# Course Syllabus

**Course title:** Oral Sciences 1
**Class section:** DHYG **-** 221 **-** X01
**Term:** 2025W
**Course credits:** 1.5
**Total hours:** 34
**Delivery method:** In-Person

## Territorial Acknowledgement

Camosun College respectfully acknowledges that our campuses are situated on the territories of the L□k□□□ŋ□n (Songhees and Kosapsum) and W□SÁNEĆ peoples. We honour their knowledge and welcome to all students who seek education here.

## Instructor Details

**Name:** Amber Chamut
**Email:** ChamutA@camosun.ca

## Instructor Statement

*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.*

## Instructor Office Hours

| Office: | Hours: |
| --- | --- |
| D003 | By appointment |

## Course Description

**Course Description:**
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.

**Pre or Co-requisites:**
All of:

- B- in DHYG 219
- B- in DHYG 220

## Course Delivery Hours

| ACTIVITY | HOURS / WEEK | # OF WEEKS | ACTIVITY HOURS |
| --- | --- | --- | --- |
| Lecture | 2 | 17 | 34 |
| Seminar | | | |
| Lab / Collaborative Learning | | | |
| Supervised Field Practice | | | |
| Final Exam | | | |
| | | **TOTAL HOURS:** | 34 |

## Course Learning Outcomes / Objectives

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

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

## Course Materials - Required

Fehrenbach, M.J., & Herring, S.W. (2021). Illustrated anatomy of the head and neck (6th ed.). Elsevier.

Fehrenbach, M.J., & Popowics, T. (2020). Illustrated dental embryology, histology and anatomy. (5th ed.). Elsevier.

Gadbury-Amyot C., & Pieren J.A. (2025). Darby and Walsh dental hygiene: Theory and practice (6th ed.). Elsevier

Iannucci, J.M., & Howerton, L.J. (2022). Dental radiography: Principles and techniques (6th ed.). Elsevier.

DHYG 221 Workbook & Study Guide (2025 edition) is available through the Camosun College Bookstore.

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

## Learning Outcomes and Performance Indicators

**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

## Course Schedule, Topics, and Associated Preparation / Activity

**The following schedule and course components are subject to change with reasonable advance notice, as deemed appropriate by the instructor. Course days, times and locations can be found on MyCamosun.**

| Week or Date Range | Activity or Topic | Other Notes |
|---|---|---|
| Week 1 | Embryology: Prenatal development | Embryology units include typical and atypical development |
| Week 2 | Embryology: Development of facial structures & palate | |
| Week 3 | Embryology: Development of the tongue | |
| Week 4 | Histological Study of tissues: oral mucosa | Histology units include cell junctions |
| Week 5 | Histological Study of tissues: gingiva and dentogingival unit and salivary glands | |
| Week 6 | Test #1 Units 1 & 2 | |
| Week 7 | Reading week (no instruction) | |
| Week 8 | Embryonic development of dental tissues: overview and anomalies | |
| Week 9 | Embryonic development of tooth crown: Odontogenesis | |
| Week 10 | Embryonic development of tooth crown: Amelogenesis | |
| Week 11 | Embryonic development of tooth root, cementum, pulp | |
| Week 12 | Development and Histology of PDL & Alveolar bone | |
| Week 13 | Test #2 Units 3 and 4A | |

| Week or Date Range | Activity or Topic | Other Notes |
|---|---|---|
| Week 14 | Tooth eruption and exfoliation/ Development of occlusion | |
| Week 15 | Dental Caries and Acquired abnormalities | |
| Week 16 | TMJ- Development and Histological features | |
| Week 17 | Final Exam | |

## Evaluation of Learning: Weighted

| DESCRIPTION | WEIGHTING |
|---|---|
| Quizzes (5 total) | 15% |
| Test #1 | 25% |
| Test #2 | 25% |
| Final Exam | 35% |
| **TOTAL:** | **100%** |

**NOTE: Minimum passing grade for this course is a B- of 70%**

**See Camosun's Grading Systems for Details**
https://camosun.ca/registration-records/student-records/camosun-grading-systems

**Grade Reviews and Appeals**

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 policy** for more information.
http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.14.pdf

**The Centre for Accessible Learning (CAL) is part of Camosun's Student Affairs unit.** CAL coordinates academic accommodations and provides related programs and services to students with documented disabilities.

Students who require academic accommodations are expected to request and arrange accommodations through CAL in a timely fashion. While we understand that not all accommodation needs are known to students at the beginning of a course, accommodations cannot be provided unless the proper process is followed through CAL and an accommodation letter has been released to the instructor. Students are responsible for providing CAL with the proper documentation prior to the beginning of a course.

