

Winter 2014 Student Course Information
CHEM*1040 General Chemistry I
Department of Chemistry
University of Guelph

Course Description: CHEM*1040 General Chemistry I F,W (3-3) [0.50]

This course introduces concepts of chemistry, the central link between the physical and biological sciences. Principles discussed include chemical bonding, simple reactions and stoichiometry, chemical equilibria and solution equilibria (acids, bases, and buffers), and introductory organic chemistry.

Prerequisite(s): 4U Chemistry, (or equivalent grade 12 chemistry) or CHEM*1060

Instructor: R. de Laat
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Lectures: Tues, Thur 4:00PM - 5:20PM ROZH, Room 101

1. COURSE MATERIALS

- (a) **Textbook:** D. Ebbing and S. Gammon, General Chemistry. Students can use the 10th, 9th or 8th ed.
- (b) **CHEM*1040 Organic Chemistry Notes, Laboratory Manual** are purchased only from the Chemistry Department.
- (c) **Lab coats** are required. They can be purchased from the University Bookstore or elsewhere.
- (d) **Safety goggles** (not safety glasses) can be purchased from the Chemistry Department or elsewhere.
- (e) **Scientific calculator** with ln, e^x, log₁₀ and 10^x functions. Note: Calculators or notebook computers capable of storing text information are **NOT** allowed in examinations.
- (f) **Indigo Instruments Molecular Model Kit** is available from one of the campus bookstores. This kit will assist you in visualising material on molecular shapes and organic chemistry.
- (g) **i>Clicker Student Response Unit** is available in the University Bookstore.

2. “WET” LABORATORY – Begins Monday, January 13! Bring your lab manual.

The laboratory is an integral part of CHEM*1040 and a schedule is provided on the next page. Students attend their chemistry laboratories according to their lab section number. Your course section number describes the lecture and lab section in which you are registered. The first two numbers represent the lecture while the last two are the lab section (e.g., 0125 = lecture section 01 and lab section 25). If your lab section is an odd number (e.g., 0143 = lab section 43), then you follow the “Week Acid Schedule”. If your lab section is even (e.g., 0158 = lab section 58), then you follow the “Week Base Schedule”.

Mandatory First Lab Meeting

You **must** attend the first lab to receive mandatory safety training, which is required by law. This safety lab is a pre-requisite for all subsequent labs. As proof of your registration in a particular lab section, you must bring a computer print-out dated Jan. 01, 2014 or later of “My Class Schedule” from WebAdvisor to your first lab meeting.

Pre-laboratory Quizzes – delivered through CHEM*1040 Wet Lab CourseLink site

Pre-lab quizzes are worth 3% of your final grade. They will usually be based on the “wet” lab activities that you are about to perform – refer to Laboratory Schedule. To prepare for these quizzes, review the material provided in your lab manual. Pre-lab quizzes close 1 hour prior to the start of your lab period.

Laboratory Reports – submitted electronically this semester!

You will be using a new electronic system for lab reports 1, 2, 3, 5 - Part I Titration Curve and 5 - Part II & III Buffers. (The report for Exp’t#4 is handed in at the end of the lab period.) You will collect your data and submit a copy to your TA before leaving the lab. You will then complete your lab report online – further information provided on CHEM*1040 Wet Labs CourseLink site, under “Content”. Lab reports are normally due 1 week after your lab by 11:55 PM.

Missed Laboratory

Refer to the “Purple Page for Lab Absences in First-Year Chemistry” handout, posted on the CHEM*1040 course and the Wet Lab CourseLink websites under “Content”.

Laboratory Exemptions for students who are repeating CHEM*1040

DEADLINE: WEDNESDAY, JANUARY 8th - www.chemistry.uoguelph.ca/labexemption

Students who obtained a “wet” lab grade of at least 60%, but who failed the course as a whole, may apply for a lab exemption. The lab work must have been completed during one of the three preceding semesters in which the course was offered (i.e., F’12, W’13 or F’13).

NOTE: Students repeating CHEM*1040 who are granted a “wet” lab exemption **must complete the online “dry” computer labs.**

CHEM*1040 Wet Lab CourseLink Website – delivers pre-lab quizzes (see “Content” tab), provides lab information and is where your final laboratory grades are posted.

