



CAMOSUN COLLEGE  
School of Arts & Science  
Department of Chemistry & Geoscience

CHEM-121-001  
College Chemistry 2  
Winter 2019

## COURSE OUTLINE

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The course description is online @ <http://camosun.ca/learn/calendar/current/web/chem.html>

Ω Please note: This outline will not be kept indefinitely. It is recommended students keep this outline for their records, especially to assist in transfer credit to post-secondary institutions.

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### 1. Instructor Information

(a) Instructor	John Lee		
(b) Office hours	See Posted Hours on Office Door		
(c) Location	F348 D		
(d) Phone	3436	Alternative:	
(e) E-mail	leejohn@camosun.ca		
(f) Website	D2L		

### 2. Intended Learning Outcomes

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

1. Utilize the specialized vocabulary and nomenclature based on the IUPAC system of organic compounds to name and draw structures for many simple organic compounds containing the common functional groups.
2. Write chemical reactions to illustrate numerous transformations between organic functional groups.
3. Draw structural and stereoisomers of organic compounds and name stereoisomers based upon the IUPAC system of nomenclature.
4. Demonstrate an understanding of the factors that influence the rate of a chemical reaction, deduce the rate of a chemical reaction from time/concentration data, and utilize rate laws to perform kinetic calculations.
5. Apply the laws of thermodynamics and account for the factors that lead to spontaneous physical and chemical changes.
6. Explain how and why reactions attain equilibrium positions and perform calculations pertaining to equilibrium systems.
7. Describe redox reactions, use electrochemical data to predict the spontaneity of redox reactions, and comprehend the structures of electrochemical cells.
8. Describe various acid-base theories and apply these theories to acid-base reactions in aqueous solution.
9. Perform experiments in the areas of preparative organic, preparative inorganic, physical and analytical chemistry and use the various associated pieces of laboratory equipment.

### 3. Required Materials

- (a) (a) **My Lab and Mastering Course Code.** A My Lab and Mastering Access Code can be purchased from the Camosun Bookstore. **Your Course code is valid for multiple courses for 2 years from purchase. So if you already have a code (from Chemistry 120) there is no need to get another.**

If you have previously purchased a new textbook (Custom Camosun Edition) or ebook (see below) then this includes a My Lab Mastering Chemistry Course Code.

- (b) Other  
**Chemistry 121 Laboratory Manual.**

#### Other Recommended Materials for the Course

Chemistry, The Central Science, Brown, Le May, Bursten. *Custom Camosun Edition*. \$175. (For hard copy, ebook access and My Lab and Mastering course code). ebook and My Lab Mastering course code only \$114.

The 2<sup>nd</sup> and 1<sup>st</sup> Australian editions of this textbook are also acceptable. **Note: New textbooks come with a My Lab Mastering Chemistry Code.**

### 4. Course Content and Schedule

Subject	Material Covered	Classes (approximate)
Organic Chemistry	Alkane/Alkenes structure and properties, including naming simple cycloalkanes/ cycloalkenes, reactions and stereochemistry, functional groups and some reactions. Polymers depending on schedule.	12
Chemical Kinetics	Reaction rates, change in concentration with time, temperature and rate, reaction mechanisms and catalysis	5
Thermochemistry	Energy, first law of thermodynamics, enthalpy, calorimetry, Hess' Law, enthalpies of formation	3
Thermodynamics	Spontaneity, second law of thermodynamics, entropy, Gibbs Free Energy, free energy and temperature, free energy and equilibrium	3
Equilibrium	Equilibrium constants, heterogeneous equilibria, working with equilibrium constants	4
Acids and Bases	Acids and bases, pH scale, $K_a$ and $K_b$ , auto-ionization of water, acid strength of ions	3
Aqueous equilibria	Titrations, buffers	2
Electrochemistry	Redox reactions, balancing redox equations, half cells and the Nernst equation	3

Lecture Times: Tuesday WT 225, Thursday Y 300, Friday E 344: 1.30 - 2.20 pm

Laboratory Time: Monday: 12.30 to 3.20 pm in F 356 with Silvija Smith

#### [Winter 2019– Chem 121-001 Provisional Lab Schedule](#)

Monday, 12:30-3:20 pm in Fisher 356

Note: This is only a preliminary lab schedule, changes will be made due to equipment &/or scheduling. Lab coat and eye protection are both mandatory and **ARE NOT PROVIDED BY THE DEPARTMENT.**

