

# CLASS SYLLABUS



COURSE TITLE: DHYG 221 Oral Sciences 1  
CLASS SECTION: X01 – Tuesdays 10:00-11:50am  
TERM: W2022  
COURSE CREDITS: 2.0  
DELIVERY METHOD(S): Synchronous class to be delivered on-site whenever possible

Camosun College campuses are located on the traditional territories of the Ləkʷəŋən and W̱SÁNEĆ peoples. We acknowledge their welcome and graciousness to the students who seek knowledge here. Learn more about Camosun's [Territorial Acknowledgement](#).

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For COVID-19 information please visit: <https://camosun.ca/about/covid-19-updates>

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*Camosun College requires mandatory attendance for the first class meeting of each course. If you do not attend, and do not provide your instructor with a reasonable explanation in advance, you will be removed from the course and the space offered to the next waitlisted student.*

## INSTRUCTOR DETAILS

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NAME: Amber Chamut  
EMAIL: [chamuta@camosun.ca](mailto:chamuta@camosun.ca)  
OFFICE: DNT 003  
HOURS: By appointment

*As your course instructor, I endeavour to provide an inclusive learning environment. However, if you experience barriers to learning in this course, do not hesitate to discuss them with me. Camosun College is committed to identifying and removing institutional and social barriers that prevent access and impede success.*

## CALENDAR DESCRIPTION

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Students will learn the embryological development and histology of the soft and hard tissues of the mouth. Developmental anomalies and conditions of dental and oro-facial structures are studied. Students are introduced to select pathological and acquired conditions related to dental caries and other tooth abnormalities.

PREREQUISITE(S): n/a  
CO-REQUISITE(S): n/a  
PRE/CO-REQUISITE(S): B- in DHYG 219, B- in DHYG 220

## COURSE DELIVERY

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ACTIVITY	HOURS / WEEK	# OF WEEKS	ACTIVITY HOURS
Lecture	2	17	34
Seminar			

Lab / Collaborative Learning  
 Supervised Field Practice  
 Workplace Integrated Learning  
 Online


TOTAL HOURS                      **34**

### COURSE LEARNING OUTCOMES

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Upon completion of this course, a student will be able to:

1. Discuss the embryological formation of the tissues of the body to enhance knowledge of typical and atypical dental and oral development.
2. Describe the concepts and principles of histology as they relate to the soft and hard tissues present in the oral cavity.
3. Describe the formation and development of dental and oral structures and common anomalies that may occur.
4. Describe dental caries and non-carious cervical lesions of the teeth.

### REQUIRED MATERIALS & RECOMMENDED PREPARATION / INFORMATION

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Fehrenbach, M.J., Herring, S.W. (2021). *Illustrated anatomy of the head and neck* (6th ed.). St. Louis, Missouri: Elsevier.

Fehrenback, M. & Popowics, T. (2020). *Illustrated Dental Embryology, Histology, and Anatomy*. 5th Ed. St. Louis: Elsevier/Saunders.

Darby M., Walsh M. (2020). *Dental hygiene theory and practice*. 5th Ed. St. Louis: Saunders Elsevier.

Iannucci J, Howerton L. (2017). *Dental radiography principles and techniques*. 5th Ed. St Louis: Elsevier. (or equivalent).

DHYG 221 Workbook & Study Guide (2022 edition) is available through the Camosun College Bookstore.

The D2L website will be used for posting additional course information.

### COURSE SCHEDULE, TOPICS, AND ASSOCIATED PREPARATION / ACTIVITY / EVALUATION

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- 1. Describe the concepts and principles of histology as they relate to the soft and hard tissues present in the oral cavity for base knowledge of structure as it relates to clinical function.**

**Describe histological study of tissues.**

- Explain histological study of tissues and identify common methods used to study dental tissues.
- Identify and discuss basic components of tissues and their appearance in histological slides.
- Explain uses for the histological study of tissues in determining dental/oral health and disease.