3. WINTER 2014 CHEM*1040 LABORATORY SCHEDULE

DATE	“Week Acid” Schedule (ODD lab section numbers)		“Week Base” Schedule (EVEN lab section numbers)	
Week 1: Jan. 6 - 10	Online Computer Lab <u>Dry Lab A: Atomic Spectroscopy</u>			
Week 2: Jan. 13 - 17	Arrive at regular starting time. Check-in & safety training. Bring printout of “My Class Schedule & your lab manual. Note: Safety training is mandatory and a legal requirement.		Arrive 90 min after regular starting time. Check-in & safety training. Bring printout of “My Class Schedule & lab manual. Note: Safety training is mandatory and a legal requirement.	
Atomic Spectroscopy Marking Module Final Deadline: Sunday Jan. 19, 11:55 PM				
Week 3: Jan. 20 - 24	Arrive at regular starting time. <u>Experiment 1:</u> Introduction to Laboratory Equipment <u>Lab Report Due 1 Week Later by 11:55 PM</u>	Pre-lab quiz on Safety & Exp’t 1	Arrive 90 min after regular starting time. <u>Experiment 1:</u> Introduction to Laboratory Equipment <u>Lab Report Due 1 Week Later by 11:55 PM</u>	Pre-lab quiz on Safety & Exp’t 1
Week 4: Jan. 27 - 31	Arrive at regular starting time. <u>Experiment 2:</u> Chemical Reactions in Aqueous Solutions (no Part D) <u>Lab Report Due 1 Week Later by 11:55 PM</u>	Pre-lab quiz on Exp’t 2	Arrive 90 min after regular starting time. <u>Experiment 2:</u> Chemical Reactions in Aqueous Solutions (no Part D) <u>Lab Report Due 1 Week Later by 11:55 PM</u>	Pre-lab quiz on Exp’t 2
Semester Test 1: Monday Feb. 3, 5:40 - 6:40 PM ROZH 104				
Week 5: Feb. 3 - 7	Arrive at regular starting time. <u>Experiment 4:</u> Synthesis of Aspirin <u>(Hand in report at end of lab)</u>	Pre-lab quiz on Exp’t 4	Online Computer Lab: <u>Dry Lab B:</u> Volumetric Analysis	

Week 6: Feb. 10 - 14	Online Computer Lab: <u>Dry Lab B:</u> Volumetric Analysis	Arrive at regular starting time. <u>Experiment 4:</u> Synthesis of Aspirin <u>(Hand in report at end of lab)</u>		Pre-lab quiz on Exp't 4
Winter Break - February 17 to 21 - NO CLASSES - NO LABS				
Week 7: Feb. 24 - 28	Online Computer Lab <u>Dry Lab C:</u> Gaseous Equilibrium			
Volumetric Analysis Marking Module Final Deadline: Sunday Mar. 2, 11:55 PM				
Week 8: Mar. 3 - 7	Arrive at regular starting time. <u>Experiment 3:</u> Standardization of Sodium Hydroxide (first half of experiment)	Pre-lab quiz on Exp't 3	Arrive 90 min after regular starting time. <u>Experiment 3:</u> Standardization of Sodium Hydroxide (first half of experiment)	Pre-lab quiz on Exp't 3
Semester Test 2 - Monday Mar. 10, 5:40 - 6:40 PM ROZH 104				
Week 9: Mar. 10 - 14	Arrive at regular starting time. <u>Experiment 3:</u> Standardization of Sodium Hydroxide (second half of experiment) <u>Lab Report Due 1 Week Later by 11:55 PM</u>	Arrive 90 min after regular starting time. <u>Experiment 3:</u> Standardization of Sodium Hydroxide (second half of experiment) <u>Lab Report Due 1 Week Later by 11:55 PM</u>		
Gaseous Equilibrium Marking Module Final Deadline: Sunday Mar. 16, 11:55 PM				
Week 10: Mar. 17 - 21	Arrive at regular starting time. <u>Experiment 5:</u> Buffers, Titration Curves and Indicators (Titration Curve Part I of Experiment) <u>Lab Report Due 1 Week Later by 11:55 PM</u>	Pre-lab quiz on Exp't 5	Arrive 90 min after regular starting time. <u>Experiment 5:</u> Buffers, Titration Curves and Indicators (Titration Curve Part I of Experiment) <u>Lab Report Due 1 Week Later by 11:55 PM</u>	Pre-lab quiz on Exp't 5

