



**CAMOSUN COLLEGE**  
**School of Health & Human Services**  
**Dental Programs**

**DHYG 310 Pharmacology**  
**FALL 2017**

**COURSE OUTLINE**

The Approved Course Description is available on the web @ <http://camosun.ca/learn/school/health-human-services/student-info/archives/index.html?p=DHYG+%28Dental+Hygiene%29>

Ω Please note: This outline will not be kept indefinitely. It is recommended students keep this outline for their records.

**1. Instructor Information**

(a) Instructor	Liz Morch
(b) Office hours	By appointment
(c) Location	D 004
(d) Phone	370-3215 <b>Alternative:</b> _____
(e) E-mail	<a href="mailto:morch@camosun.bc.ca">morch@camosun.bc.ca</a>
(f) Website	D2L <a href="https://.camosun.ca/">https://.camosun.ca/</a>

**2. Course Content and Schedule**

Principles of pharmacology and drug therapy are presented. Drugs used in dentistry are discussed, with special emphasis on drugs and techniques used for pain control. Additional drugs and drug-related issues that have an effect on the delivery of dental care are also studied.

Prerequisite: "B-" or "com" in each of BIOL 260, DHYG 280, DHYG 281  
Co-requisite: DHYG 371.

Course Particulars

- i) Credits: number of credits (3.0)
- ii) Components: Class Hours: 3.5 hours per week x 14 weeks
- iii) Is the course available by distance education? No
- iv) Is prior learning available for this course? No

A weekly schedule of classes will be distributed separately. Students are expected to be prepared for class by reading text chapters and other assigned material.

**3. Required Materials**

(a) Texts

Haveles, E.B.(2015) *Applied Pharmacology for the Dental Hygienist, 7<sup>th</sup> Ed.*: St. Louis, USA: Elsevier

Logothetis, Demetra . (2017)..*Local Anesthesia for the Dental Hygienist 2<sup>nd</sup> Ed* Mosby, St. Louis USA: Elsevier

**4. Intended Learning Outcomes**

Learning Outcomes for DHYG 310	Program (Global) Outcomes
<p>Upon completion of Pharmacology 1, the successful student will:</p> <ol style="list-style-type: none"> <li>1. Describe and apply basic pharmacological concepts and principles, including drug regulations and the issue of drug abuse;</li> <li>2. Describe how various drugs are used in dentistry;</li> <li>3. Plan and describe ways to safely and effectively administer local anesthetics in order to achieve pain control;</li> <li>4. Describe how various groups of drugs can affect dental care;</li> <li>5. Describe how to identify and treat common oral pathologies with both pharmacological and non-pharmacological interventions;</li> <li>6. Describe select “alternative” or “non-conventional” therapies.</li> </ol>	<ol style="list-style-type: none"> <li>A. <i>Function as a professional dental hygienist.</i></li> <li>B. <i>Communicate and collaborate effectively with individuals, family, community and interdisciplinary teams.</i></li> <li>C. <i>Demonstrate critical thinking and use evidence based decision-making to provide optimal dental hygiene services to individuals, families and community.</i></li> <li>D. <i>Advocate improving oral health and access to oral health services for individuals, families and community.</i></li> <li>E. <i>Coordinate and contribute to the effective management of the practice environment to ensure quality care and services.</i></li> <li>F. <i>Function as a competent clinician using the dental hygiene process of care.</i></li> <li>G. <i>Educate individuals, families and community about oral health including its relationship to general health.</i></li> <li>H. <i>Apply health promotion principles to improve the health of individuals, families and community.</i></li> </ol>

## **5. Course Elements**

### **1.0 Upon completion of Pharmacology, the successful student will have an understanding of basic pharmacological concepts and principles, including drug regulation and the issue of drug abuse.**

#### 1A Discuss basic concepts relating to pharmacology.

- .1 - define "pharmacology"
- .2 - discuss pharmacology as it relates to comprehensive dental hygiene and dental care
- .3 - describe common reference texts used for pharmacology
- .4 - define pharmacological terminology including "chemical name, trade or proprietary name, brand name and generic name"
- .5 - discuss the regulation of drugs in Canada and B.C.

