

CLASS SYLLABUS



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| COURSE TITLE: | DHYG 310 Pharmacology |
| CLASS SECTION: | X01–Tuesdays 1:00-2:50pm and Fridays 1:00-2:50pm |
| TERM: | Fall 2021 |
| COURSE CREDITS: | 3.0 |
| 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](#).

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

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

| | |
|---------|--|
| NAME: | Liz Morch |
| EMAIL: | morch@camosun.ca |
| OFFICE: | DNT 004 |
| 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

Students will study the principles of pharmacology and drug therapy. Students will examine how drugs are used in dentistry with an emphasis on drugs and techniques used for pain management and control. Students will discuss additional medications and drug-related issues that affect the delivery of dental hygiene and dental care.

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| PREREQUISITE(S): | B- in BIO 260, B- in DHYG 280, COM in DHYG 280 |
| CO-REQUISITE(S): | n/a |
| PRE/CO-REQUISITE(S): | n/a |

COURSE DELIVERY

| ACTIVITY | HOURS / WEEK | # OF WEEKS | ACTIVITY HOURS |
|----------|--------------|------------|----------------|
| Lecture | 4 | 15 | 60 |
| Seminar | | | |

Lab / Collaborative Learning
 Supervised Field Practice
 Workplace Integrated Learning
 Online

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| | | |
| | | |
| | | |
| TOTAL HOURS | | 60 |

COURSE LEARNING OUTCOMES

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

1. Describe pharmacokinetics, pharmacodynamics, and pharmacogenetics as they relate to physiological processes.
2. Discuss drug regulations and the process of prescribing medications in the dental environment.
3. Describe and plan ways to safely and effectively administer local anesthetics in order to achieve pain control.
4. Describe select "alternative" or "non-conventional" therapies for pain management.
5. Describe various drug classifications used in dental hygiene and dental practice.
6. Explain how various classifications of prescribed or over-the-counter drugs can affect delivery of both dental hygiene and dental care.

REQUIRED MATERIALS & RECOMMENDED PREPARATION / INFORMATION

Haveles, E.B.(2019) Applied Pharmacology for the Dental Hygienist, 8th Ed.: St. Louis, USA: Elsevier

Logothetis, Demetra . (2022)..Local Anesthesia for the Dental Hygienist 3rd Ed, Mosby, St. Louis USA: Elsevier

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

- The following schedule and course components are subject to change with reasonable advance notice, as deemed appropriate by the instructor.

Performance Indicators

1. Describe pharmacokinetics, pharmacodynamics, and pharmacogenetics as they relate to physiological processes.

- A. Define "pharmacology"
- B. Discuss pharmacology as it relates to comprehensive dental hygiene and dental care
- C. Describe common reference texts and APPS used for pharmacology
- D. Define pharmacological terminology including "chemical name, trade or proprietary name, brand name and generic name"

1B Describe the characteristics of drug action.

- A. Describe a drug's potency and efficacy in relation to a dose-effect curve

- B. Describe factors affecting an individual's response to a drug
- C. Define "pharmacokinetics" , "pharmacodynamics" and "pharmacogenomics"
- D. Describe common enteral and parenteral routes of drug administration including the forms of drugs used
- E. Recall knowledge of cell and organ function (from BIO 150/151 and 260)
- F. Describe mechanisms for drug passage across body membranes
- G. Describe in general terms the absorption, distribution, metabolism and excretion of drugs
- H. Describe factors that alter the effects of drugs including age and disease
- I. Describe a "placebo" effect

1C Discuss adverse reactions to drugs.

- A. Differentiate between "therapeutic" and "adverse" effects of drugs
- B. Describe adverse reactions including toxic reaction, side effect, idiosyncratic reaction, allergy and interference with natural defense mechanisms
- C. Describe clinical manifestations of adverse reactions
- D. Define "poly-pharmacy"
- E. Discuss the addition of sucrose to some medications

2. Discuss drug regulations and the process of prescribing medications in the dental environment.

2A Discuss the regulation of drugs in Canada

- A. Discuss Health Canada drug regulation including scheduling of drugs
- B. Discuss drug approval process in Canada including DIN numbers

2B Discuss prescriptions.

- A. Discuss legal and ethical requirements of prescribers
- B. Describe measurements and abbreviations used for prescription writing
- C. Describe parts of a prescription and information included in each part
- D. Discuss vigilance documentation required by prescribers
- E. Describe ways of preventing prescription drug abuse in the dental office

3. Describe and plan ways to safely and effectively administer local anesthetics in order to achieve pain control.

3A Recall knowledge of pain and pain perception

- A. Discuss theories of chronic vs acute pain

3B Discuss the pharmacology of local anesthetics.

- A. Describe the history of local anesthetics
- B. List properties of an ideal local anesthetic

- C. Describe the basic differences between the ester and amide chemical classifications
- D. Recall knowledge of nerve physiology (from Bio 150/151)
- E. Describe the mechanism of local anesthetic action on nerves
- F. Discuss the pharmacokinetics, pharmacologic effects and adverse reactions of local anesthetic agents
- G. Describe the composition of local anesthetic solutions including the action and purpose of each ingredient
- H. List the concentration, duration and chemical classification of common local anesthetics
- I. Discuss factors to consider when choosing an anesthetic agent
- J. Explain how to calculate maximum dosages for all types and ages of clients
- K. Given information about any client (adult and child), calculate the maximum dosage for any local anesthetic (single agent used, two agents used)

3C Discuss the pharmacology of vasoconstrictors.

