

# CHEMISTRY 1105 (R11), FAL 2006

## INSTRUCTOR INFORMATION

**Instructor:** **Dr. Roshan Cader**  
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**Office Hours:** Monday/ Wednesday: 12:00 - 01:00 pm  
( *OTHER TIMES BY APPOINTMENT* )

## GENERAL COURSE INFORMATION

**Credits:** 5, transferable directly to SFU and to UBC when taken with Chemistry 1110 and 1210

**Class Times:** Monday/ Wednesday: 04:00-05:50 pm (Room 3310)

**Prerequisites:** Chemistry 0094 (C or better grade) or Chemistry 11 (C+ or better grade) or Chemistry 12 (C or lower grade). Either Math 11 (C or better grade) or Math 0093 (C or better grade) are also required.

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

**Required Material:** Essentials of General Chemistry – Ebbing/Gammon/Ragsdale, Houghton Mifflin(2006), 2<sup>nd</sup> edition. Chemistry 1105 Lab Manual(2006) , 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.

**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/chemistry](http://www.kwantlen.ca/chemistry) or directly at my home page : [www.kwantlen.ca/faculty/rcader/](http://www.kwantlen.ca/faculty/rcader/)

**Optional:** Complete Solutions Manual for Essentials of General Chemistry 2<sup>nd</sup> Ed, Houghton Mifflin(2006)

## 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 Dec.14, 2006. 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>Sept. 11 (Monday):</b>	Last day to add a course or to drop a course without a “W” appearing on your transcript
<b>Oct. 18 (Wednesday):</b>	<b>Exam #1</b>
<b>Oct. 28 (Saturday):</b>	Last day to drop a course (“W” will appear on your transcript)
<b>Nov. 27 (Monday)</b>	<b>Exam #2</b>
<b>Dec. 11 (Monday)</b>	Last day of scheduled classes
<b>Dec. 14 (Thursday)</b>	<b>Final Examination Day (Room: 2550, Time: 8:00 -11:00 am)</b>

**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 1105 COURSE OUTLINE AND SCHEDULE OF TOPICS**

*Text: Essentials of General Chemistry – Ebbing/Gammon/Ragsdale (2nd edition)*

Chapters 1-4 in the textbook make up the introduction and review material which should have been covered in Chemistry 11. 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 1105 Supplement and questions from past exams and final exams. The **Supplemental Material** listed below is from the **CHEM 1105 Surrey Supplement** which can be accessed by going through [www.kwantlen.ca/chemistry](http://www.kwantlen.ca/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.

**Chapter 1.** Chemistry and Measurement - Experiment and explanation, Law of conservation of mass, physical state and chemical constitution, measurement and significant figures, SI units, dimensional analysis.

**Suggested problems:** 19, 35, 37, 49, 55, 73, 79, 85

**Chapter 2.** Atoms, Molecules, and Ions - Atomic Theory, structure of the atom, isotopes, atomic weights, periodic table of the elements, chemical formulas of molecular and ionic substances, naming simple compounds, writing and balancing chemical equations.

(Omit: Section 2-7 "Organic Compounds")

**Suggested problems:** 17, 25, 29, 35, 37, 45, 47, 59, 61, 67, 69, 83, 85

**Supplemental Material:** "Naming Polyatomic Ions and Anions" Handout

**Chapter 3.** Calculations with Chemical Formulas and Equations - Molar mass, mole concept, mass percentage, determining chemical formulas, stoichiometry of a chemical reaction, limiting reagents, percent yield, percent purity (lecture notes and supplemental handout).