#### 1B Describe the characteristics of drug action.

- .1 - describe a drug's potency and efficacy in relation to a dose-effect curve
- .2 - describe factors affecting an individual's response to a drug
- .3 - define "pharmacokinetics" , "pharmacodynamics" and "pharmacogenomics"
- .4 - describe common enteral and parenteral routes of drug administration including the forms of drugs used
- .5 - recall knowledge of cell and organ function (from DHYG BIOL 150/151 and 260)
- .6 - describe mechanisms for drug passage across body membranes
- .7 - describe in general terms the absorption, distribution, metabolism and excretion of drugs
- .8 - describe factors that alter the effects of drugs
- .9 - describe a "placebo" effect

#### 1C Discuss adverse reactions to drugs.

- .1 - differentiate between "therapeutic" and "adverse" effects of drugs
- .2 - describe adverse reactions including toxic reaction, side effect, idiosyncratic reaction, allergy and interference with natural defense mechanisms
- .3 - describe clinical manifestations of adverse reactions
- .4 - define "poly-pharmacy"
- .5 - discuss the addition of sucrose to some medications

#### 1D Describe prescriptions.

- .1 - discuss reasons for a dental hygienist to be knowledgeable about prescription information
- .2 - describe measurements and abbreviations used for prescription writing
- .3 - describe parts of a prescription and information included in each part
- .4 - discuss prescription drug abuse
- .5 - describe ways of preventing prescription drug abuse in the dental office

1E Discuss drug abuse.

- .1 - define terms used to describe drug abuse
- .2 - describe types of drug abuse including patterns of abuse and implications for dental care
- .3 - discuss drug abuse and dental personnel
- .4 - discuss access to and services of the College of Dental Surgeons of B.C.'s confidential Dental Profession Advisory Program

**2.0 Upon completion of Pharmacology, the successful student will have an understanding of the pharmacology of topical and local anesthetics.**

2A Recall knowledge of pain and pain perception (from DHYG 151)

2B Discuss the pharmacology of local anesthetics.

- .1 - describe the history of local anesthetics
- .2 - list properties of an ideal local anesthetic
- .3 - Describe the basic differences between the ester and amide chemical classifications
- .4 - recall knowledge of nerve physiology (from BIOL 150/151)
- .5 - describe the mechanism of local anesthetic action on nerves
- .6 - discuss the pharmacokinetics, pharmacologic effects and adverse reactions of local anesthetic agents
- .7 - describe the composition of local anesthetic solutions including the action and purpose of each ingredient
- .8 - list the concentration, duration and chemical classification of common local anesthetics
- .9 - discuss factors to consider when choosing an anesthetic agent
- .10- explain how to calculate maximum dosages for all types and ages of clients
- .11- given information about any client, calculate the maximum dosage for any local anesthetic

2C Discuss the pharmacology of vasoconstrictors.

- .1 - explain the mode of action of vasoconstrictors
- .2 - discuss concentrations of vasoconstrictors
- .3 - discuss specific vasoconstrictors used in local anesthetics and their clinical action
- .4 - discuss drug interactions with epinephrine
- .5 - discuss factors to consider when choosing specific vasoconstrictors

2D Discuss topical anesthetics.

- .1 - discuss absorption and systematic effects of topical anesthetics
- .2 - describe specific topical anesthetic agents
- .3 - describe indications, contraindications and precautions for using topical anesthetics

**3.0 Upon completion of Pharmacology, the successful student will have the knowledge to safely and effectively administer local anesthetics in order to achieve pain control.**

3A Describe local anesthesia armamentarium

- .1 - describe the dental syringe
- .2 - describe needles
- .3 - describe anesthetic cartridges
- .4 - describe additional armamentarium that can be used for the administration of local anesthetic including safety devices

3B Describe preparation of local anesthesia armamentarium

- .1 - describe a safe and aseptic method for assembling and disassembling a dental syringe, needle and cartridges
- .2 - describe care of used dental needles and cartridges
- .3 - describe routine maintenance procedures for the dental syringe
- .4 - describe safe needle capping procedures and alternatives to needle capping

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

- .1 - discuss how to determine the need for local anesthetics during comprehensive dental hygiene care
- .2 - recall knowledge of health histories (from DHYG 270, 280 )
- .3 - discuss key questions/responses to review on the health history prior to the administration of local anesthetics, including the significance of "yes" responses
- .4 - recall knowledge of vital signs (from DHYG 270, 271)
- .5 - discuss vital signs that contraindicate the administration of local anesthetic
- .6 - discuss evaluating a client's stress/anxiety associated with local anesthetic
- .7 - describe how the problem-solving process can be used to determine if a client is at risk for local anesthetics
- .8 - given comprehensive information for a fictitious client, discuss the client's risk for local anesthesia and choose an appropriate anesthetic solution

3D Describe general principles for local anesthetic injections

- .1 - discuss principles for injecting atraumatically and comfortably
- .2 - discuss interpersonal skills appropriate for the administration of local anesthesia
- .3 - discuss interpersonal skills appropriate for clients of various ages and needs, including anxious clients
- .4 - describe appropriate medicolegal terminology, symbols and abbreviations to use for recording local anesthetic injections