**Identify the histological features of oral mucosa.**

- Recall basic knowledge of cells and tissues (biology pre-requisite).
- Describe and compare the histological structure of keratinized, parakeratinized and nonkeratinized epithelium (recall from DHYG 219).
- Describe the histological structure of the lamina propria and discuss its function.
- Describe the basement membrane and identify differences in its structure for various types and locations of oral mucosa (recall from DHYG 219).
- Compare mobile and non-mobile oral mucosa and relate structure to degree of mobility.
- Describe submucosa and differentiate structures that may be present in this component of lining, specialized and masticatory mucosa.
- Describe histologic structure of the hard palate and compare with those of the gingiva.
- Describe the histologic structure and function of the salivary glands and their distribution.

**Describe the histological features of the dentogingival unit and relate histological features of healthy gingiva to clinical characteristics.**

- Recall knowledge of the gingiva including histology, arrangement of gingival fibers etc. (from DHYG 219).
- Describe the histological structure of the junctional epithelium and its attachment to the tooth (recall from DHYG 219).
- Describe passive eruption and changes in the position of the epithelial attachment.
- Describe renewal rate of gingival and junctional epithelium (recall from DHYG 219).
- Relate histological features of healthy gingiva to its clinical appearance.

**Describe histological features of the tissues of the periodontium, other than gingiva, including periodontal ligament and alveolar bone and relate to clinical and radiographic characteristics.**

- Recall structure and functions of the periodontal ligament including types and directions of periodontal ligament fibers (from DHYG 219).
- Identify structural and cellular elements of the periodontal ligament and their function.
- Describe the attachment of the periodontal ligament fibers to cementum and bone.
- Discuss clinical significance of the periodontal ligament including response to injury and other clinical situations.
- Recall knowledge of alveolar bone including types and location (from DHYG 219).
- Describe the histologic structure of alveolar bone and explain the clinical significance of alveolar bone levels.
- Describe bone formation and resorption and discuss reasons for their occurrence.
- Recall fenestration and dehiscence and discuss histology and clinical significance of each.
- Describe clinical variations of the alveolar bone, including tori.
- Identify and describe the radiographic appearance of ankylosis and hypercementosis and relate clinical significance.
- Explain the similarities of cementum and bone and the relationship that occurs with the periodontal ligament.

**Describe the histological features of tooth tissues including enamel, dentin, cementum and pulp.**

- Recall the location, composition and macroscopic structure of enamel (from DHYG 219 and 220)
- Describe the histological structure of enamel, including enamel rods, incremental lines, tufts, lamellae and spindles.
- Describe the histologic structure of the dentinoenamel junction.
- Explain the clinical importance of enamel and discuss changes that occur with wear and/or age.

- Recall the location and composition of dentin (from DHYG 220).
- Describe the histological structure of dentin, including predentin, the dentinal tubule, peritubular, intertubular, mantle and circumpulpal dentin, tomes granular layer and incremental lines.
- Explain the clinical importance of dentin and describe changes that may occur with function and/or age.
- Recall knowledge of cementum (from DHYG 219).
- Compare histological structure and location of cellular and acellular cementum.
- Describe and discuss age related changes that occur with cementum including resorption and repair.
- Recall location and composition of pulp (from DHYG 219)
- Describe the formative, sensory, nutritive, and defensive functions of the pulp.
- Explain the clinical importance of the pulp and discuss changes that occur with trauma and/or age.
- Describe pulp calcifications including types and etiology and discuss clinical significance.
- Describe and identify the radiographic appearance of various pulp calcifications.

## **2. Discuss the embryological formation of the tissues of the body to enhance knowledge of typical and atypical dental and oral development.**

