



**YUKON COLLEGE**

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Course Outline prepared by Tom McBee, JANUARY 6, 2014

Yukon College  
P.O. Box 2799  
Whitehorse, YT  
Y1A 5K4

**Introduction to Chemistry II**

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**INSTRUCTOR:** Tom McBee  
**OFFICE HOURS:** TBA  
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**COURSE OFFERING** January 7, 2014 to April 24, 2014  
**DAYS & TIMES:** Lectures: Tuesday, and Thursday 10:30 a.m. to 12:00 noon.  
Wednesday 1:00 p.m. to 2:30 p.m.  
Labs: Wednesday: 1:00 p.m. to 4:00 p.m.

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**COURSE DESCRIPTION**

Chemistry 060 involves the study of organic chemistry, biochemistry; gases, acids and bases, equilibrium, electrochemistry, and nuclear chemistry

**LEARNING OUTCOMES:**

Upon completion of Chemistry 060, students will be able to:

- Obtain the prerequisite body of knowledge and skills that will provide a basis for further academic and career/vocational training.
- Appreciate and apply the chemistry of everyday life.
- Appreciate and apply the scientific method to investigations of all phenomena.
- Communicate effectively, particularly to the scientific community using the language of chemistry.
- Carry out all duties in an ethical, professional manner, including the collection of data.
- Work effectively as a member of a team.
- Handle equipment and chemicals in a safe and effective manner with regard to their own safety and the safety of others.

## **DELIVERY METHOD/FORMAT:**

This class is offered by lecture format at Ayamdigut Campus only. Slightly more than half the Wednesday classes will be labs from 1:00 p.m. until completion on or before 4:00 p.m.; the remaining Wednesdays will be regular classes from 1:00 a.m. until 2:30 p.m. A schedule with labs times will be made available.

## **PREREQUISITES:**

High school Mathematics grade 11 (with Algebra) or Yukon College Math 050 or any college equivalent. High School Chemistry 11, Yukon College Chemistry 050, or the equivalent with a grade of 65% or higher. A demonstrated writing ability is required.

## **COURSE REQUIREMENTS/EVALUATION:**

### **Attendance Policy**

It is the student's responsibility to attend classes. Students who miss classes are responsible for any work missed.

Students must attend the laboratory sessions in order to submit a report. Students arriving late to a laboratory session may be refused entry.

### **Assignments**

There are six assignments to be completed. Late assignments will be docked 10%; however, assignments cannot be accepted after they have been returned to the class. A student planning to be away on the due date must submit the assignment prior to leaving. If the due date is missed owing to an emergency, an alternate assignment may be given.

### **Labs**

7 lab sessions with 8 labs in total will be completed. Each of the 8 labs requires a detailed lab report due one week after the lab session. The collection of data must be done in the laboratory or classroom; the calculations and write-up can be done at home, therefore students must attend the lab session in order to submit a report; For this reason, consult the schedule and make any necessary arrangements. There will be 10% deducted for late reports unless prior permission has been received from the instructor. It is the students' responsibility to attend class. Late reports will receive deductions regardless of absences. Reports will usually be returned the class after the due date. Once reports have been returned they will no longer be accepted. **Students must achieve a minimum of 50% on the laboratory component to pass the course.**

## Examinations

There is a midterm and cumulative final examination with topics and weighting shown below.

The examinations are "closed book" though a data sheets will be provided.

## Evaluation

Assignments		20%
Labs*		30%
Midterm Exam:	Chapters 20, 21, 13	20%
Final Exam:	Ch 20, 21, 13, with emphasis on 16, 17, and 18	<u>30%</u>
Total		100%

\* A minimum 50% score must be obtained in the labs in order to receive credit for the course.

Yukon College uses a letter grade system and calculates weighted grade point averages (GPA) on a 4.0 scale. Following are equivalents of the letter grades:

LETTER GRADE	PERCENTAGE EQUIVALENT	GRADE POINT
A+	95 – 100	4.0
A	86 – 94	4.0
A-	80 – 85	3.7
B+	75 – 79	3.5
B	70 – 74	3.0
B-	65 – 69	2.7
C+	62 – 64	2.5
C	58 – 61	2.0
C-	55 – 57	1.7
D	50 – 54	1.0
F	under 50	0.0

### Rewrites

A rewrite for a failing grade on an examination (less than 50%) may be permitted at the instructor's discretion. These examinations will be written no earlier than two weeks after the date of the original examination. The mark will be recorded whether it is higher or lower than the original. However, a maximum mark of 65% will be awarded.

### "No Shows"

A student who misses an examination will receive a mark of zero for that examination but may be permitted a rewrite. Exceptions may be made if a student receives prior permission from the instructor, or faces an emergency. Some form of documentation of the emergency may be required.

