Chemistry 020

Intersession 2007 Course Outline

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Course Website:
http://instruct.uwo.ca/chemistry/020inter

Course information will also be posted on WebCT.

1) COURSE DESCRIPTION

Chemistry 020 is a course in general chemistry in which primary emphasis is placed on the quantitative aspects of chemical behaviour. Basic mathematic relations are introduced and derived whenever possible.

This course serves as a preparation for the more advanced chemistry courses in the senior years, or it gives some chemical background to students who intend to study some other branch of science.

Chemistry 020 is intended primarily for students in a 1st Year General Program in Sciences. It (or Chemistry 023) is the prerequisite for senior courses in Chemistry. In assessing students for admission into chemistry programs in the second year, the Chemistry Department requires a minimum mark of 60% in Chemistry 020 and satisfactory marks in each of physics and mathematics.

The laboratory program is designed to acquaint the student with some of the basic experimental techniques in chemistry, with quantitative measurement the main emphasis.

2) MANDATORY PREREQUISITES

OAC or Grade 12 U (SCH4U) Chemistry is mandatory and OAC (or Grade 12 U) Physics, Calculus and Algebra are strongly recommended. (Students lacking the Chemistry prerequisite must obtain Special Permission to register in this course.)

3) CONTACT HOURS PER WEEK

12.5 hours lectures, two 3 - hour laboratory periods, and one or two 1½ - 2 hour tutorials per week. An additional tutorial will be given the day before each test.

4) **TEACHING STAFF**

The lectures and tutorials will be given by the instructor. Laboratories will be taught by experienced Teaching Assistants under the supervision of the lecturer.

5) **ASSIGNMENTS AND EXAMINATIONS**

Tuesday, May 29	two-hour term test	25%
Tuesday, June 12	two-hour term test	25%
Monday June 25 **or** Tuesday, June 26	three-hour final exam	35%
Laboratory		15%
		100%

Attendance at laboratories is mandatory. A minimum of 7.5 marks out of 15 on the laboratory is a requirement, in addition to 50% overall, for passing this course.

A passing grade (at least 50%) on at least one of the three written tests (exams) is required to pass this course.

6) **GENERAL COMMENTS**

The subject is developed progressively and regular attendance at lecture and laboratory/tutorial classes is essential if the student is to keep abreast of the material. Preparing ahead for the laboratory periods is strongly recommended or you may encounter difficulty in completing the experiments within the allotted time. A pre lab exercise is handed in at the beginning of each lab and is part of the mark for the experiment. The tutorial problems should be attempted before the tutorial period to obtain maximum benefit from these sessions.

7) **TEXTBOOK AND OTHER PURCHASES FROM BOOKSTORE**

1. "Chemistry 020 Lecture Notes for Intersession 2007" (Required)
2. "Chemistry, Principles and Reactions" by Masterton and Hurley, Thompson Learning, Inc. 5th edition, 2003 (4th edition also acceptable) (Optional)
3. "Tutorial Problem Sets and Exam Papers (pink cover, 2006 - 07 edition) (Required)
4. "Chem 020 / 023 Laboratory Manual" (2006 - 07 edition, pink cover). (Required)
5. Safety Glasses and Lab Coat (Required)

8) LABORATORY INFORMATION and RULES

1. Safety is the top priority in the lab. Read the introductory section of the lab manual and the waiver form. Students will be ejected if they are not observing the safety standards or the rules of conduct of the lab. The waiver form will be completed and handed in at Lab Check In.

2. Students who are more than 10 minutes late are not permitted to do the lab, the prelab exercise will not be marked. A mark of zero is assigned.

3. A lab coat is mandatory. Students without lab coats are not allowed to do the experiment and a mark of zero is assigned. Students arriving without a lab coat are not permitted to leave after the prelab talk to get one. TAs are not permitted to provide lab coats and these are not available for rent. This rule applies to all labs except Lab Check In.