Week Number Begins on	Activity & Experiment Number	Actual Date of Lab Monday
I Jan 7 <sup>th</sup>	Lab Orientation and Safety	Jan 7 <sup>th</sup>
II Jan 14 <sup>th</sup>	Synthesis of Aspirin	Jan 14 <sup>th</sup>
III Jan 21 <sup>st</sup>	Synthesis of Banana Oil	Jan 21 <sup>st</sup>
IV Jan 28 <sup>th</sup>	Extraction of Caffeine	Jan 28 <sup>th</sup>
V Feb 4 <sup>th</sup>	Analysis of an Unknown Acid	Feb 4 <sup>th</sup>
VI Feb 11 <sup>th</sup>	Midterm 1	Feb 11 <sup>th</sup>
VII Feb 18 <sup>th</sup>	COLLEGE CLOSED FOR READING WEEK	Feb 18 <sup>th</sup>
VIII Feb 25 <sup>th</sup>	[Reaction Rate of Bleach with Blue Dye]	Feb 25 <sup>th</sup>
IX Mar 4 <sup>th</sup>	Thermochemistry	Mar 4 <sup>th</sup>
X Mar 11 <sup>th</sup>	Gravimetric Determination of Chloride	Mar 11 <sup>th</sup>
XI Mar 18 <sup>th</sup>	pKa and pH of Acetic Acid	Mar 18 <sup>th</sup>
XII Mar 25 <sup>th</sup>	Midterm 2	Mar 25 <sup>th</sup>
XIII Apr 1 <sup>st</sup>	Copper(I) chloride	Apr 1 <sup>st</sup>
XIV Apr 8 <sup>th</sup>	Material Review	Apr 8 <sup>th</sup>
Final Exam Period	Final Exams Apr 15 <sup>th</sup> to Apr 23 <sup>rd</sup>	

<http://camosun.ca/events/important-dates.html?y=2019>

## 5. Basis of Student Assessment (Weighting)

The course mark will be derived in the following manner:

- 2 Midterm tests: 10 % each.
- A 3 hour written final examination covering all the material in the course: 30 %
- Online mastering assignments: up to 20 %
- Laboratory component: 25 %

If it is advantageous to the student the theory mark will solely be derived from the final examination, or a combination of midterm(s), and online homework and final. In the event of a midterm test being missed due to illness/other commitments the weight of the missed test will be carried over to the final. There are no make-up dates for midterms.

**You must pass the laboratory section of the course to be eligible to pass the course.**

## 6. Grading System

Standard Grading System (GPA)

Competency Based Grading System

## 7. Recommended Materials to Assist Students to Succeed Throughout the Course

n/a

## 8. College Supports, Services and Policies



### Immediate, Urgent, or Emergency Support

If you or someone you know requires immediate, urgent, or emergency support (e.g. illness, injury, thoughts of suicide, sexual assault, etc.), **SEEK HELP**. Resource contacts @ <http://camosun.ca/about/mental-health/emergency.html> or <http://camosun.ca/services/sexual-violence/get-support.html#urgent>

### College Services

Camosun offers a variety of health and academic support services, including counselling, dental, disability resource centre, help centre, learning skills, sexual violence support & education, library, and writing centre. For more information on each of these services, visit the **STUDENT SERVICES** link on the College website at <http://camosun.ca/>

### College Policies

Camosun strives to provide clear, transparent, and easily accessible policies that exemplify the college's commitment to life-changing learning. It is the student's responsibility to become familiar with the content of College policies. Policies are available on the College website at <http://camosun.ca/about/policies/>. Education and academic policies include, but are not limited to, Academic Progress, Admission, Course Withdrawals, Standards for Awarding Credentials, Involuntary Health and Safety Leave of Absence, Prior Learning Assessment, Medical/Compassionate Withdrawal, Sexual Violence and Misconduct, Student Ancillary Fees, Student Appeals, Student Conduct, and Student Penalties and Fines.

### A. GRADING SYSTEMS <http://camosun.ca/about/policies/index.html>

The following two grading systems are used at Camosun College:

#### 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-		4
65-69	C+		3
60-64	C		2

50-59	D		1
0-49	F	Minimum level has not been achieved.	0

## 2. Competency Based Grading System (Non GPA)

This grading system is based on satisfactory acquisition of defined skills or successful completion of the course learning outcomes

Grade	Description
COM	The student has met the goals, criteria, or competencies established for this course, practicum or field placement.
DST	The student has met and exceeded, above and beyond expectation, the goals, criteria, or competencies established for this course, practicum or field placement.
NC	The student has not met the goals, criteria or competencies established for this course, practicum or field placement.

## 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/about/policies/index.html> 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.