Week 11: Mar. 24 - 28	Arrive at regular starting time. <u>Experiment 5: Buffers, Titration Curves and Indicators (Buffer Parts II & III of Experiment)</u> <u>Lab Report DUE 2 DAYS later by 11:55 PM</u>	Arrive 90 min after regular starting time. <u>Experiment 5: Buffers, Titration Curves and Indicators (Buffer Parts II & III of Experiment)</u> <u>Lab Report DUE 2 DAYS later by 11:55 PM</u>
Week 12: Mar. 31 - Apr. 4	Arrive at regular starting time. YOU MUST ATTEND. Clean-up and review lab grades.	Arrive 60 min after regular starting time. YOU MUST ATTEND. Clean-up and review lab grades.

4. **Evaluation** - Your course grade will be calculated based upon the scheme that produces the highest grade:

	Scheme 1	Scheme 2
In-class Clicker Score (optional)	3%	0%
Online "Wet" Pre-lab Quizzes (Courselink 5 Quizzes)	3%	3%
Online "Dry" Lab Work (Courselink 3 Dry Labs)	5%	5%
"Wet" Lab Reports (6 Lab Reports)	12%	12%
In Class Activities (6 Activities)	6%	6%
Discussion Board Participation (3 Discussions)	3%	3%
Semester TEST 1 (1 hour)	14%	15%
Semester TEST 2 (1 hour)	19%	20%
Final Examination (2 hours)	35%	36%

Online "Wet" Pre Lab Quizzes (depending on lab day and Week Acid and Week Base schedule) Quizzes must be completed 30 minutes prior to the beginning of your scheduled lab period (see Lab schedule). (courselink.uoguelph.ca on the CHEM*1040 Lab Site)

Jan 20 - 24	Pre-lab Quiz on Safety and Exp't 1
Jan 27 - 31	Pre-lab Quiz on Exp't 2
Feb 3 - 14	Pre-lab Quiz on Exp't 4
Mar 3 - 7	Pre-lab Quiz on Exp't 3
Mar 17 - 21	Pre-lab Quiz on Exp't 5

Online "Dry" Lab Work (courselink.uoguelph.ca on the CHEM*1040 Course Site)

Each online lab consists of 2 parts: the experiment and the marking module. Both are delivered through the course website. Background info and worksheets are provided in the CHEM*1040 Laboratory Manual. Experiments can be done as many times as you wish, however, some labs assign a new "unknown" number with each attempt. Make sure to record this number for grading purposes. Once you have completed all calculations, only then open the marking module to grade

your work. You can grade your work only once and have 60 min. to enter your answers. If a marking module is not attempted, a grade of zero is assigned. The Lab Schedule includes dates/deadlines for these activities.

Sunday Jan. 19, 11:55 PM Dry Lab A: Atomic Spectroscopy Marking Module Final Deadline

Sunday Mar. 2, 11:55 PM Dry Lab B: Volumetric Analysis Marking Module Final Deadline

Sunday Mar. 16, 11:55 PM Dry Lab C: Gaseous Equilibrium Marking Module Final Deadline

“Wet” Lab Reports submitted electronically see the CHEM*1040 Wet Labs Courselink site. Labs are due by 11:55 PM one week after performing the experiment unless otherwise indicated.

Jan 27 - 31 Experiment 1: Introduction to Laboratory Equipment

Feb 3 - 7 Experiment 2: Chemical Reactions in Aqueous Solutions (no Part D)

Feb 3 - 14 Experiment 4: Synthesis of Aspirin (Hand in report at end of lab)

Mar 17 - 21 Experiment 3: Standardization of Sodium Hydroxide

Mar 24 - 28 Experiment 5: Buffers, Titration Curves and Indicators
(Titration Curve Part I of Experiment)

Mar 26 - 28 Experiment 5: Buffers, Titration Curves and Indicators
(Buffer Parts II & III of Experiment) - **DUE 2 DAYS AFTER
EXPERIMENT**

In Class Activities

Tuesday Jan 21 Based Upon Experiment 6: Bonding and Molecular Structure in the
CHEM*1040 Lab Manual

