program. Details on how to access the LMS and the course will be provided to you by your faculty members.

As a student, you will be expected to be enrolled in the course. Your faculty may enrol you in the course, in which case, you will receive an email indicating this. Otherwise, if advised by the faculty member, you will be expected to self-enrol in the course and instructions for this will be provided by your instructor.

Faculty members will post course announcements, course materials and any supplemental materials on the LMS for you to access and review. It is your responsibility to check the course site on a daily basis for any updates to the course material. In addition, the faculty member may email you from the site, require you to complete online components such as blogs, discussions, and assignments, as well as post grades using this site.

Evaluation

Evaluations will include critical thinking and problem-solving questions such as case scenarios, a tooth identification using samples, and slides from which students will have to distinguish between normal and abnormal. Students will be evaluated on course participation through completion of pre-quizzes and development and submission of multiple-choice questions based on the course material.

Grading System				Marks Assignment	
A+	90 – 100	C+	67 – 69	Test 1	20
A	85 – 89	C	63 – 66	Test 2	30
A-	80 – 84	C-	60 – 62	Participation	10
B+	77 – 79	F	59 and below	Final exam	40
B	73 – 76			Total	100
B-	70 – 72				

Course Content

Course Learning Outcomes and Embedded Knowledge and Skills

Upon completion of this course the student will be able to:		
Course Learning Requirements		Embedded Knowledge and Skills
1. Examine the nomenclature used in dentistry	1.1. Examine the basic anatomy of teeth using the appropriate terminology	<ul style="list-style-type: none"> ▪ Define and identify the following parts of teeth: <ul style="list-style-type: none"> - Crown - Apex - Furcation area - Root - Embrasures - Bifurcation - Cervix - Cervical line - Trifurcation ▪ Define and identify the following surfaces of teeth: <ul style="list-style-type: none"> - Mesial - Labial - Buccal - Distal - Lingual - Occlusal - Proximal - Facial ▪ Outline how the surface of the root and crown are divided (mesial, middle, distal, occlusal, middle, cervical) ▪ Locate surface areas of a tooth by the appropriate name ▪ Define and identify the following landmarks found on teeth: <ul style="list-style-type: none"> - Lobe - Cusp - Ridge - Fossa - Groove - Concavity - Pit - Cingulum
	1.2. Describe the role of curvature in dental anatomy in terms of function and as protection for periodontal tissues	<ul style="list-style-type: none"> ▪ Examine the effect on gingival health of pronounced or inadequate curvatures of teeth and widened or narrow embrasures ▪ Understand that the teeth are shaped to align next to each other to preserve the dentition ▪ Differentiate between contact point and contact area
	1.3. Examine the tissues that form and support teeth	<ul style="list-style-type: none"> ▪ Discuss the composition of enamel, dentin, and pulp ▪ Differentiate between enamel, dentin, cementum, and pulp ▪ Identify enamel, dentin, cementum, and pulp on pictures, diagrams, models, and specimens

Upon completion of this course the student will be able to:		
Course Learning Requirements		Embedded Knowledge and Skills
1. Examine the nomenclature used in dentistry	1.4. Use the coding systems to identify primary and permanent dentitions	<ul style="list-style-type: none"> ▪ Determine the arrangement of teeth in dentitions, arches, sextants, and quadrants ▪ Name and code permanent and primary teeth using the: <ul style="list-style-type: none"> - Universal System - Palmer Notation System - Federation Dentaire Internationale (FDI) System ▪ Identify teeth when given a code of any of the three systems
2. Examine the anatomy of the permanent dentition	2.1 Examine the anatomy of the permanent incisors	<ul style="list-style-type: none"> ▪ Describe the crown and root anatomy of incisors ▪ Describe the pulp chambers and canals of incisors ▪ Compare the crown and root anatomy of: <ul style="list-style-type: none"> - Maxillary central incisors to maxillary lateral incisors - Maxillary incisors to their mandibular incisor counterparts ▪ Compare the pulp chambers and canals of maxillary and mandibular incisors ▪ Assess the size, shape, and location of incisors and their relationship to the function of incisors ▪ Discuss the calcification and root completion schedule of incisors
	2.2 Examine the anatomy of the permanent canines	<ul style="list-style-type: none"> ▪ Describe the crown and root anatomy of canines ▪ Describe the pulp chambers and canals of canines ▪ Compare the crown and root anatomy of maxillary and mandibular canines ▪ Compare the pulp chambers and canals of maxillary and mandibular canines ▪ Discuss the size, shape, and location of canines and their relationship to the function of canines ▪ Discuss the calcification and root completion schedule of canines