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 can be reviewed on the CAL exams page**
https://camosun.ca/services/academic-supports/accessible-learning/academic-accommodations-exams

**Please consult the CAL webpage for more information:**
https://camosun.ca/services/academic-supports/accessible-learning:

## Artificial Intelligence: A Guide for Students

**Generative Artificial Intelligence (GenAI)** is an evolving technology that brings potential benefits but also substantial risks. While GenAI tools have the ability to transform how we work and learn, it is essential for the college community to adapt to these changes in a thoughtful and secure way.

**When using GenAI tools, students should ensure proper citation and attribution guidelines are followed**. This includes acknowledging AI assistance in reports ,presentations, or any external communications. Clear citation helps build trust, ensures ethical use, and reduces the risk of misinformation or copyright issues.

**For citation support visit the college's citation style guide.**
https://camosun.libguides.com/cite

**Artificial Intelligence: A Guide for Students**
Visit the following website to learn about AI use in academic settings.
https://camosun.libguides.com/artificialintelligence/home

## Course Guidelines & Expectations

Students are expected to prepare for class discussion of each topic by reading the required text and filling in the workbook prior to class. Refer to the DHYG 221 Workbook Manual for reference readings for each section. Classes will be Tuesday, 8:30am-10:20pm in WT202. PowerPoints will be posted in the course D2L site.

Monitor D2L site for updates!

## School or Departmental Information

**Students are required to read and are accountable for the College policies (outlined in the section below).**

**If relevant, students are required to read and are accountable for the guidelines noted on the HHS Clinical and Practice Placements website.**
https://camosun.ca/programs-courses/school-health-and-human-services/hhs-programs/practicums

**In addition students are required to follow the guidelines as described in the School of Health & Human Services (HHS) and program handbooks, including information on supplemental exams.**

**School of Health & Human Services (HHS) Handbook**
https://camosun.ca/programs-courses/school-health-and-human-services/information-health-and-human-services-students-1#top

**Dental Hygiene Handbook**
https://camosun.ca/programs-courses/school-health-and-human-services/information-health-and-human-services-students-4

## Student Responsibility

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.

## College Policies

### Academic Integrity

Students are expected to follow the college's Academic Integrity policy, and be honest and ethical in all aspects of their studies. To help you understand these responsibilities review the online Academic Integrity guide.

The college's Academic Integrity policy and supporting documents detail the process for addressing and resolving matters of academic misconduct.

### Academic Accommodations for Students with Disabilities

If you have a documented disability and need accommodations contact the Centre for Accessible Learning (CAL). CAL will arrange the appropriate academic accommodations so you can participate in all academic activities. Visit the CAL website for more information

**Academic Progress**

The Academic Progress policy details how the college monitors students' academic progress and what steps are taken if a student is at risk of not meeting the college's academic progress standards.

**Acceptable Technology Use**

The Acceptable Technology Use policy outlines how students are expected to use college technology resources, this includes using your own devices on the college's network. The use of the college resources in a way that violates a person's right to study in an environment free of discrimination, harassment or sexual violation is prohibited.

**Course Withdrawals Policy**

For details about course withdrawal see the Course Withdrawals policy. Be aware of the deadlines for fees, course drop dates, and tuition refunds.

**Grading Policy**

To learn more about grading see the Grading Policy.

**Grade Review and Appeals**

The process to request a review of grades is outlined in the Grade Review and Appeals policy.

**Medical / Compassionate Withdrawals**

If you have experienced a serious health or personal issue, you may be eligible for a medical/compassionate withdrawal. The Medical / Compassionate Withdrawal Request form outlines what is required.

**Sexual Violence**

If you have experienced sexual violence on or off campus, you can get support from the Office of Student Support. The Office of Student Support is a safe and private place to talk about what supports are available and your options for next steps. Visit the sexual violence support and education site to learn more or email oss@camosun.ca or phone: 250-370-3046 or 250-370-3841.

**Student Misconduct (Non-Academic)**

Camosun expects students to conduct themselves in a manner that contributes to a positive, supportive, and safe learning environment. Review the Student Misconduct Policy to understand the college's expectations of conduct.

Looking for other policies? See Camosun College Policies and Directives

## Services and Supports

Services are free and available to all students.

| Academic Supports | Enrollment Supports |
|---|---|
| Centre for Accessible Learning | Academic Advising |
| English, Math and Science Help Centres | Financial Aid and Awards |
| Library | Registration |
| Writing Centre & Learning Skills | Tuition and Fees |
| **Health and Wellness** | **Applied learning** |
| Counseling | Co-operative Education and Career Services |
| Fitness and Recreation | Makerspace |
| Office of Student Support | |

The Centre for Indigenous Education Centre and Community Connections provides cultural and academic supports for Indigenous students.

Camosun International provides supports to international students.

The Ombudsperson provides an impartial, independent service to ensure students are treated fairly. The service is a safe place for students to voice and clarify concerns and complaints.

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

## 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 the course content or schedule. When changes are necessary the instructor will give clear and timely notice.