



## CHEMISTRY 1110 (R 11), SPRING 2009

### INSTRUCTOR INFORMATION

**Instructor:** **Dr. Roshan Cader**  
Office 3455, Phone 599-2657, Voice-Mail: 9162  
E-Mail: *Roshan.Cader@kwantlen.ca*

**Office Hours:** Wednesday/ Thursday: 12:00 - 01:00 pm  
( *OTHER TIMES BY APPOINTMENT* )

### GENERAL COURSE INFORMATION

**Credits:** 4, transferable directly to SFU, or to UBC and UVic (with 1210)

**Class Times:** Monday/ Wednesday: 10:00-11:50 am (Room 3310)

**Prerequisites:** Chemistry 1105 (C or better grade) or Chemistry 12 (C+ or better grade).  
Either Math 11 (C or better grade) or Math 0093 (C or better grade) are also  
required. Math 1112, if not already taken, must be taken as a corequisite.

**Instruction Format:** Two lectures per week (two hours each) and one lab per week (three hours).

**Required Material:** CHEMISTRY, M.S. Silberberg, McGraw Hill(2007) 5th ed. Chemistry 1110  
Lab Manual(2009) , one Lab Notebook, a Lab Coat, Safety Glasses, Goggles  
or Side Shields (to be worn with regular glasses); Contact Lenses can not be  
worn in the laboratory. ***Calculator: Aurex SC-6136 calculator. This is the  
only calculator allowed for all the tests in chem1110***  
( *available from the Kwantlen Bookstore for about \$ 8* )

**Supplementary Material:** The Chemistry Department Web Pages contain **Lab Hand-in Sheets (select  
Richmond Campus Section!)**; *Supplemental Course Material; Problem Sets  
with Answers* and copies of past midterm and final exams. This material can  
be accessed at: ***www.kwantlen.ca/science/chemistry*** or *directly at my home  
page : ***www.kwantlen.ca/science/chemistry/faculty/rcader/****

**Optional:** Student Study Guide and Solutions Manual for Silberberg, 5th ed

### EVALUATION

<u>Lecture (70%)</u>		<u>Laboratory (30%)</u>	
<b>Two Exams</b>	40	<b>Lab Reports/Unknowns</b>	22
<b>Final Exam</b>	30	<b>Lab Exam</b>	8

## Attendance:

Students are expected to attend all lectures, tutorials and laboratory sessions. If you miss a lab for a legitimate reason (e.g. illness), please consult your lab instructor about a possible make-up lab. **Make-up tests will not be available; if you miss a test for a legitimate reason, the value of the final exam will be increased accordingly. The Final Examination date is set for April 23, 2009. Do not make any travel plans during this period because you will not be allowed to take any Chemistry Finals earlier than scheduled.**

## IMPORTANT DATES

<b>Jan. 11 (Sunday)</b>	Last day to add a course or to drop a course without a "W" appearing on your transcript
<b>Feb. 16 (Monday)</b>	<b>Exam #1</b>
<b>Feb. 19-20 (Thur./ Fri.)</b>	Reading Break
<b>Feb. 28 (Saturday)</b>	Last day to drop a course ("W" will appear on your transcript)
<b>March 25 (Wednesday)</b>	<b>Exam #2</b>
<b>April 11 (Saturday)</b>	Last day of scheduled classes ( <i>note: wed. April 8<sup>th</sup> last class for this course</i> )
April 23 (Thursday)	Final Examination Day (Room: 2550, Time: 08:00 -11:00 am)

## GRADE GUIDELINES

What follows are the guidelines used to determine your final grade in Chemistry 1105. Satisfactory completion of the laboratory portion of the course (i.e. an overall lab mark of 60% or better) is required to obtain a C or better grade.