Thursday Jan 30 Based Upon Part B of Dry Lab D Aspects of Organic Chemistry in the
CHEM*1040 Lab Manual

Thursday Feb 13 Based Upon Part D of Experiment 2: Chemical Reactions in Aqueous
Solutions

Thursday Mar 6 Stoichiometry

Thursday Mar 20 Acids and Bases

Thursday Mar 27 Buffers and Titration Curves

Discussion Board Participation

Postings must be made before 11:55 PM on the dates indicated

Discussion topics will be discussed in class and posted to the discussion board

Sunday Feb 2 Discussion 1

Sunday Mar 9 Discussion 2

Sunday March 30 Discussion 3

Semester Test 1: Monday Feb. 3, 5:40 - 6:40 PM - ROZH 104

Semester Test 2: Monday Mar. 10, 5:40 - 6:40 PM - ROZH 104

Final Examination: Wednesday, Apr. 9 08:30AM - 10:30AM - Room TBA

All examinations will be closed book, with no written or printed materials of any kind permitted. Computers or calculators capable of storing text information or formulas are not allowed.

i>Clicker Questions in Class - optional

Participation in classroom discussions and interacting with your class colleagues is an important aspect to successful learning. One proven approach has been the use of i>Clicker response systems. If you really want to learn and succeed in the class, you will want to participate in the questions posed by your lecturer during the class. The learning value with these devices lies not so much in getting the right answer - in fact, the best questions are those in which you get the wrong answer - but rather in confronting an unknown situation and being forced to think through it. This is really when new learning occurs (in learning theory this is called cognitive dissonance). For this reason, we will not be giving marks for correct answers - correct answers are for the exams. Rather, we need to have you honestly participate in the class using these clickers. We know of many ways students can get around doing the hard work of thinking. But we hope that you will avail yourself of this learning tool and work with your colleagues and the instructor.

To this end, we will provide 3% of your grade to be calculated as follows. There will be many days throughout the semester in which clicker questions will be posed. If you respond to the majority of the questions on a given day, then it will be taken that you have participated in the i>Clicker questions that day. If you participate in clicker questions for at least 85% of the days on which questions are asked, you will receive 3 marks towards your final grade. If you participate for at least 60% of the days, you will get 2 marks; at least 35% will earn you 1 mark. If you choose to not participate at all, then that 3% will be added to your exams. We expect that the class will divide into those who fully participate and receive 3% towards their final grade, and those who do not and have that weighting add to their exams. We know that students will do better on their exams if they participate in this learning activity and we feel it is important to offer this to those who are willing to make the effort.

5. General Lecture Schedule - see Guided Readings on the courselink website for specifics

Week	Date	Topics	Online	Text Sections	Text Questions
Week 0		<u>Review</u> - things to help you recall Chemistry you have taken before. Measurement, Significant Figures, Atoms, Molecules, Ions & the Mole	See Courselink Website table of contents	Ch1: 1.1 - 1.8 Ch2: 2.1 -2.10 Ch3: 3.1 - 3.5	1.35, 1.41, 1.81, 1.83, 1.127, 2.43, 2.51, 2.65, 2.67, 2.75, 2.77, 2.79, 2.83, 2.85, 2.87, 2.91, 2.93, 2.99, 2.101, 2.109, 2.111, 2.119, 2.123, 2.127, 3.37, 3.39, 3.45, 3.61, 3.65, 3.67, 3.73
Week 1	Jan. 6 - 10	<u>Atoms</u> - Atomic structure, atomic spectroscopy, periodic trends	See Courselink Website table of contents	Ch7: 7.1 - 7.5 Ch8: 8.1 - 8.7 Ch9: 9.2 - 9.3, 9.5	7.25, 7.33, 7.37, 7.45, 7.69, 7.87, 7.97, 7.114, 7.117, 8.16, 8.21, 8.24, 8.39, 8.43, 8.49, 8.61, 8.63, 8.65, 8.81, 9.43, 9.45, 9.49, 9.57
Week 2-4	Jan. 13 - 31	<u>Molecules</u> - Lewis structures, VSEPR & bonding, Organic Functional Groups, Organic Isomers, Intermolecular forces	See Courselink Website table of contents	Ch9: 9.4 - 9.9 Ch10: 10.1 - 10.4 Organic Notes pg 1 - 34 Ch23: 23.1 - 23.7 Ch11: 11.5	9.63, 9.65, 9.69, 9.71, 9.77, 9.93, 9.97, 9.99, 9.128, 10.27, 10.31, 10.33, 10.35, 10.39, 10.41, 10.45, 10.49, 10.53, 10.65, 10.69, 10.73, 10.100 Organic Notes - all questions up to pg 34, pg 54 question 1 11.63, 11.69, 11.71, 23.14, 23.25, 23.29, 23.39, 23.41, 23.53, 23.55, 23.65