- Explain formation of the primary germ layers beginning with the development of the primitive streak and identify oral tissues that will be derived from these tissue layers: ectoderm, mesoderm and endoderm.
- Describe briefly the formation of the neural tube and the contribution of neural crest cells to facial development.
- Describe formation of the 5 branchial arches.
- Describe embryonic development of the face, palate, and tongue including formation and growth of processes to migration and merging or fusion of tissues.
- Differentiate between two types of fusion that occur during embryonic development.
- Describe in detail the formation of the following; upper lip, primary palate and palatal processes, hard palate and nasal septum.
- Explain the origin of the thyroid gland and the pituitary gland.
- Describe the origin and the development of orofacial cysts.
- Identify several areas cysts may form (from embryonic tissues/structures to the adult structures of the head and neck).
- Be aware of the various possible cleft lip and palate types and frequency of each.
- Discuss medical treatment and the clinical significance of caring for clients with treated and untreated clefts.
- Describe disruptions in embryonic development of the tongue that cause anomalies of the tongue and discuss clinical significance.
- Describe other oral anomalies that may occur during development and may have an affect on clinical care such as: fordyce's granules, epithelial rests, macrostomia and microstomia.

## **Describe the development of dental and oral structures and their relationship to oral health and client care.**

- Define terms associated with development of dental hard tissues: histodifferentiation, morphodifferentiation, initiation, proliferation, apposition, calcification, odontogenesis, dentinogenesis, amelogenesis and cementogenesis.
- Describe development of the tooth crown during the various stages of formation; the dental lamina, bud, cap and bell stages.
- Describe the process of dentinogenesis and amelogenesis from initiation to crown completion.
- Describe formation of the reduced enamel epithelium and the enamel cuticle, and discuss their significance.
- Identify the relationship of the permanent to the primary tooth germs.
- Describe development of the tooth root explaining sequencing and location of component structures; pulp, root dentin and cementum.
- Define the terms: hertwig's epithelial root sheath (HERS), epithelial diaphragm, epithelial rests (rests of Malassez).

- Describe the development of single versus multiple roots.
- Describe development of the periodontal ligament identifying the orientation of fibers during the stages of eruption.
- Describe the development of the alveolar bone and explain the relationship between bone, tooth root development and eruption.
- Discuss various mechanisms that may be responsible for tooth eruption.
- Describe the eruption process in the various stages (pre-eruptive, active and functional eruptive).
- Describe the exfoliation process.
- Recall the eruption sequence of deciduous and permanent teeth (from DHYG 220).
- Describe abnormalities in eruption and exfoliation and their etiologies.
- Identify radiographically stages of tooth crown and root development.
- Describe eruption factors that influence the development of occlusion.
- Recall the relationship between ideal tooth alignment and normal occlusal stresses (DHYG 220)
- Describe passive eruption and identify types of post-eruptive tooth movements and their influences on occlusion or on periodontal health.
- Describe variations in eruption including drift, migration, impaction and delayed eruption and identify clinically and recognize radiographically.

#### **Describe histological and embryological features of the temporomandibular joint (TMJ)**

- Recall knowledge of the TMJ (from DHYG 219).
- Describe the histologic structure of the major component structures of the TMJ including the articular surfaces, disc and capsule.
- Briefly describe the embryologic development of the TMJ and identify differences between adult and the fetal TMJ.
- Explain abnormalities that may develop in the TMJ.

### **3. Describe dental caries and other pathological conditions of the teeth and their implications for dental hygiene practice.**

#### **Explain dental caries**

- Describe dental caries epidemiologically, as a chronic, infectious disease.
- Describe etiological factors of dental caries and their inter-relationship.
- Describe the oral ecology and the role of specific microorganisms in the development of caries (recall microorganisms from Biol 160).
- Describe demineralization as the accepted theory of cariogenesis.
- Describe the types of foods most often associated with caries.
- Draw a diagram illustrating the interaction of sucrose and bacteria in the oral cavity over time (Stephan curve).
- Describe the susceptibility of tooth surfaces and factors that affect their resistance.
- Describe the protective mechanisms of saliva and the effect of lack of this resource.
- Describe the pathological development, clinical characteristics and morphology of plaque associated with pit and fissure caries, smooth surface caries and cementum caries (root surface caries).
- Recall protective mechanisms of the dentin including sclerotic and reparative dentin.
- Define types of caries including chronic, acute and arrested.
- Describe the clinical signs and symptoms of caries.
- Identify on images, obvious clinical signs of various types of caries.
- Recall microbiological tests used to assess or monitor caries activity (Biol 160) and discuss uses in clinical dental hygiene.
- Describe preventive and restorative approaches to dental caries.