<b>Grade</b>	<b>Percent</b>	<b>Requirements</b>
A+	90 - 100	Minimum of 80% on final exam
A	85 - 89	Minimum of 70% on final exam
A-	80 - 84	Minimum of 65% on final exam
B+	76 - 79	Minimum of 60% on final exam
B	72 - 75	Minimum of 60% on final exam
B-	68 - 71	Minimum of 55% on final exam
C+	64 - 67	Minimum of 50% on final exam
C	60 - 63	Minimum of 40% on final exam
C-	56 - 59	Minimum of 40% on final exam
D	50 - 55	Some work can be incomplete
F	<50	

## **CHEMISTRY 1110; COURSE OUTLINE AND SCHEDULE OF TOPICS**

*Text: M.S. Silberberg, McGraw Hill(2007) 5th ed*

**Chapters 1-4 (Introduction and Review Material) and Chapter 5 (Gases) in the textbook are already covered in detail in Chem 11-12/ Chem 1105.** Suggested problems are listed for each chapter but do not restrict yourself to these questions alone. You can also do the additional exercise in the CHEM 1110 Supplement and questions from past exams and final exams. The **Supplemental Material** listed below is from the **CHEM 1110 Surrey Supplement** which can be accessed by going through [www.kwantlen.ca/science/chemistry](http://www.kwantlen.ca/science/chemistry) or *directly at my home page* : [www.kwantlen.ca/faculty/rcader/](http://www.kwantlen.ca/faculty/rcader/) as noted on page one of this handout.

### **Chapters 1,2,3,4 - INTRODUCTION AND REVIEW OF STOICHIOMETRY**

Measurements; significant figures; scientific notation; classification and nomenclature; chemical formulae; stoichiometric calculations including solutions; empirical formula and molecular formula. (3 lectures)

**Supplemental Problem Sets:** "Review and Introductory Material" and "Stoichiometry Problem Set"

**Supplemental Review Material:** Equivalent Masses and Normality & Coping with Significant Figures

### **Chapter 5 - GASES (pp 176-200; 205-206)**

Properties of gases; empirical gas laws(Boyle's and Charles'); ideal gas law; STP conditions; Dalton's law of partial pressures; calculations using gas laws; gas stoichiometry; kinetic theory of gases; molecular velocities; Graham's laws of effusion and diffusion. (1 lecture)

**Suggested Problems Chapter 5:** 5.33, 5.44, 5.48, 5.55, 5.73, 5.75, 5.80.

**Supplemental Problem Set:** Gases Problem Set

### **Chapter 15 and handouts - ORGANIC CHEMISTRY**

IUPAC nomenclature; saturated, unsaturated and aromatic hydrocarbons, alcohols, ethers, carbonyl compounds, amines; cyclical compounds; degree of unsaturation; properties and reactions; structural isomerism, geometrical isomerism, functional and optical isomerism. (7-8 lectures)

**Suggested Problems Organic Section:** Organic Problem Sets 1 – 4; Isomer Problem Sets.

**Supplemental Material:** Organic Chemistry; Glossary of CHEM 1110 Organic Chemistry Terms; Unsaturation or Rings; Naming Organic Compounds.

## **Chapter 7 - ATOMIC STRUCTURE & QUANTUM THEORY**

Experimental basis for modern concepts of the atom; spectra and electromagnetic radiation; Bohr model of the atom and emission spectrum of atomic hydrogen and hydrogen-like species; quantum theory; dual nature of matter; wave mechanical model; Heisenberg uncertainty principle; photoelectric effect; orbitals and quantum numbers. (3-4 lectures)

**Suggested Problems Chapter 7:** 7.16, 7.29, 7.34, 7.48, 7.59, 7.66, 7.81, 7.88.

**Supplemental Problem Sets:** Atomic Structure Problem Set.

## **Chapter 8 - ELECTRONIC CONFIGURATION & CHEMICAL PERIODICITY**

Electronic configurations; interpretation of the periodic table; periodic properties: atomic and ionic sizes; ionization energies; electron affinities. (1-2 lectures)

**Suggested Problems Chapter 8:** 8.9, 8.13, 8.21, 8.35, 8.39, 8.46, 8.48, 8.50, 8.59, 8.78, 8.84, 8.86.

**Supplemental Problem Sets:** Electronic Configurations Problem Set & Periodic Problem Set.

## **Chapters 9, 10 & 11 - MODELS OF CHEMICAL BONDING, SHAPES OF MOLECULES AND THEORIES OF COVALENT BONDING**

Ionic and covalent bonding; Lewis structures; resonance; electronegativities; VSEPR theory and molecular geometry; Valence bond theory; hybridization on central atom of polyatomic species; Molecular Orbital theory applied to diatomic molecules; bond order and magnetic properties. (6 lectures)

**Suggested Problems Chapter 9:** 9.14, 9.35, 9.52, 9.57, 9.61, 9.63, 9.65, 9.67.

**Suggested Problems Chapter 10:** 10.9, 10.13, 10.21, 10.26, 10.36, 10.40, 10.55, 10.57, 10.88.

**Suggested Problems Chapter 11:** 11.5, 11.9, 11.13, 11.23, 11.34, 11.36, 11.40, 11.46.

**Supplemental Problem Sets:** Lewis Dot Structures & Molecular Structure Problem Set; and Molecular Orbitals Problem Set.

