CAPILANO UNIVERSITY COURSE OUTLINE	
Term: **Fall 2014**	Course No. **CHEM 101**
Course: **FUNDAMENTALS OF CHEMISTRY**	Credits: **4.0**
Instructor: **TBA** Office: **TBA** Tel: **604-986-1911 (Ext. TBA)** email: tba@capilanou.ca web:	

COURSE FORMAT: Three hours of class time, two lab hours plus an additional hour of supplemental activity delivered through on-line or other activities for a 15 week semester, which includes two weeks for final exams.

PRE-REQUISITES: Chemistry 11 or CHEM 030 or CHEM 130 or BCHM 044; Principles Math 11 or Foundations Math 11 or Precalculus 11 or BMTH 054

COURSE OBJECTIVES:

General: The student will:

- gain a depth of understanding of basic chemistry, such that they will be thoroughly prepared for any subsequent chemistry course.
- learn to develop an awareness of the influence of science in our society and realise that science is not just a collection of isolated facts, but a series of interconnecting and overlapping ideas.

Student Learning Outcomes: Upon successfully completing the course, the student should be able to:

- solve problems using scientific notation and dimensional analysis;
- balance chemical equations, solve stoichiometric problems in both solution and gas phases;
- understand the energy relations involved in chemical changes;
- solve problems in calorimetry;
- have an understanding of basic nuclear reactions; and
- solve problems in radioactive dating.

REQUIRED COURSE MATERIALS:

Textbook: Chang, R. and Goldsby, K. Chemistry 101 – Custom Publication. 11th ed. New York: McGraw-Hill, 2012.

Capilano University Chemistry 101 Laboratory Manual and Student Laboratory Guide.
(optional: Quiz and Midterm Practice Book)

COURSE CONTENT:

Topic	Weeks (approx)
Introductory Material Basic definitions; matter; measurement and error; scientific notation, significant figures; dimensional (unit) analysis.	1-2
Atoms, Molecules & Ions Structure of the atom; atomic and mass number; isotopes; atomic mass; Avogadro's constant and the mole; chemical bonding; molecules, formulae, molar mass; ions and ionic compounds; percent composition; inorganic nomenclature.	2-3
Chemical Reactions Chemical equations; stoichiometry; solution concentrations; dilutions; limiting reactant; theoretical yield and percent yield.	4-5
Reactions in Aqueous Solutions Aqueous solutions; precipitation reactions and net ionic equations; acid-base reactions; oxidations states and balancing redox reactions.	6-7
Gases Properties of gases; gas laws; the ideal gas equation and its use in calculations; gas stoichiometry problems and a brief examination of Dalton's Law of partial pressures.	8-9
Thermochemistry Energy changes in chemical reactions; enthalpies of reaction and calorimetry; thermochemical equations and Hess's Law.	10-11
Nuclear Chemistry The student will look at different types of radioactive decay, dating of objects and examine nuclear stability. We will also briefly look at nuclear fission and fusion and the effects of radiation.	12-13
Final Exam Period	14,15

EVALUATION PROFILE:

Final grades for the course will be computed based on the following schedule:

Term Tests (2)	40%
Labs	15%
Final Examination	35%
Performance Evaluation	10%
TOTAL	100%

A pass grade of 50% or above is required on each of the laboratory and lecture portions of the course for the student to pass the course.

Please note that lab exemptions are granted at the discretion of the instructor.

PERFORMANCE EVALUATION:

In the absence of exceptional circumstances, which are at the instructor's discretion, the performance evaluation component of the final grade will be prorated to the rest of the grade. For example, a 10% performance evaluation component would be determined by dividing the remaining mark out of 90 by 9. The most common circumstance justifying an increased performance evaluation mark is a student's improved performance in the final examination relative to the midterm exam(s), which the instructor feels justifies an elevated letter grade.

SUPPLEMENTAL 4TH HOUR ACTIVITY:

Supplemental activity might be a scheduled tutorial, an on-line activity, a group meeting, or some other activity as indicated by the instructor.

GRADING PROFILE: Letter grades will be assigned according to the following guidelines:

A+ 90 - 100%	B+ 77 - 79%	C+ 67 - 69%	D 50 - 59%
A 85 - 89%	B 73 - 76%	C 63 - 66%	F 0 - 49%
A- 80 - 84%	B- 70 - 72%	C- 60 - 62%	

Students should refer to the University Calendar for the effect of the above grades on grade point average.

OPERATIONAL DETAILS:

University Policies: Capilano University has policies on Academic Appeals (including appeal of final grade), Student Conduct, Cheating and Plagiarism, Academic Probation and other education issues. These and other policies are available on the University website.

Attendance: The student is responsible for all information given in the lectures and laboratories, including times of examinations and assignment deadlines.

Missed Exams and Labs: Normally, a score of zero will be given for a missed exam, test, quiz, lab, etc. In some exceptional situations, the student will

be permitted to write a make-up test, defer the lab to a later date or to replace the score by other marks.

The situations in which a score of zero may be avoided are those for which the student meets **all** of the following conditions:

1. Circumstances are beyond the control of the student which resulted in the exam, test, quiz, lab, etc. to be missed. Such circumstances include serious illness or injury, or death of close family member. They do **NOT** include forgetting about the test, lack of preparation for the test, work-related or social obligations.

2. The student has notified the instructor (or the Pure and Applied Science office staff, if the instructor is not available) about the missed exam, test, quiz, lab, etc. Such notification **MUST** occur in advance, if possible, or at the latest, on the day of the exam, test, quiz, lab, etc.

3. Proof of the circumstances must be provided. Proof of illness or injury requires a note from a doctor, who may also be consulted.

4. The student has been fully participating in the course up until the circumstances that prevented the writing of the exam, test, quiz, lab, etc. **Fully participating means attending almost all classes and turning in almost all assignments in the course**.

The options offered to the student who meets the four conditions are decided by the instructor. They will not necessarily meet the convenience of the student.

Final Exam Period: Students should note that the final exam period is from **(date)** and that they can expect to write exams at any time during this period. Individual exam times will not normally be rescheduled because of holidays, work, or other commitments. While efforts are made to spread exams throughout the exam period, an individual's particular course combination may result in exams being scheduled close together, or spread widely through the entire exam period.

Cheating/Plagiarism: Students caught cheating on a test will normally receive a grade of "F" on the course and may be expelled from the University. Plagiarism (including the copying of any part of assignments, laboratory reports, and essays) is a serious offence and is a form of cheating.

Incomplete Grades: Incomplete grades (“I”) are given only when special arrangements have been agreed upon with the instructor prior to the end of the semester. Since "I" grades are granted only in exceptional circumstances (usually health problems), their

occurrence is rare. A student receiving an "I" grade should see the instructor.

English Usage: Students are expected to use correct standard English in their written and oral assignments, exams, presentations and discussions. Failure to do so may result in reduced grades in any part of the Evaluation Profile. Please refer to the guidelines provided in the Capilano Guide to Writing Assignments (available from the University bookstore).

Emergency Procedures: Please read the emergency procedures posted on the wall of the classroom.