



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

**DHYG 210 Pharmacology 1**  
**FALL 2012**

**COURSE OUTLINE**

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The Approved Course Description is available on the web @ <http://www.camosun.bc.ca/calendar/current/web/dhyg.html#DHYG210>

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

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**1. Instructor Information**

(a) Instructor	Dr. B. Bassett
(b) Office hours	By appointment
(c) Location	D 111
(d) Phone	370-3176 <b>Alternative:</b> _____
(e) E-mail	<a href="mailto:bassetw@camosun.bc.ca">bassetw@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 and the specific drugs and techniques of pain control used in dentistry are discussed. The successful completion of the local anesthesia portion of this course is required before a student is allowed to deliver local anesthetics in the clinical setting.

Prerequisite: "B-" in DHYG 162.

Co-requisite: DHYG 260.

Course Particulars

- i) Credits: number of credits (1.5)
- ii) Components: Class Hours: 2 hours per week x 14 weeks / Seminar hours 0 / Practicum hours 0 / Lab hours 0 / Out of class hours 2 hours per week.
- 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
  - Applied Pharmacology for the Dental Hygienist, 6<sup>th</sup> ed. 2011, Haveles, E.B., Mosby, St. Louis, 2007.
  - Handbook of Local Anesthesia, 6<sup>th</sup> ed., Malamed, S.F., Elsevier Mosby, St. Louis, 2013
- (b) Other
  - Lecture guide and manual for Pharmacology 1: Local Anesthesia and Pharmacology, Dr. B. Bassett, Camosun College Bookstore, 2012

### 4. Intended Learning Outcomes

Learning Outcomes for Dhyg 210	Program (Global) Outcomes
<p>Upon completion of Pharmacology 1, the successful student will:</p> <ol style="list-style-type: none"> <li>1. have an understanding of basic pharmacological concepts and principles, including drug regulations and the issue of drug abuse;</li> <li>2. have an understanding of the pharmacology of topical and local anesthetics;</li> <li>3. have the knowledge to safely and effectively administer local anesthetics in order to achieve pain control;</li> <li>4. be familiar with the autonomic group of drugs, narcotic and non-narcotic analgesics, and antimicrobials.</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 1, the successful student will have an understanding of basic pharmacological concepts and principles, including drug regulation and the issue of drug abuse.**
  - 1.1 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.

1.2 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"
- .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

1.3 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

1.4 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

1.5 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 1, the successful student will have an understanding of the pharmacology of topical and local anesthetics.**

2.1 Recall knowledge of pain and pain perception (from DHYG 151)

2.2 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

2.3 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

2.4 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 1, the successful student will have the knowledge to safely and effectively administer local anesthetics in order to achieve pain control.**

3.1 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

3.2 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

3.3 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 160, 161,162)
- .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 161)
- .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

### 3.4 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

### 3.5 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 161 and 162)
- .5 - given a description of local or systemic complications from local anesthesia, including emergencies, explain appropriate emergency care

### 3.6 Describe local anesthetic injections used for dental hygiene care

- .1 - recall knowledge of head and neck anatomy/physiology (from DHYG 180)
- .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

### 3.7 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 1, the successful student will be familiar with the autonomic group of drugs, narcotic and non-narcotic analgesics, and antimicrobials.**

### 4.1 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

#### 4.2 Describe the characteristics of non-narcotic analgesics

- .1 - recall knowledge of pain and pain perception (from DHYG 150)
- .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

#### 4.3 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

#### 4.4 Describe antiinfective/antimicrobial agents

- .1 - describe the use of antiinfective agents in dentistry
- .2 - define terms used to discuss antiinfective 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 antiinfective/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

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

- (a) Assignments  
none
- (b) Quizzes/Tests  
2 @ 30% of final grade each
- (c) Exams  
1 @ 40% of final grade

## 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/learn/calendar/current/pdf/academic-policies.pdf> 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>