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

CHEM-121-001
College Chemistry 2
Summer 2020

COURSE OUTLINE

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	Dr. Tatiana Popa		
(b) Office hours	Online by appointment		
(c) Location			
(d) Phone		**Alternative:**	
(e) E-mail	PopaT@camosun.bc.ca		
(f) Website	D2L		

2. Intended Learning Outcomes

(If any changes are made to this part, then the Approved Course Description must also be changed and sent through the approval process.)

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) **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, then this includes a My Lab Mastering Chemistry Course Code.

(b) Other
Chemistry 121 Laboratory Manual – posted on D2L

Other Recommended Materials for the Course

Chemistry, The Central Science, Brown, le May, Bursten. *Custom Camosun Edition.* The 2nd and 1st 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	Lecture Hours (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.	**10**
Chemical Kinetics	Reaction rates, change in concentration with time, temperature and rate, reaction mechanisms and catalysis	**6**
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, Ka and Kb, auto-ionization of water, acid strength of ions	**4**
Aqueous equilibria	Titrations, buffers	**2**
Electrochemistry	Redox reactions, balancing redox equations, half cells and the Nernst equation	**4**

Lecture	Mon, Wed, Fri	9:30 am - 11:20 pm
Laboratory	Tue, Thu	9:30 pm – 12:20 pm

Test I	Thursday	May 21st	(Lab period)	D2L
Test II	Tuesday	June 9th	(Lab period)	D2L

Summer 2020 – Chem 121 Lab Schedule

Week I	Lab Safety	Lab Safety Quiz due **Thursday, May 7th**
	Experiment 1 – Synthesis of aspirin	Pre-lab Assignment and Lab Report due **Thursday, May 14th**
Week II	Experiment 2 – Extraction of caffeine	Pre-lab Assignment and Lab Report due **Tuesday, May 19th**
	Experiment 3 - Synthesis of Banana Oil	Pre-lab Assignment and Lab Report due **Tuesday, May 26th**
Week III	Experiment 5 - Analysis of an Unknown Acid	Pre-lab Assignment and Lab Report due **Thursday, May 28th**
	Midterm I	9:30 – 11:30, **Thursday, May 21st**
Week IV	Experiment 6 - The Rate of Reaction between Bleach and Blue Dye	Pre-lab Assignment and Lab Report due **Thursday, June 4th**
Week V	Experiment 7 - Thermochemistry	Pre-lab Assignment and Lab Report due **Thursday, June 11th**
Week VI	Midterm II	9:30 – 11:30, **Tuesday, June 9th**
	Experiment 9 - pH measurements and the pKa of Acetic Acid	Pre-lab Assignment and Lab Report due **Tuesday, June 16th**
Week VII	Experiment 10 - Redox Reactions	Pre-lab Assignment due **Thursday, June 18th**

The Laboratory Grade

Each lab has 2 components, the Pre-Lab Assignment and the Lab Report.

Pre-Lab Assignments can be found in the lab manual and can be completed after reading through the lab protocol. They must be submitted before the due date. Late pre-labs are not accepted. Pre-lab assignments count 35% toward the final lab grade.

Lab Reports are to be submitted before the due date. Each student must hand in their own work. Lab reports count 65% toward the final lab grade. Late reports, with a late penalty of 20%, are accepted up to

a week after the deadline. **Plagiarized lab reports are subject to academic penalties** – see section 8 below.

5. Basis of Student Assessment (Weighting)

The course mark will be derived in the following manner:

a) Online mastering assignments: 20 %

Homework 1 - 8 : total of 196 points

Online assignment marks may not be carried over so you must **complete these before the due date. You usually have several weeks to do these assignments so no excuses will be accepted, no exceptions.**

b) Laboratory component: 20 %

To write the final exam you must achieve a minimum final score of **50%** on laboratory work, and you must pass **both** the lecture portion and the laboratory portion in order to pass the course.

The laboratory component will be online. Students will watch online videos, work with provided experimental data, and complete pre-lab assignments and laboratory reports. There are the deadlines for the assignments and lab reports, however students are more than welcome to work ahead of the class schedule. Lab reports and pre-lab assignments need to be written electronically and submitted as pdf on D2L, otherwise a mark of zero will be given.

c) 2 Midterm Tests: 15 % each.

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.

Each test will be written online as a D2L Quiz. Students are encouraged to attempt both tests. Test score that is not as high as that of the final exam will be dropped automatically and its weight redistributed to the final exam. However, anyone who is caught cheating will receive zero for that test which will not be redistributed.

Student must write each test during the lab period as scheduled for his/her section. No one can write late and there will be no makeup test, no exceptions.

d) A 3-hour written final examination covering all the material in the course: 30 %

The final exam will be written online as a D2L Quiz.
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 final.

Students are required to check D2L regularly.

6. Grading System

(If any changes are made to this part, then the Approved Course description must also be changed and sent through the approval process.)
(Mark with "X" in box below to show appropriate approved grading system – see last page of this template.)

X	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	*Incomplete*: 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	*In progress*: 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	*Compulsory Withdrawal*: 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.