4. Students must wear ankle length pants, socks and closed toed shoes. If you are not properly attired you will be asked to leave and a mark of zero assigned.

5. Safety glasses must be worn until everyone in the room has cleaned up and put away all chemicals and glassware. Do not remove your safety glasses until instructed to do so by your TA. Safety glasses may be rented. If you wear glasses you must wear safety glasses that are designed to fit over them.

6. The prelab exercise, the last page of each lab - following the work sheets, must be completed before the lab period and handed in when you arrive at your lab. The prelab exercise is designed so that you must read the experimental strategy and procedure to complete the exercise. You are permitted to the experiment if you have not done the prelab exercise but will be assigned a mark of 0/2. Your TA will not accept prelab exercises after the prelab talk is finished.

7. To successfully complete each experiment you must be prepared. Read the experiment carefully, check the data sheets to find out where to record your numbers, set up calculations on the work sheets, if possible. Organize with your partner who will do which tasks. Each experiment will refer to topics to read in the "Tools of Chemistry" section of the manual.

8. For Lab Check In and for each experiment there will be information and photos available on the Chemistry 020 web site. These will be very helpful when you are reading the procedures.

9) **ELECTRONIC CALCULATORS**

The Sharp EL-510R is the **ONLY** calculator that will be permitted for use in the laboratories, for tutorial quizzes, term tests and examinations.

The instructor and teaching assistants reserve the right to confiscate other models of calculator.

1) No special arrangement will be made in tests or examinations if your calculator requires connection to an external power source.
2) Under no circumstances will sharing or exchange of calculators be allowed in tests or examinations.
3) You will be given no special consideration on tests or examinations, because of calculator failure or malfunction. IT IS YOUR RESPONSIBILITY TO ENSURE THAT YOUR CALCULATOR IS IN PROPER WORKING ORDER. To avoid problems, it is a good idea to have with you spare batteries and/or a spare calculator for tests and examinations.

10) **CODE OF CONDUCT**

All classes will be managed so that they do not run beyond their allotted time. This means that lectures will begin **promptly** at 9:30 am each day.

We shall at all times strive to promote a respectful learning environment, which does not disrupt anyone's ability to learn and is supportive of each student's views and feelings.

You can expect me to come prepared for, and attend all classes regularly and punctually. I, in turn, expect the same from you.

Disturbing behaviours, including talking during class, cell phones ringing and any other activities which may impede the ability of you or other students to learn are unacceptable.

Students who insist on participating in such behaviours will be asked to leave the class.

11) **CHEATING AND PLAGIARISM**

Senate regulations require that we describe the University's position on these matters.

Plagiarism: Students must write their essays and assignments in their own works. Whenever students take an idea or a passage from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. Plagiarism is a major academic offence (see Scholastic Offence Policy in the Western Academic Calendar.)

Cheating: Tests and examinations in Chemistry 020 are entirely multiple choice and will be marked by computer. The marking software is alway employed to check for unusual coincidences in answer patterns that may indicated cheating, and such occurrences are followed up.

Textbook: **Chemistry, Principles & Reactions**

_____by Masterton and Hurley, Thompson Learning Inc. 5th Ed. 2003

What material is covered in Chemistry 020 ?

The topics covered in the course are those that appear in the parts of the textbook listed below. Each chapter in the text book has an introduction, a number of sections, and sometimes additional reading entitled "The Human Side" and/or "Beyond the Classroom". It is assumed that you will read the introduction to any chapter included below.