Upon completion of this course the student will be able to:		
Course Learning Requirements		Embedded Knowledge and Skills
2. Examine the anatomy of the permanent dentition	2.3 Examine the anatomy of the permanent premolars	<ul style="list-style-type: none"> Describe the crown and root anatomy of first and second premolars Compare the size and shape of pulp chambers and canals of the premolars Discuss the size, shape, and location of first and second premolars and their relationship to the function of premolars Differentiate between mandibular and maxillary premolars Differentiate between first and second premolars Discuss the calcification and root completion schedule of the first and second premolars
	2.4 Examine the anatomy of the first, second, and third permanent molars	<ul style="list-style-type: none"> Describe the crown and root anatomy of first, second, and third molars Compare the size and shape of pulp chambers and canals of the premolars Explain how the size, shape, and location of the first, second, and third molars relates to the function of molars Differentiate between mandibular and maxillary molars Differentiate between first, second and third molars Discuss the calcification and root completion schedule of the first, second, and third premolars
3. Examine the anatomy of the primary dentition	3.1 Examine the anatomy of the primary incisors	<ul style="list-style-type: none"> Describe the crown and root anatomy of incisors Describe the pulp chambers and canals of incisors Compare the crown and root anatomy of: <ul style="list-style-type: none"> Maxillary central incisors to maxillary lateral incisors Maxillary incisors to their mandibular incisor counterparts Compare the pulp chambers and canals of maxillary and mandibular incisors Discuss the size, shape, and location of incisors and their relationship to the function of incisors Discuss the calcification and root completion schedule of incisors

Upon completion of this course the student will be able to:		
Course Learning Requirements		Embedded Knowledge and Skills
3. Examine the anatomy of the primary dentition	3.2 Examine the anatomy of primary canines	<ul style="list-style-type: none"> Describe the crown and root anatomy of canines Describe the pulp chambers and canals of canines Compare the crown and root anatomy of: <ul style="list-style-type: none"> Maxillary canines to their mandibular canine counterparts Compare the pulp chambers and canals of maxillary and mandibular canines Discuss the size, shape, and location of canines and their relationship to the function of canines Discuss the calcification and root completion schedule of canines
	3.3 Examine the anatomy of primary first molars	<ul style="list-style-type: none"> Describe the crown and root anatomy of first molars Describe the pulp chambers and canals of first molars Compare the crown and root anatomy of: <ul style="list-style-type: none"> Maxillary first molars to their mandibular first molar counterparts Compare the pulp chambers and canals of maxillary and mandibular first molars Discuss the size, shape, and location of incisors and their relationship to the function of first molars Discuss the calcification and root completion schedule of first molars
	3.4 Examine the anatomy of primary second molars	<ul style="list-style-type: none"> Describe the crown and root anatomy of second molars Describe the pulp chambers and canals of second molars Compare the crown and root anatomy of: <ul style="list-style-type: none"> Maxillary second molars to their mandibular second molar counterparts Compare the pulp chambers and canals of maxillary and mandibular second molars Discuss the size, shape, and location of second molars and their relationship to the function of second molars Discuss the calcification and root completion schedule of second molars