#### **Describe and interpret the radiographic appearance of dental caries.**

- Describe the limitations of using radiographs to diagnose dental caries.

- Describe conditions or effects that imitate caries on radiographs including their appearance and significance.
- Describe the radiographic appearance of all types and stages of dental caries.

**Describe the development of dental and oro-facial anomalies, including acquired disturbances and discuss their relationship to dental health and client care.**

- Identify clinical concerns or abnormalities in crown formation related to the development of dental tissues.
- Describe the etiology, characteristics and significance of enamel and dentin hypoplasias and hypocalcification including dysplasias.
- Explain abnormalities in root formation including enamel pearls, extra roots, dilaceration, concrescence, and root resorption (recall DHYG 220).
- Describe and differentiate characteristics of acquired tooth abnormalities in terms of etiology, diagnosis, clinical features and treatment of the following: attrition, abrasion, erosion, and abfraction.
- Identify on photographs and radiographs developmental and acquired abnormalities of dental structures

Students registered with the Centre for Accessible Learning (CAL) who complete quizzes, tests, and exams with academic accommodations have booking procedures and deadlines with CAL where advanced noticed is required. Deadlines scan be reviewed on the [CAL exams page](http://camosun.ca/services/accessible-learning/exams.html). <http://camosun.ca/services/accessible-learning/exams.html>

## STUDENT EVALUATION

**NOTE: minimum passing grade for this course is B- or 70% OR COM**

DESCRIPTION	WEIGHTING
Quizzes	10%
Test #1	25%
Test #2	25%
Final Exam	40%
<b>TOTAL</b>	<b>100%</b>

If you have a concern about a grade you have received for an evaluation, please come and see me as soon as possible. Refer to the [Grade Review and Appeals](http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.14.pdf) policy for more information. <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.14.pdf>

## COURSE GUIDELINES & EXPECTATIONS

Please refer to the student handbook for information regarding supplemental exams.

## SCHOOL OR DEPARTMENTAL INFORMATION

See D2L for more information

Students are required to read and are accountable for following College policies and guidelines as described in the DHYG and HHS Student Handbooks.

[DHYG Student Handbook](#)

[HHS Student Handbook](#)

## STUDENT RESPONSIBILITY

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Enrolment at Camosun assumes that the student will become a responsible member of the College community. As such, each student will display a positive work ethic, assist in the preservation of College property, and assume responsibility for their education by researching academic requirements and policies; demonstrating courtesy and respect toward others; and respecting expectations concerning attendance, assignments, deadlines, and appointments.

## SUPPORTS AND SERVICES FOR STUDENTS

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Camosun College offers a number of services to help you succeed in and out of the classroom. For a detailed overview of the supports and services visit <http://camosun.ca/students/>.

Support Service	Website
Academic Advising	<a href="http://camosun.ca/advising">http://camosun.ca/advising</a>
Accessible Learning	<a href="http://camosun.ca/accessible-learning">http://camosun.ca/accessible-learning</a>
Counselling	<a href="http://camosun.ca/counselling">http://camosun.ca/counselling</a>
Career Services	<a href="http://camosun.ca/coop">http://camosun.ca/coop</a>
Financial Aid and Awards	<a href="http://camosun.ca/financialaid">http://camosun.ca/financialaid</a>
Help Centres (Math/English/Science)	<a href="http://camosun.ca/help-centres">http://camosun.ca/help-centres</a>
Indigenous Student Support	<a href="http://camosun.ca/indigenous">http://camosun.ca/indigenous</a>
International Student Support	<a href="http://camosun.ca/international/">http://camosun.ca/international/</a>
Learning Skills	<a href="http://camosun.ca/learningskills">http://camosun.ca/learningskills</a>
Library	<a href="http://camosun.ca/services/library/">http://camosun.ca/services/library/</a>
Office of Student Support	<a href="http://camosun.ca/oss">http://camosun.ca/oss</a>
Ombudsperson	<a href="http://camosun.ca/ombuds">http://camosun.ca/ombuds</a>
Registration	<a href="http://camosun.ca/registration">http://camosun.ca/registration</a>
Technology Support	<a href="http://camosun.ca/its">http://camosun.ca/its</a>
Writing Centre	<a href="http://camosun.ca/writing-centre">http://camosun.ca/writing-centre</a>