Chapter	Title	Sections
1	Matter and Measurement	1, 2, 3
2	Atoms, Molecules and Ions	1, 2, 3, 4, 5, 6
3	Mass Relationships in Chemistry; Stoichiometry	1, 2, 3, 4
4	Reactions in Aqueous Solutions	1, 2, 3, 4
5	Gases	1, 2, 3, 4, 5
6	Electronic Structure and the Periodic Table	1, 2, 3, 4, 5, 6, 7,8
7	Covalent Bonding	1, 2, 3, 4
8	Thermochemistry	1, 2, 3, 4, 5, 6
10	Solutions	1 (not molality)
11	Rates of Reaction	1, 2, 3, 4, 5, 6, 7
12	Gaseous Chemical Equilibrium	1, 2, 4, 5
13	Acids and Bases	1, 2, 3, 4, 5, 6
14	Equilibria in Acid-Base Solutions	1, 2, 3
16	Precipitation Equilibria	1, 2
18	Electrochemistry	1, 2, 5, 6
22	Organic Chemistry	1, 2, 3, 4, 5, 6

This core material for Chemistry 020 will be discussed in lectures, in the laboratory manual and in the tutorial manual. The material covered in Chapter 22 (Organic Chemistry) has been expanded in the tutorial manual.

Your partial lecture notes explain and expand the core material in a slightly different way from the textbook in some cases.

The syllabus for each test is, of course, defined by what has been **included in the lectures, laboratories and assigned problems in this course**, not by what was on the test in previous years!

Chemistry 020: Intersession 2007 Lecture Schedule

It is expected that you will always bring your lecture notes to class.

Monday	Tuesday	Wednesday	Thursday	Friday
May 14 Administration and Introduction	May 15 Fundamentals	May 16 Stoichiometry	May 17 Stoichiometry	May 18 Strong Acids and Bases
May 21 Holiday !!	May 22 Gases	May 23 Gases	May 24 Atomic Structure	May 25 Periodicity
May 28 1) Review 2)Tutorial (1 pm - 3 pm)	May 29 Test:9:30-11:30 Lecture on Equilibrium; 1-3	May 30 Ksp	May 31 Weak Acids and Bases	June 1 Buffers
June 4 Thermo-chemistry	June 5 Thermo-chemistry	June 6 Redox Equations	June 7 Electro-chemistry	June 8 Electro-chemistry
June 11 1) Review 2)Tutorial (1 pm - 3 pm)	June 12 Test:9:30-11:30 Lecture on Kinetics; 1-3 pm	June 13 Kinetics	June 14 Bonding	June 15 Shapes of Molecules
June 18 Organic	June 19 Organic	June 20 Organic	June 21 Review	June 22 Review

Chemistry 020: Intersession 2007 Lab Schedule

Monday	Tuesday	Wednesday	Thursday	Friday
May 14	May 15 **Lab Check In	May 16 Group 1 A: Synth. of Coord. Cmpd	May 17 Group 2 A: Synth. of Coord. Cmpd	May 18
May 21 Holiday !!	May 22 Group 2 **B**: Acid - Base Titrations	May 23 Group 1 **B:** Acid - Base Titrations	May 24 Group 2 **C:** Molar Vol. of Nitrogen	May 25 Group 1 **C:** Molar Vol. of Nitrogen
May 28 Tutorial 1 - 3 pm	May 29 Test 9:30 - 11:30 am Lecture: 1-3 pm	May 30 Group 1 Eq. Constant (hand out)	May 31 Group 2 Eq. Constant (hand out)	June 1
June 4 Group 1 **E:** Spec. Det. of Indicator	June 5 Group 2 **E**: Spec. Det. of Indicator	June 6 Group 1 **F:** Thermo-chemistry	June 7 Group 2 **F:** Thermo-chemistry	June 8
June 11 Tutorial 1 - 3 pm	June 12 Test 9:30 - 11:30 am Lecture: 1-3 pm	June 13 Group 1 **I:** Kinetics Hand in Lab F	June 14 Group 2 **I:** Kinetics Hand in Lab F	June 15
June 18 Group 1 **G:** Redox	June 19 Group 2 **G:** Redox	June 20 Group 1 **H:** Qual. Analysis	June 21 Group 2 **H:** Qual. Analysis	June 22

** For Lab Check In: Sec 002 (M,W) at 1 pm; Sec 003 (Tu, Th) at 2 pm
Sec 004 (Tu, Th eve) at 3 pm in Chem Lab Rooms 12 and 13