3E Discuss complications and emergencies

- .1 - discuss local complications associated with local anesthesia injections including their prevention and management
- .2 - discuss systemic complications associated with local anesthesia injections including their prevention and management
- .3 - describe signs and symptoms of impending emergencies
- .4 - recall knowledge of basic emergency care (from DHYG 270, 271)
- .5 - given a description of local or systemic complications from local anesthesia, including emergencies, explain appropriate emergency care

3F Describe local anesthetic injections used for dental hygiene care

- .1 - recall knowledge of head and neck anatomy/physiology (from DHYG 219)
- .2 - define "infiltration, field block and nerve block"
- .3 - describe "aspiration" and discuss its purpose
- .4 - 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
- .5 - describe methods of testing for anesthesia
- .6 - describe how the problem-solving process can be used when lack of anesthesia occurs

3G Discuss modifications to anesthetic techniques used in dentistry

- .1 - discuss considerations specific to periodontal care
- .2 - discuss considerations for other dental specialties

**4.0 Upon completion of Pharmacology, the successful student will be familiar with the autonomic group of drugs, narcotic and non-narcotic analgesics, and antimicrobials.**

4A Describe the characteristics of drugs affecting the autonomic nervous system (ANS)

- .1 - recall knowledge of the ANS (from BIOL 150/151)
- .2 - list the four groups of drugs affecting the ANS
- .3 - describe briefly the pharmacologic effects, adverse reactions, contraindications and uses of drugs in each group
- .4 - list common drugs affecting the ANS

4B Describe the characteristics of non-narcotic analgesics

- .1 - recall knowledge of pain and pain perception (from DHYG 245,246, 280)
- .2 - differentiate between pain perception and pain reaction
- .3 - differentiate briefly between non-narcotic and narcotic analgesics
- .4 - describe groupings of non-narcotic analgesics
- .5 - describe the pharmacologic effects, adverse reactions, drug interactions, pharmacokinetics, uses and dosage of aspirin and aspirin-like analgesics and acetaminophen
- .6 - list and differentiate between common non-narcotic analgesics

4C Describe opioid analgesics

- .1 - define "opioid"
- .2 - describe the history of opioid use
- .3 - describe briefly the pharmacologic effects and adverse reactions to opioids
- .4 - describe opioid use and addiction as it relates to dentistry
- .5 - list common opioids including their use

4D Describe anti-infective/antimicrobial agents

- .1 - describe the use of anti-infective agents in dentistry
- .2 - define terms used to discuss anti-infective agents
- .3 - describe sensitivity testing
- .4 - describe the indications and adverse effects of antimicrobial agents
- .5 - describe the pharmacokinetics, spectrum, resistance, adverse reactions and uses of common anti-infective/antimicrobial drugs used in dentistry including penicillin, erythromycin and tetracycline
- .6 - describe the use of common antifungal and antiviral agents used in dentistry
- .7 - describe conditions requiring antibiotic prophylaxis for the prevention of bacterial endocarditis
- .8 - describe the American Heart Associations' recommended antibiotic regimen

4E Describe anti-anxiety drugs.

- .1 recall knowledge of dental anxieties (from DHYG 245)
- .2 list types of anti-anxiety drugs including sedatives, hypnotics and major and minor tranquilizers
- .3 describe the pharmacokinetics, pharmacologic effects, adverse reactions, indications and uses of common anti-anxiety drugs
- .4 describe anti-anxiety drugs that are commonly prescribed for dental anxiety

4F Describe general anesthetics.

- .1 describe methods of administering general anesthetic
- .2 describe the patient's response during the four stages of anesthesia
- .3 describe adverse reactions to general anesthetics
- .4 describe the advantages, safety, contraindications, pharmacologic effects and abuse of nitrous oxide in dentistry
- .5 list common general anesthetics

4G Describe cardiovascular drugs.

- .1 describe cardiac conditions that require the dental hygienist to consult with the dentist and/or the dentist to consult with the patient's physician
- .2 describe briefly various cardiovascular diseases, drugs used to treat them and the implications of the drugs for dental and dental hygiene care