**Supplemental Material:** Ion Distortion Approach to Polar Covalent Bonds; Pauling Electronegativity Scale; What's the shape of that molecule? (Parts 1 and 2).

**Chapter 12 - INTERMOLECULAR FORCES AND LIQUIDS (pp 450-456)**

Intermolecular forces (i.e. H-bonding, dipole-dipole, and London forces) (2 lectures)

*Suggested Problems Chapter 12:* 12.37, 12.39, 12.49, 12.51

*Supplemental Problem Sets:* Molecular Orbitals (Problem 4).

*Supplemental Material:* Intermolecular Forces & Boiling Point - Branched Chain vs Straight Chain Alkanes and Alcohols"; "Intermolecular Forces - Functional Groups & Boiling Point".

**Chapter 24 - NUCLEAR CHEMISTRY (pp 1064-1074; 1080-1082)**

Naturally occurring modes of radioactive decay; equations for nuclear reactions. (2 lectures)

*Supplemental Problem Sets:* Nuclear Chemistry Problem Set

# **Kwantlen University College Policy on Plagiarism and Cheating (Policy C.8)**

## **Introduction**

### **1. Definitions**

Cheating, which includes plagiarism, occurs where a student or group of students uses or attempts to use, unauthorized aids, assistance, materials or methods. Cheating is a serious educational offense.

Plagiarism occurs where a student represents the work or ideas of another person as his or her own.

### **Policy**

Kwantlen University College condemns all forms of cheating. If it is determined that a student has cheated, the University College will proceed with discipline in the following manner:

1. For most first offences, a grade of zero will be awarded for the affected assignment, test, paper, analysis, etc.;
2. For most second offences, a failing grade will be assigned in the affected course;
3. Depending upon the circumstances surrounding a first or second offense, a more severe level of discipline may be imposed by the University College;
4. Where deemed appropriate in the circumstances, for any third offence, the matter must be referred to the University College Vice President Learner Support under Policy No. C.21 Student Conduct for the assignment of discipline, which may include suspension or expulsion from the University College.
5. Any student who contributes to an act of academic dishonesty by another student may face disciplinary action. This policy must be communicated in all Course Presentations.

### **Procedural Guidelines**

1. When an instructor or invigilator believes that a student has cheated (which includes intent to cheat), the student will be asked for an explanation of the events that led the instructor or invigilator to make the allegation. If after hearing the explanation, the instructor or invigilator still believes that the student has cheated, the instructor or invigilator will gather all available evidence and inform the Dean in writing. Documentation should include, but is not limited or restricted to, a clear description of the offence (the date when the incident occurred or was detected, the course number and section, the student's name and number); evidence (cheat notes, plagiarized samples, photocopies of, or actual, unpermitted aids or materials, etc.) as applicable; and names and phone numbers of witnesses, if applicable. It should be sent to the Dean within 10 days of the incident or discovery, unless there are problems contacting the student. The instructor or invigilator will inform the student of her/his decision regarding the assignment of a grade to the affected work and that the documentation will be forwarded to the appropriate Dean.
2. The Dean, upon (and only upon) receipt of the written information from the instructor or invigilator, will assign any additional disciplinary action which may be in order under the policy described above, and will inform the Registrar.
3. The Registrar will maintain a record of each offence in the student's file.
4. The affected student has the right at any time to consult with a University College counsellor and/or the student ombudsperson.
5. Except in circumstances where the matter has been referred to the President under Policy No. C.21 Student Conduct, a student may appeal a decision or penalty under this policy to the Kwantlen University College Appeals Committee (C.5 Appeals of Academic or Admissions Decisions).