Upon completion of this course the student will be able to:		
Course Learning Requirements		Embedded Knowledge and Skills
3. Examine the anatomy of the primary dentition	3.5 Compare the primary and permanent dentition	<ul style="list-style-type: none"> Explain the essential anatomical differences between primary (deciduous) and permanent teeth
4. Outline the eruption schedule of the primary and permanent dentitions.	4.1 Examine the chronology of the primary dentition	<ul style="list-style-type: none"> Explain the calcification and root completion of the incisors, canines, and molars Outline the eruption schedule of the primary teeth Relate the calcification and root completion to the eruption of each type of tooth
	4.2 Examine the chronology of the permanent dentition	<ul style="list-style-type: none"> Explain the term succedaneous Discuss the calcification and root completion schedule of the incisors, canines, premolars, and molars. Outline the eruption schedule of the permanent teeth Relate the calcification and root completion to the eruption of each type of tooth
5. Using the critical thinking process, identify variations and anomalies of primary and permanent teeth	5.1 Identify developmental disturbances found in primary and / or permanent teeth	<p>Identify distinguishing characteristics of teeth with developmental disturbances (i.e., anomalies acquired pre-eruption):</p> <ul style="list-style-type: none"> dens in dente, ectodermal dysplasia, enamel dysplasia, amelogenesis imperfecta, dentin dysplasia, dentinogenesis imperfecta, gemination, fusion; supernumerary; root form (dilacerations and flexion) and number; microdontia, macrodontia, partial and complete anodontia, and oligodontia; retained primary teeth hypocalcification, dental fluorosis, enamel hypoplasia, Syphilis-related anomalies (Hutchinson's incisors and mulberry molars), variations in root form and number, tubercles, taurodontia, hypercementosis, concrescence, enamel pearl
	5.2 Identify post-eruption variations and anomalies found in primary and / or permanent teeth	<p>Identify distinguishing characteristics of tooth anomalies acquired post-eruption:</p> <ul style="list-style-type: none"> decalcification, erosion, abrasion, caries, attrition

Upon completion of this course the student will be able to:		
Course Learning Requirements		Embedded Knowledge and Skills
6. Examine the occlusion of permanent and primary dentitions.	6.1 Discuss terminology to describe occlusion	<ul style="list-style-type: none"> ▪ Define the following terms: <ul style="list-style-type: none"> - Occlusion - Centric occlusion - Centric relation - Overjet - Overbite - Crossbite - Open bite - Leeway space -
	6.2 Differentiate between skeletal and dental classification	<ul style="list-style-type: none"> ▪ Describe the basis for skeletal classification ▪ Outline the three classes of the skeletal system ▪ Explain the basis for dental classification
	6.3 Explain the development of occlusion and factors that cause malocclusion	<ul style="list-style-type: none"> ▪ Explain how spacing patterns in the primary dentition and the principle of mesial drift influence the development of occlusion in the permanent dentition ▪ Explain the causes of malocclusion under the following factors: <ul style="list-style-type: none"> - Developmental - Genetic - Environmental - Functional
	6.4 Inspect the occlusal relationship of permanent teeth	<ul style="list-style-type: none"> ▪ Describe normal occlusion and understand its significance ▪ Outline Angle's Classification of Malocclusion ▪ Differentiate between each class of Angle's Classification system by describing the relationship between the molars, canines, and anteriors ▪ Relate facial profiles (mesognathic, prognathic, retrognathic) to normal occlusion and Angle's Classification of Malocclusion ▪ Recognize on pictures and diagrams the different classes of Angle's classification ▪ Discuss the concepts lateral excursion, protrusion, and premature contact when assessing occlusion

Upon completion of this course the student will be able to:		
Course Learning Requirements		Embedded Knowledge and Skills
6. Examine the occlusion of permanent and primary dentitions	6.5 Inspect the occlusal relationship of the primary and mixed dentition	<ul style="list-style-type: none"> ▪ Describe the relationship of the primary teeth when they are in: <ul style="list-style-type: none"> - Flush terminal plane - Mesial step - Distal step ▪ Identify on pictures and diagrams the flush terminal plane, mesial step, and distal step
7. Describe the procedures for performing a hard tissue assessment	7.1 Explain the importance of sequencing in performing examinations	<ul style="list-style-type: none"> ▪ Demonstrate the appropriate charting symbols to record: <ul style="list-style-type: none"> - Abnormal positions of teeth (missing, unerupted, over erupted, tipped, drifted, rotated, supernumerary) - Abnormal tooth surfaces (caries, restorations, hypoplasia, decalcification, fluorosis, fractures, abrasion, attrition, wear facets, erosion), etc.