- 4H Describe anticonvulsants.
- .1 describe epilepsy and epileptic seizures
  - .2 describe drugs used to control epilepsy and their implications for dental and dental hygiene care
  - .3 describe prevention and treatment of epileptic seizures
- 4I Describe psychotherapeutic agents.
- .1 describe briefly various psychiatric disorders and depression
  - .2 describe general pharmacologic effects and adverse reactions of common antipsychotic agents and antidepressants
  - .3 describe drug interactions with psychotherapeutic agents that are significant for dental care
- 4J Describe antihistamines.
- .1 describe the pharmacologic effects and adverse reactions of histamines and antihistamines
  - .2 describe the use of antihistamines in dentistry
- 4K Describe adrenocorticosteroids.
- .1 define terms relating to adrenocorticosteroids
  - .2 describe general pharmacologic effects, adverse reactions and uses of adrenocorticosteroids
  - .3 describe the implications of adrenocorticosteroids for dental care
- 4L Describe drugs used for common hormone therapies.
- .1 recall knowledge of hormones and endocrine imbalances (from BIOL 150/151, BIO 260)
  - .2 describe common hormone therapies
  - .3 describe the implications of hormone therapy for dental care
- 4M Describe antineoplastic agents.
- .1 describe the use and adverse effects of antineoplastic agents
  - .2 describe the implications of antineoplastic drugs and treatment for dental care
- 4N Describe respiratory and gastrointestinal drugs.
- .1 describe the use of respiratory and gastrointestinal drugs
  - .2 describe the implications of respiratory and gastrointestinal drugs for dental care



- 40 Discuss the range of medications that a patient may be taking.
- .1 differentiate between prescription drugs and over-the counter drugs
  - .2 discuss the problem of multiple medications particularly with the elderly
  - .3 discuss the importance of obtaining information about a patient's current and recent medications during a health history
  - .4 recognize the most commonly prescribed drugs currently used in our society.

**5.0 Upon completion of Pharmacology, the successful student will have the knowledge to identify and treat common oral pathologies with both pharmacological and non-pharmacological interventions.**

- .1 recall knowledge of oral pathologies (from DHYG 321)
- .2 describe the pharmacology of drugs used in dentistry
- .3 describe briefly pharmacologic agents used to treat common oral pathologies and conditions
- .4 recall pharmacology agents used in medical emergencies within the dental office (from DHYG 270, 370)

**6.0 Upon completion of Pharmacology, the successful student will be familiar with several "alternative" or "non-conventional" therapies.**

- .1 describe several alternative or non-conventional therapies
- .2 discuss the treatment of several medical conditions or ailments using non-conventional or alternative therapies

**6. Basis of Student Assessment (Weighting)**

- (a) Assignments  
none
- (b) Quizzes/Tests  
2 @ 33% of final grade
- (c) Exams  
1 @ 34% of final grade ( note 3 hour comprehensive final)

## 7. Grading System

- Standard Grading System (GPA)
- Competency Based Grading System

### A. GRADING SYSTEMS <http://www.camosun.bc.ca/policies/policies.php>

#### 1. Standard Grading System (GPA)

Percentage	Grade	Description	Grade Point Equivalency
90-100	A+		9
85-89	A		8
80-84	A-		7
77-79	B+		6
73-76	B		5
70-72	B-	<b>PASSING GRADE for Dhyg courses</b>	4
65-69	C+	Minimum level has not been achieved.	3
60-64	C		2
50-59	D		1
0-49	F		0

### B. Temporary Grades

Temporary grades are assigned for specific circumstances and will convert to a final grade according to the grading scheme being used in the course. See Grading Policy at <http://camosun.ca/search/?q=grading+policy> for information on conversion to final grades, and for additional information on student record and transcript notations.

Temporary Grade	Description
I	<i>Incomplete:</i> A temporary grade assigned when the requirements of a course have not yet been completed due to hardship or extenuating circumstances, such as illness or death in the family.
IP	<i>In progress:</i> A temporary grade assigned for courses that are designed to have an anticipated enrollment that extends beyond one term. No more than two IP grades will be assigned for the same course.
CW	<i>Compulsory Withdrawal:</i> A temporary grade assigned by a Dean when an instructor, after documenting the prescriptive strategies applied and consulting with peers, deems that a student is unsafe to self or others and must be removed from the lab, practicum, worksite, or field placement.

## **8. Recommended Materials or Services to Assist Students to Succeed Throughout the Course**

### **LEARNING SUPPORT AND SERVICES FOR STUDENTS**

There are a variety of services available for students to assist them throughout their learning. This information is available in the College Calendar, Student Services or the College web site at <http://www.camosun.bc.ca>

Also, refer to the resources for learning section of the DHYG student handbook.

### **STUDENT CONDUCT POLICY**

There is a Student Conduct Policy. It is the student's responsibility to become familiar with the content of this policy. The policy is available in each School Administration Office, Registration, and on the College web site in the Policy Section. Additional information regarding the dental hygiene program is in the student handbook.

<http://camosun.ca/learn/calendar/current/pdf/academic-policies.pdf>