- A. Discuss the mode of action of vasoconstrictors
- B. Discuss concentrations of vasoconstrictors
- C. Discuss specific vasoconstrictors used in local anesthetics and their clinical action
- D. Discuss drug interactions with epinephrine
- E. Discuss factors to consider when choosing specific vasoconstrictors
- F. Discuss principles related to buffering anesthetic

3D Discuss topical anesthetics.

- A. Discuss absorption and systematic effects of injectable and non-injectable topical anesthetics
- B. Describe the pharmacology of topical anesthetic agents
- C. Describe indications, contraindications and precautions for using topical anesthetics

3E Describe local anesthesia armamentarium

- A. Describe the dental syringe
- B. Describe needles
- C. Describe anesthetic cartridges
- D. Describe additional armamentarium that can be used for the administration of local anesthetic including safety devices

3F Describe the armamentarium and infection control used during delivery of local anesthesia

- A. Describe a safe and aseptic method for assembling and disassembling a dental syringe, needle and cartridges
- B. Describe safe disposal of dental needles and cartridges
- C. Describe safe needle re-capping procedures

3G Discuss evaluating the client prior to using local anesthetic.

- A. discuss how to determine the need for local anesthetics during comprehensive dental hygiene care
- B. Recall knowledge of health histories (from DHYG 270, 271)
- C. Discuss key questions/responses to review on the health history prior to the administration of local anesthetics, including the significance of "yes" responses
- D. Recall knowledge of vital signs (from DHYG 270, 271)
- E. Discuss vital signs that contraindicate the administration of local anesthetic
- F. Discuss evaluating a client's stress/anxiety associated with local anesthetic
- G. Describe how the problem-solving process can be used to determine if a client is at risk for complications with local anesthetics

3H Describe general principles for local anesthetic injections

- A. Discuss the CDHBC regulations regarding use of local anesthesia
- B. Discuss principles for injecting safely, atraumatically, and comfortably using stable fulcrums
- C. Discuss interpersonal skills appropriate for the administration of local anesthesia for clients of various ages and needs, including anxious clients
- D. Describe appropriate medicolegal documentation for recording local anesthetic injections to comply with CDHBC regulations
- E. Apply principles of risk reduction for operator and client well being
- F. Calculate safe doses of the appropriate amide and vasoconstrictor based on the client's medical history

3I Discuss complications and emergencies

- A. Discuss local complications associated with local anesthesia injections including their prevention and management
- B. Discuss systemic complications associated with local anesthesia injections including their prevention and management
- C. Describe signs and symptoms of impending emergencies
- D. Recall knowledge of basic emergency care (from DHYG 270, 271)
- E. Utilize knowledge of local or systemic complications from local anesthesia, including emergencies to explain appropriate emergency care

3J Describe local anesthetic injections used for dental hygiene care

- A. Recall knowledge of head and neck anatomy/physiology (from DHYG 219)
- B. Define "infiltration, field block and nerve block"
- C. Describe "aspiration" and discuss its purpose
- D. Describe specific injections for maxillary and mandibular anesthesia including a description of the associated anatomy, choice of needle, insertion site, depth of penetration, amount of solution to deposit hard and soft tissues anesthetized with each injection
- E. Describe methods of testing the effectiveness of local anesthesia
- F. Describe how the problem-solving process can be used when lack of anesthesia occurs

3K Discuss modifications and developing trends to the provision of anesthetic techniques used in dentistry

4. Describe select “alternative” or “non-conventional” therapies for pain management.

- A. Discuss alternative or non-conventional therapies
- B. Discuss commonly used herbal/natural preparations used to treat oral condition
- C. Discuss adverse reactions to commonly used herbal/natural preparations

5. Describe various drug classifications used in dental hygiene and dental practice.

5A Describe the characteristics of drugs affecting the autonomic nervous system (ANS)

- A. Recall knowledge of the ANS (from BIOL 150/151)
- B. List the four groups of drugs affecting the ANS
- C. Describe briefly the pharmacologic effects, adverse reactions, contraindications and uses of drugs in each group
- D. List common drugs affecting the ANS

5B Describe the characteristics of non-narcotic analgesics

- A. Differentiate briefly between non-narcotic and narcotic analgesics
- B. Describe groupings of non-narcotic analgesics
- C. Describe the pharmacologic effects, adverse reactions, drug interactions, pharmacokinetics, uses and dosage of aspirin and aspirin-like analgesics and acetaminophen
- D. List and differentiate between common non-narcotic analgesics
- E. Discuss pharmaceutical agents use to treat migraine headaches
- F. Discuss the pharmacologic effects of cannabis

