Applied Science and Management Division
School of Science
Fall 2015

COURSE OUTLINE

CHEMISTRY 050

Introduction to Chemistry I

98 HOURS
3 CREDITS

PREPARED BY: _____ DATE: June 15, 2015
Tom McBee, Instructor

APPROVED BY: _____ DATE:
Margaret Dumkee, Dean

YUKON COLLEGE

Course Outline prepared by Tom McBee, June 15, 2015

Yukon College
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Applied Science and Management
CHEM 050
3 Credit Course
Fall 2015

Introduction to Chemistry I

INSTRUCTOR: Tom McBee

OFFICE HOURS: TBA
OFFICE LOCATION: Room A2718

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COURSE OFFERING September 9 to December 18, 2015
DAYS & TIMES: Lectures: Monday, Tuesday, Wednesday and Friday 10:30 a.m. to 12:00 noon
Labs: Tuesday: 10:30 a.m. to 1:00 p.m.
LOCATIONS: Lectures: A2103
Labs: A2803

COURSE DESCRIPTION

Chemistry 050 involves the study of SI measurements, matter and energy, atomic theory to the present day, chemical formulas, nomenclature, bonding, including molecular shape, reactions and equations, stoichiometry, liquids and solutions, acid base chemistry and chemistry of hydrocarbons

LEARNING OUTCOMES:

Upon completion of Chemistry 050, students will be able to:

- Meet the competencies as stated for ABE Advanced Level Chemistry located in the ABE in BC Articulation Handbook http://www.aved.gov.bc.ca/abe/docs/handbook.pdf
- 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 METHODS/FORMAT:

This class is offered by lecture format at Ayamdigut Campus only. Slightly more than half the Tuesday classes will be labs from 10:30 a.m. until completion on or before 1:00 p.m; the remaining Tuesdays will be regular classes from 10:30 a.m. until 12:00 noon. A schedule with labs times will be made available.

PREREQUISITES:

High school Mathematics 11 (with Algebra) or Yukon College Math 050 or any college equivalent is a co-requisite. It is recommended that students complete Math 050 prior to enrolling in Chemistry 050. High school Science 10 or Yukon College Science 040 is strongly recommended.

As there are many laboratory experiments to write up, a demonstrated writing ability is also required. Successful completion of Yukon College English 040 would be considered the minimum.

COURSE REQUIREMENTS/EVALUATION:

Attendance and Participation

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

Assignments

There are twelve assignments to be completed. There will be 10% deducted for late assignments unless prior permission has been received from the instructor. It is the students' responsibility to attend class. Late assignments will receive deductions regardless of absences. A student planning to be away on the due date must submit the assignment prior to leaving. Assignments will usually be returned the class following the due date. Once assignments have been returned to the class, they will no longer be accepted. If the due date is missed owing to an emergency, an alternate assignment may be given.

Labs

There are nine labs in the course. Each of the nine 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 are two examinations.

Evaluation

Assignments		20%
Laboratory mark*		30%
Exam 1*	Chapters 1 to 8	25%
Exam 2*	Chapters 9, 11, 12, 15 & 20	25%
Total		100%

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 (such as APA, MLA, CSE, etc.). 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.

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.

REQUIRED TEXTBOOKS/MATERIALS:

Course Materials:

Zumdahl, Steven S. (2015). Introductory Chemistry: A Foundation, (8th ed.)
McBee, Tom. (2014). 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 050 is articulated as Advanced Algebraic Mathematics in the Adult Basic Education system (ABE) in British Columbia and Yukon. For more information see page 43 of the 2014-2015 edition of the A.B.E. in B.C. Articulation Handbook www.aved.gov.bc.ca/**abe**/docs/handbook.pdf
Or http://www.bctransferguide.ca/program/abe/

ABE Advanced Chemistry is considered equivalent to Chemistry 11 by the British Columbia Ministry of Education. For more information see page 22 of the A.B.E.

Articulation Handbook or search “ABE Advanced Chemistry” at http://www.bced.gov.bc.ca/datacollections/course_registry_web_search/simple-search.php

TOPIC OUTLINE/SYLLABUS (since 1992, topics in italics added 2007)

Chemistry 050 covers the Core Topics for Chemistry: Advanced Level set out in A.B.E. in B.C. Articulation Handbook http://www.aved.gov.bc.ca/abe/docs/handbook.pdf

More Specifically:

The Scientific Method

Measurements and Calculations

- Scientific Notation
- SI units
- Uncertainty, Significant Figures
- Dimensional Analysis

Matter and Energy

- Matter
- Physical and Chemical Properties
- Physical and Chemical Changes
- Mixtures and Pure Substances

Elements, Atoms, and Ions

- Dalton's Atomic Theory
- Modern Concepts of the Atom
- Isotopes
- Periodicity and the Periodic Table
- Quantum Theory
- The Bohr Model of the Atom
- The Wave Mechanical Model of the Atom
- Atomic Properties: atomic size, ionization energy

Inorganic Nomenclature

- Compounds Containing Metals and Non-metals
- Compounds Containing only Non-metal
- Polyatomic Ions
- Compounds Containing Transition Metals
- Acids

Chemical Reactions

- Evidence
- Writing Chemical Equations
- Balancing Reactions
- Reactions Types: Precipitation, Acid Base, Redox
- Predicting Reactions: Precipitation, Acid Base, Redox

Stoichiometry

- The Mole
- Molar Mass
- Percent Composition
- Mole-Mole relationships
- Mass Calculations
- Limiting Reagent Calculations
- Percent Yield

Chemical Bonding

- Electronegativity
- Bond Types
- Polarity
- Lewis Structures, simple *and complex*
- *Molecular Structure, VSEPR*

Solutions

- Percent Composition (v/v, m,/m m/v)
- Molarity
- Dilution
- Solution Stoichiometry
- Neutralization Reactions and Titrations

Organic Chemistry

- *Carbon Bonding*
- *Alkanes*
- *Structural Formulas and Isomerism*
- *Nomenclature*
- *Reactions of Alkanes*
- *Nomenclature and Reactions of Alkenes, Alkynes, Aromatics*
- *Functional Groups*