### **Plagiarism**

Plagiarism involves representing the words of someone else as your own, without citing the source from which the material is taken. If the words of others are directly quoted or paraphrased, they must be documented according to standard procedures (APA). The resubmission of a paper for which you have previously received credit is considered a form of plagiarism.

Plagiarism is academic dishonesty, a serious academic offence, and will result in you receiving a mark of zero (F) on the assignment or the course. In certain cases, it can also result in dismissal from the college. And do not underestimate the impact such a situation will have on your reputation.

### **Electronic Devices**

In order to be successful in classes and minimize distractions for others, cell phones, iPods and other electronic devices must be turned off while students are in class. In an emergency situation, the instructor may give a student permission to use a cell phone or pager.

### **Appropriate Language**

In all areas of the college environment, students are responsible to show respect for others, swearing, or language that is discriminatory or derogatory in relation to race, sex, ethnic background, religious beliefs, age and physical condition is not appropriate.

### **STUDENTS WITH DISABILITIES OR CHRONIC CONDITIONS:**

Reasonable accommodations are available for students with a documented disability or chronic condition. It is the student's responsibility to seek these accommodations. If a student has a disability or chronic condition and may need accommodation to fully participate in this class, he/she should contact the Learning Assistance Centre (LAC) at (867) 668-8785 or [lassist@yukoncollege.yk.ca](mailto:lassist@yukoncollege.yk.ca).

## **REQUIRED TEXTBOOKS/MATERIALS:**

Zumdahl, Steven S. (2008). Introductory Chemistry: A Foundation, (7th ed.)

McBee, Tom. (2011). Yukon College Chemistry 050 Laboratory Manual.

Writing paper, graph paper, ruler, pencils, and a scientific calculator.

Safety classes are required to be worn at all times during the experiments. Safety classes are provided, however, in the interest of comfort, students may wish to purchase their own. Students may also wish to purchase their own lab coat.

## **EQUIVALENCY/TRANSFERABILITY:**

Yukon College Chemistry 060 is articulated as Provincial Chemistry in the Adult Basic Education system (ABE) in British Columbia and Yukon. For more information see page 39 of A.B.E. in B.C. 2013-2014 Articulation Handbook [www.aved.gov.bc.ca/abe/docs/handbook.pdf](http://www.aved.gov.bc.ca/abe/docs/handbook.pdf)

ABE Provincial Chemistry is considered by colleges, institutes and universities in the British Columbia public post-secondary system to be equivalent to MEd Chemistry 12

The British Columbia Ministry of Education credits ABE Provincial Chemistry as a Ministry-Authorized External Credential which is of equivalent or higher standard to other MEd-authorized senior secondary courses, but the learning outcomes differ. For more information see page 58 and 83 of the British Columbia Ministry of Education Handbook of Procedures <http://www.bced.gov.bc.ca/exams/handbook/>

## TOPIC OUTLINE

Chemistry 060 covers the Core Topics for Chemistry: Provincial Level set on page 110 of A.B.E. in B.C. 2013-2014 Articulation Handbook [www.aved.gov.bc.ca/abe/docs/handbook.pdf](http://www.aved.gov.bc.ca/abe/docs/handbook.pdf)

More Specifically:

### Organic Chemistry

- Carbon bonding
- Alkanes
- Isomerism
- Nomenclature, Synthesis and Reactions of:
  - Alkanes                      Substituted alkanes
  - Alkenes                      Alkynes
  - Aromatics                    Alcohols
  - Ethers                        Aldehydes
  - Ketones                      Carboxylic Acids
  - Esters                        Amines
  - Amides
- Polymerization

### Biochemistry

- Proteins: Structure and Functions
- Carbohydrates
- Nucleic Acids
- Lipids

### Gases

- Boyle's Law, Charle's Law, Guy-Lussac's Law, Combines Gas Law
- Avogadro's Law
- Ideal Gas Law
- Partial Pressures
- Kinetic Molecular Theory
- Gas Stoichiometry

### Acids and Bases

- Definitions
- Strength
- Calculations: pH, pOH,  $[H^+]$ ,  $[OH^-]$ , strong acids
- Buffers

### Equilibrium

- Reaction Kinetics and Energetics
- Reaction Rates
- Equilibrium Constant
- Le Châtelier's Principle
- Solubility:  $K_{sp}$  including common ion effect,  $K_a$ , pH of weak acids, buffers

### Electrochemistry

- Oxidation States
- Balancing; Half-Cell Method in Acid Medium
- Electrochemical and Electrolytic Cells
- $E^\circ$  Calculations