



## CHEMISTRY 1154 (R50), SPRING 2010

### INSTRUCTOR INFORMATION

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

**Office Hours:** Monday/ Wednesday: 8:00 - 09:00 pm  
[Tuesday: 01:00 - 02:00 pm, Thursday: 03:00 - 04:00 pm (Surrey Campus)]

### GENERAL COURSE INFORMATION

**Credits:** 4, transferable to SFU, UBC, and UVic (see course calendar for details)

**Class Times:** Monday/ Wednesday: 06:00-07:50 pm (Room 3310)

**Prerequisites:** Chemistry 1105 (C or better grade) or Chem 12 (C+ or better grade). Either Principles of Math 12 (B or better grade) or Math 1112 (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:** Chemistry 1154 Lab Manual (2010) , 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. *All chemistry courses will require the **Sharp EL-531W calculator**, and its available from the Kwantlen Bookstore. This and the **Aurex SC-6136 calculator** (which was used in the past) are the only two calculators allowed.*

**Supplementary Material:** Supplemental Course Material, Problem Sets with Answers and copies of Past Midterms and Final Exams can be accessed at Pat Duffy's web page at: [www.kwantlen.ca/science/chemistry/faculty/pduffy/](http://www.kwantlen.ca/science/chemistry/faculty/pduffy/)

**Optional:** **Textbook:** "CHEMISTRY", M. Silberberg , McGraw Hill ,5th Ed., (2009) or any first year chemistry text.

### EVALUATION

<u>Lecture (70%)</u>		<u>Laboratory (30%)</u>	
<b>Two Exams</b>	40	<b>Lab Reports/Unknowns</b>	20
<b>Final Exam</b>	30	<b>Pre-lab Assignments</b>	2
		<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 22, 2010. 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. 10 (Sunday)</b>	Last day to add a course or to drop a course without a "W" appearing on your transcript
<b>Feb. 10 (Wednesday)</b>	<b>Exam #1</b>
<b>Feb. 15-27</b>	Reading Break
<b>March 13 (Saturday)</b>	Last day to drop a course ("W" will appear on your transcript)
<b>April 07 (Wednesday)</b>	<b>Exam #2</b>
<b>April 19 (Monday)</b>	Last day of scheduled classes
<b>April 22 (Thursday)</b>	<b>Final Examination Day (Room: 3310, Time: 08:00 -11:00 am)</b>

### **GRADE GUIDELINES**

What follows are the guidelines used to determine your final grade in Chemistry 1154. 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 1154 COURSE OUTLINE AND SCHEDULE OF TOPICS**  
[ As per optional text: "CHEMISTRY", M. Silberberg , McGraw Hill ,5th Ed., (2009)]

- Chapter 3**      **STOICHIOMETRY:** Molar mass, empirical and molecular formula determination, chemical equations, stoichiometric calculations including limiting reagents and percent yield, stoichiometric calculations including volumetric analysis. (2 lectures)
- Problems:**      **Problems:** 12, 14, 18, 20, 25, 27, 28, 31, 37, 41, 44, 46, 50, 51, 63, 69, 75, 79, 85, 95, 96, 100, 102, 106, 114, 127, 140, 159
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- Chapter 5**      **GASES:** Measurement of properties of gases, effects of temperature and pressure on gases, ideal gas equation and STP conditions, gas mixtures and partial pressures, kinetic theory of gases, Graham's law of effusion, diffusion, real gases and the van der Waals equation. (2 lectures)
- Problems:**      6, 10, 24, 41, 43, 49, 51, 56, 60, 69, 73, 75, 83, 86, 94, 102, 107, 109, 121, 129, 148
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- Chapters 17 and 19.3 - 19.4**      **CHEMICAL EQUILIBRIUM:** Equilibrium in chemical reactions, Le Chatelier's principle and effects of pressure, volume and temperature, K<sub>c</sub> and K<sub>p</sub>, calculations for gaseous systems, solubility products. (2 lectures)
- Problems:**      Chapter 17: All "blue" problems  
Chapter 19: 63, 65, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 91, 94, 95, 97, 99, 103, 110, 114, 150, 152
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- Chapter 21**      **ELECTROCHEMISTRY:** Fundamentals of electrochemical cells, thermodynamics of electrochemical cells, application of Galvanic cells, electrolysis, corrosion. (3 lectures)
- Problems:**      "blue" problems: 27 – 37, 40, 46, 48, 53 – 76, 83, 87 – 122, 127 – 138, 144, 146, 150, 153, 156, 158
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- Chapter 16**      **CHEMICAL KINETICS:** Reaction rates and rate laws, differential and integrated rate laws, factors influencing rates, temperature dependence of rates. (2 lectures)
- Problems:**      All "blue" problems except 122
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- Chapters 18 (omit 18.6, 18.8, 18.9) and 19.1, 19.2**      **ACIDS AND BASES:** Review of acid-base fundamentals, weak acids and bases, buffers, hydrolysis, indicators, titration curves. (3 lectures)

**Problems:** Chapter 18: All “blue” problems from 7 – 102, 147, 152, 155, 161, 163, 165, 174, 180, 187  
Chapter 19: All “blue” problems from 7 – 60, 105, 107, 117, 118, 120, 124, 128, 129, 136, 141, 143, 153

**Chapters 6 and 9.4** **HEAT, WORK & ENERGY:** Thermodynamic terms and concepts, heat and PV work, First Law of Thermodynamics, heats of reactions, calorimetry and Hess’ law. (*3 lectures*)

**Problems:** Chapter 6: All “blue” problems from 8 onwards.  
Chapter 9: 44, 48, 50, 51, 74, 83

**Chapter 20** **ENTROPY AND FREE ENERGY:** Reversible and irreversible processes, disorder, entropy and the Second Law of Thermodynamics, Third Law of Thermodynamics and entropy changes, Gibbs free energy and equilibrium, temperature dependence of equilibrium constant. (*3 lectures*)

**Problems:** All “blue” problems

**Chapters 12.1 - 12.3, 13 (omit 13.2, 13.7)** **LIQUIDS AND SOLUTIONS:** Properties of liquids, phase changes and phase diagrams of one-component systems, properties of solutions and concentration units, colligative properties for non-electrolyte and electrolyte solutions, Raoult’s law and distillation. (*3 lectures*)

**Problems:** Chapter 12: “blue” problems: 4 – 28, 34 – 51, 125, 130, 132, 137  
Chapter 13: “blue” problems: 2 – 16, 29, 44 – 108, 117 – 136, 142 – 157, 161

**Chapter 12.6** **SOLIDS:** Unit cells and crystal lattices, metallic crystals, ionic crystals. (*2 lectures*)

**Problems:** 78, 83, 84, 90, 92, 98, 141

# **Kwantlen Poly. University 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).