Class Schedule

Week	Day – Time	Topic	Resources
1	Thurs. – 10 a.m.	Introduction to DH 103 Dental Anatomy Unit 1: Nomenclature (terminology) used in dentistry (LO1: 1.1, 1.2, 1.3, 1.4)	Unit 1: Fehrenbach & Popowics, Ch 15 (& 12, 13, 20) / Supplemental resources
	Fri. – 10 a.m.	Unit 1, cont'd: Nomenclature used in dentistry Unit 2A: Dental anatomy of the permanent dentition – Anterior teeth (LO2: 2.1, 2.2, 2.3, 2.4)	Unit 2A: Fehrenbach & Popowics, Ch 16 Supplemental resources
2	Tues. – 3 p.m.	Unit 2A, cont'd: Dental anatomy of the permanent anterior teeth	
	Thurs. – 8 a.m.	Unit 2B: Dental anatomy of the permanent dentition – Posterior teeth (LO2: 2.1, 2.2, 2.3, 2.4)	
Fri. – 9:30 a.m.			
3	Tues. – 3 p.m.	Unit 2B, cont'd: Dental anatomy of the permanent posterior teeth	Units 1, 2A, and 2B resources
	Thurs. – 8 a.m.		
	Friday – 8:00 a.m.	Review for Test 1	
4	Tues., May 10 – 3:00 p.m.	Test 1: on Canvas – Units 1 and 2 - Terminology (LO 1) and Permanent Anterior and Posterior Teeth (LO 2)	
	Thurs. – 8 a.m.	Brief debrief of Test 1 Unit 3: Dental anatomy of the primary dentition (LO3: 3.1, 3.2, 3.3, 3.4) / Comparison of the permanent and primary dentition (LO3: 3.5)	Unit 3: Fehrenbach & Popowics, Ch 18 Supplemental resources
5	Mon. –12:30 p.m.	Unit 4: The eruption schedule of the primary dentition (4.1) The eruption schedule of the permanent dentition (4.2)	Unit 4: Fehrenbach & Popowics, Ch 6 (Fig. 6.22) Supplemental resources
	Tues. – 10 a.m.	Unit 5: Identify developmental disturbances of teeth primary and permanent teeth (5.1) Identify post-eruption variations and anomalies of primary and permanent teeth (5.2)	Unit 5: Fehrenbach & Popowics Ch 6; Ch 3 (p. 31) Bowen and Pieren (D&W), Ch 17 Supplemental resources
6	Tues. – 10 a.m.	Review for Test 2	Units 1, 2A, 2B, 3, 4, and 5 resources
	Thurs. – 8 a.m.	Unit 6: Examine the occlusion of the permanent and primary dentitions (LO6: 6.1, 6.2, 6.3, 6.4)	Unit 6: Fehrenbach & Popowics, Ch 20 Bowen and Pieren, Ch 17 Supplemental resources
	Fri., May 27 – 9:30 a.m.	Test 2: on Canvas – Units 1, 2A, 2B, 3, 4, and 5 - Terminology (LO 1), Permanent Teeth (LO 2), Primary Teeth (LO 3), Tooth Eruption (LO 4), Developmental Disturbances (LO 5)	
7	Tues. – 10 a.m.	Brief debrief of Test 2	Unit 6: Fehrenbach & Popowics, Ch 20 Bowen and Pieren, Ch 17 Supplemental resources
	Wed. – 10 a.m.	Unit 6, cont'd: Examine the occlusion of the permanent and primary dentitions	
8	Thurs. – 10 a.m.	Unit 7: Procedures for performing a hard tissue assessment (LO 7: 7.1)	Unit 7: Bowen and Pieren, Ch 17 CADH Clinic Manual Supplemental resources
	Tues. – 3 p.m.	Unit 7, cont'd: Procedures for performing a hard tissue assessment - practice	
		Thurs. – 8 a.m.	Review for Final Exam
9	Mon., June 13 – 8:00 a.m.	Final Exam: on Canvas – Units 1, 2A, 2B, 3, 4, 5, 6, and 7: Terminology (LO 1), Permanent Teeth (LO 2), Primary Teeth (LO 3), Tooth Eruption (LO 4), Developmental Disturbances (LO 5), Occlusion (LO6), and Hard Tissue Assessment (LO 7)	