**Suggested Problems:** 15, 19, 21, 25, 29, 39, 43, 47, 53, 57, 61, 67, 69, 73, 75, 79

**Supplemental Material:** "Stoichiometry and Percent Purity" Handout

**Supplemental Problems:** Problem set 2 (Stoichiometry)

**Chapter 4.** Chemical Reactions - Solubility rules, molecular and ionic equations, precipitation reactions, acid-base reactions, oxidation-reduction reactions, balancing simple oxidation-reduction reactions (acidic solutions only), molar concentration, diluting solutions, gravimetric and volumetric analysis

**Suggested Problems:** 11, 15, 19, 21, 29, 31, 33, 37, 41, 45, 47, 49, 51, 55, 69, 71, 73, 77, 81, 85, 89

**Supplemental Problems:** Problem Set 1 (Solutions, etc.)

**Supplemental Problem Set:** Problem Set 8 (Redox and Colligative Properties): Problems #1 and #2.

**Supplemental Material:** "Classification of Reactions" Handout

### **GASES**

**Chapter 6** - gas pressure and its measurement, empirical gas laws, calculations with the Ideal Gas Law, Dalton's Law of Partial Pressures, gas stoichiometry, Kinetic Theory of Gases (section 5-6 Page 153 only). (Omit: Section 5-7 "Molecular Speeds; Diffusion and Effusion" and section 5-8 "Real Gases")

**Suggested Problems:** 21, 29, 35, 37, 43, 45, 49, 61, 67, 69, 73, 75, 79

**Supplemental Problem Set:** Problem set 3 (Gases)

## **THERMOCHEMISTRY**

**Chapter 6** - Energy and its units, heat of reaction, enthalpy and enthalpy change (**Omit:** page 178 on "Enthalpy and Internal Energy"), thermochemical equations, measurements of heats of reactions, specific heat, calorimetry, standard enthalpies of formation, Hess's Law.

**Suggested Problems:** 19,27,33,35,39,41,43,45,51,57,59,61,65,75,79

**Supplemental Problem Set:** Problem Set 4 (Thermochemistry)

## **CHEMICAL EQUILIBRIUM**

**Chapter 14** - Chemical equilibrium, calculation of equilibrium constant ( $K_c$ ) and concentrations, Le Chatelier's Principle. (**Omit:** The section called "The Equilibrium Constant  $K_p$ " on page 447)

**Suggested Problems:** 9, 14, 15, 21, 25, 27, 33, 37, 41, 47, 51, 57, 61, 73, 75

**Supplemental Problem Set:** Problem Set 5 (Gas Equilibria)

## **ACIDS AND BASES**

**Chapter 15** - Acid-base concepts, acid and base strengths, self-ionization of water, solutions of a strong acid or base, pH scale (**Omit:** Section 15-5 "Molecular Structure and Acid-Base Strength"; Section 15-3 "Lewis Acids and Bases")

**Suggested Problems:** 15, 17, 27, 33, 41, 43, 63, 65, 69

**Supplemental Problem Sets:** Problem Set 6 (Acid/Bases)

**Problem Set 7 (Ionic Equilibria) Questions:** 1, 3, 4, 5, 6

## **ACID-BASE EQUILIBRIA**

**Chapter 16** - Acid and base ionization equilibria, acid-base properties of salt solutions, common-ion effect, buffers, titration curves (**Omit:** Section 16.2 "Polyprotic Acids")

**Suggested Problems:** 13, 21, 25, 27, 33, 35, 37, 45, 47, 49, 51, 53, 55, 57, 61, 67, 69

**Supplemental Problem Set:** Problem Set 7 (Ionic Equilibria) Questions: 2, 7, 8, 9, 10

## **SOLUTIONS**

**Chapter 12 (Sections 12-1, 12-2, 12-4 & 12-6)** - Types of solutions, concentration scales, colligative properties of solutions: freezing point depression, boiling point elevation.

**Suggested Problems:** 29, 31, 35, 39, 41, 47, 59, 61, 69

**Supplemental Problems Set:** Problem Set 8 (Redox and Colligative Properties): Questions 3, 4, 5, 6, 7.

# **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 Appeals Committee (L.6 Appeals of Academic Decisions).