If you have a mental health concern, please contact Counselling to arrange an appointment as soon as possible. Counselling sessions are available at both campuses during business hours. If you need urgent support after-hours, please contact the Vancouver Island Crisis Line at 1-888-494-3888 or call 911.

### Academic Accommodations for Students with Disabilities

The College is committed to providing appropriate and reasonable academic accommodations to students with disabilities (i.e. physical, depression, learning, etc). If you have a disability, the [Centre for Accessible Learning](#) (CAL) can help you document your needs, and where disability-related barriers to access in your courses exist, create an accommodation plan. By making a plan through CAL, you can ensure you have the appropriate academic accommodations you need without disclosing your diagnosis or condition to course instructors. Please visit the CAL website for contacts and to learn how to get started: <http://camosun.ca/services/accessible-learning/>

### Academic Integrity

Please visit <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.13.pdf> for policy regarding academic expectations and details for addressing and resolving matters of academic misconduct.

### Academic Progress

Please visit <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.1.pdf> for further details on how Camosun College monitors students' academic progress and what steps can be taken if a student is at risk of not meeting the College's academic progress standards.

### Course Withdrawals Policy

Please visit <http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.2.pdf> for further details about course withdrawals. For deadline for fees, course drop dates, and tuition refund, please visit <http://camosun.ca/learn/fees/#deadlines>.

### Grading Policy

Please visit <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.5.pdf> for further details about grading.

### Grade Review and Appeals

Please visit <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.14.pdf> for policy relating to requests for review and appeal of grades.

### Mandatory Attendance for First Class Meeting of Each Course

Camosun College requires mandatory attendance for the first class meeting of each course. If you do not attend, and do not provide your instructor with a reasonable reason in advance, you will be removed from the course and the space offered to the next waitlisted student. For more information, please see the "Attendance" section under "Registration Policies and Procedures" (<http://camosun.ca/learn/calendar/current/procedures.html>) and the Grading Policy at <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.5.pdf>.

### Medical / Compassionate Withdrawals

Students who are incapacitated and unable to complete or succeed in their studies by virtue of serious and demonstrated exceptional circumstances may be eligible for a medical/compassionate withdrawal. Please visit



<http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.8.pdf> to learn more about the process involved in a medical/compassionate withdrawal.

### Sexual Violence and Misconduct

Camosun is committed to creating a campus culture of safety, respect, and consent. Camosun's Office of Student Support is responsible for offering support to students impacted by sexual violence. Regardless of when or where the sexual violence or misconduct occurred, students can access support at Camosun. The Office of Student Support will make sure students have a safe and private place to talk and will help them understand what supports are available and their options for next steps. The Office of Student Support respects a student's right to choose what is right for them. For more information see Camosun's Sexualized Violence and Misconduct Policy: <http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.9.pdf> and [camosun.ca/sexual-violence](http://camosun.ca/sexual-violence). To contact the Office of Student Support: [oss@camosun.ca](mailto:oss@camosun.ca) or by phone: 250-370-3046 or 250-370-3841

### Student Misconduct (Non-Academic)

Camosun College is committed to building the academic competency of all students, seeks to empower students to become agents of their own learning, and promotes academic belonging for everyone. Camosun also expects that all students to conduct themselves in a manner that contributes to a positive, supportive, and safe learning environment. Please review Camosun College's Student Misconduct Policy at <http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.5.pdf> to understand the College's expectations of academic integrity and student behavioural conduct.

**Changes to this Syllabus:** Every effort has been made to ensure that information in this syllabus is accurate at the time of publication. The College reserves the right to change courses if it becomes necessary so that course content remains relevant. In such cases, the instructor will give the students clear and timely notice of the changes.