5C Describe opioid analgesics and other prescription medications

- A. Describe the history of opioid use
- B. Describe briefly the pharmacologic effects and adverse reactions to opioids and other prescription pain medications
- C. Describe opioid use and dependence as it relates to dentistry
- D. Discuss the CDHBC regulation for the safe administration of naloxone as a harm reduction agent including the required training
- E. Discuss safe intramuscular injection technique

5D Describe anti-infective/antimicrobial agents

- A. Describe the use of anti-infective agents in dentistry
- B. Define terms used to discuss anti-infective agents including delivery mechanisms
- C. Describe the pharmacokinetics, spectrum, resistance, adverse reactions and uses of common anti-infective/antimicrobial drugs used in dentistry

- D. Describe the use of common antifungal and antiviral agents used in dentistry
- E. Describe conditions requiring antibiotic prophylaxis for the prevention of bacterial endocarditis
- F. Describe the CDHBC recommended antibiotic regimen
- G. Discuss antibiotic stewardship

5E Describe anti-anxiety drugs.

- A. Recall knowledge of dental anxieties (from DHYG 370)
- B. List types of anti-anxiety drugs including sedatives, hypnotics and major and minor tranquilizers
- C. Describe the pharmacokinetics, pharmacologic effects, adverse reactions, indications and uses of common anti-anxiety drugs
- D. Describe anti-anxiety drugs that are commonly prescribed for dental anxiety

5F Describe general and inhalation anesthetics.

- A. describe methods of administering general anesthetic
- B. describe the patient's response during the four stages of anesthesia
- C. Describe the pharmacokinetics, pharmacologic effects, adverse reactions, indications of inhalation anesthetics agents including nitrous oxide
- D. Describe the advantages, safety, contraindications, pharmacologic effects and potential abuse of nitrous oxide in dental and dental hygiene care

5G Describe cardiovascular drugs.

- A. Describe cardiac conditions that require the dental hygienist to consult with the physician prior to dental hygiene care
- B. Describe the pharmacokinetics, pharmacologic effects, adverse reactions, indications and uses of common cardiovascular drug classifications used to manage hypertension, arrhythmias, heart failure, angina, high cholesterol and as blood thinners.
- C. Describe briefly various cardiovascular diseases, and the implications of common drugs for dental and dental hygiene care

5H Describe anticonvulsants.

- A. Describe epilepsy and epileptic seizures
- B. Describe the pharmacokinetics, pharmacologic effects, adverse reactions, indications and uses of common anti-convulsants
- C. Describe the implications of anticonvulsants on dental hygiene care
- D. Describe prevention and treatment of epileptic seizures

5I Describe psychotherapeutic agents.

- A. Describe briefly various psychiatric disorders and depression
- B. Describe the pharmacokinetics, pharmacologic effects, adverse reactions, indications and uses of common of common antipsychotic agents and antidepressants
- C. Describe drug interactions with psychotherapeutic agents that are significant for dental hygiene care

5J Describe antihistamines.

- A. Describe the pharmacokinetics, pharmacologic effects, adverse reactions, indications of histamines and antihistamines
- B. Describe the use of antihistamines in dentistry

5K Describe adrenocorticosteroids and newer drug classifications for inflammatory suppression

- A. Describe general pharmacologic effects, adverse reactions and uses of adrenocorticosteroids
- B. Describe the implications of adrenocorticosteroids for dental care
- C. Describe medications used to treat gastrointestinal diseases including inflammatory bowel disease and other common inflammatory diseases

5L Describe drugs used for endocrine disorders and common hormone therapies

- A. Recall knowledge of hormones and endocrine imbalance (from BIOL 150/151, BIO 260)
- B. Describe general pharmacologic effects, adverse reactions and uses of hormone therapies and drugs used manage endocrine disorders including diabetes
- C. Describe the implications of hormone therapy for dental hygiene care
- D. Describe the implications of drugs used to manage endocrine disorders including diabetes on dental hygiene care

5N Describe respiratory drugs.

- A. Describe general pharmacologic effects, adverse reactions and uses of drugs used to manage respiratory diseases including asthma and COPD
- B. Describe the implications of respiratory and gastrointestinal drugs for dental care

6. Explain how various classifications of prescribed or over-the-counter drugs can affect delivery of both dental hygiene and dental care.

- A. Differentiate between prescription drugs and over-the counter drugs
- B. Discuss the problem of multiple medications particularly with the elderly
- C. Describe briefly pharmacologic agents used to treat common oral pathologies and conditions

| WEEK or DATE RANGE | ACTIVITY or TOPIC | OTHER NOTES |
|--------------------|-----------------------------------|-------------|
| | Refer to D2L for more information | |

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 notice is required. Deadlines can 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 |
|--|--|-------------|
| Naloxone Training and Discussion Board | Upload course certificate to meet learning outcome | 5% |
| Quizzes | Quiz #1 | 32% |
| | Quiz #2 | 30% |
| Exam | Final Exam (3 hr comprehensive) | 33% |
| TOTAL | | 100% |

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

More information is available on D2L

SCHOOL OR DEPARTMENTAL 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

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

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

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.

COLLEGE-WIDE POLICIES, PROCEDURES, REQUIREMENTS, AND STANDARDS

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. To contact the Office of Student Support: 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.