Semester Test 1: Monday Feb. 3, 5:40 - 6:40 PM ROZH 104

Week 5-6	Feb. 3 - 14	Reactions - Precipitation, Acid- Base, Organic	See Courselink Website table of contents	Ch4: 4.1 - 4.4 Organic Notes pg 35 - 57 Ch23: 23.1 - 23.7 Ch24: 24.1 - 24.2	4.31, 4.35, 4.37, 4.39, 4.41, 4.43, 4.51, 4.105, 4.107 Organic Notes - all questions pg 35 - pg 57 23.35, 24.29, 24.31, 24.53, 24.55.
Week 7-8	Feb. 24 - Mar. 7	<u>Stoichiometry</u>	See Courselink Website table of contents	Ch4: 4.7 - 4.10 Ch3: 3.6 - 3.8 Ch5: 5.1 - 5.5	4.69, 4.71, 4.77, 4.81, 4.85, 4.87, 4.89, 4.93, 4.109, 4.111, 4.115, 4.119, 4.123, 4.127, 4.135, 4.137, 4.140, 3.24, 3.81, 3.83, 3.89, 3.91, 3.93, 3.97, 3.103, 3.105, 3.117, 3.119, 3.135, 3.137, 5.75, 5.77, 5.87, 5.119, 5.137, 5.143

Semester Test 2 - Monday Mar. 10, 5:40 - 6:40 PM ROZH 104

Week 9	Mar. 10 - 14	<u>Equilibrium</u>	See Courselink Website table of contents	Ch14: 14.1 - 14.9	14.23, (14.25, 14.35, 14.37, 14.39, 14.41, 14.43, 14.55, 14.57, 14.59, 14.61, 14.63, 14.73) - K_c , 14.75, (14.83, 14.87) - K_c , 14.121, 14.123 - K_p
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Week 10-12	Mar. 17 - Apr. 4	<u>Acids-Bases</u> - Acids, Bases, Salts, Buffers, Titration curves	See Courselink Website table of contents	Ch15: 15.1 - 15.8 Ch16: 16.1 - 16.7	15.27, 15.28, 15.29, 15.31, 15.33, 15.35, 15.51, 15.53, 15.57, 15.59, 15.61, 15.67, 15.71, 15.99, 15.127, 16.1, 16.9, 16.23, 16.25, 16.35, 16.39, 16.41, 16.45, 16.51, 16.53, 16.55, 16.57, 16.59, 16.63, 16.65, 16.101, 16.111, 16.115 Salts & Buffers: 16.27, 16.29, 16.71, 16.73, 16.75, 16.77, 16.81, 16.83, 16.113, 16.141 Titration Curves: 16.15, 16.31, 16.85, 16.87, 16.89, 16.93, 16.107, 16.109, 16.119, 16.121, 16.135, 16.143
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Final Examination: Wednesday, Apr. 9 08:30AM - 10:30AM - Room TBA

6. Policy on Missed Work

Missed Semester Test:

If you do not write one of both of the semester tests, documentation must be given to your instructor. (Note: Doctor's notes are always acceptable, but not required.) If a valid excuse is received, the percentage value of the midterm will be added to the percentage value of the final exam. Otherwise, a grade of zero will be assigned. No make-up midterm examination will be given.

Missed Final Examination:

If you miss a final exam, contact your Program Counsellor as soon as possible (refer to www.uoguelph.ca/uaic/programcounsellors for a list of Program Counsellors). Official documentation is required. Consult the Undergraduate Calendar (Section VIII, under Academic Consideration).

Other Missed Work: (with the exception of missed "wet" labs – see Purple Page)

Contact your instructor. If a valid excuse is received, your work will be re-evaluated. Otherwise, a grade of zero will be assigned. For information on regulations and procedures for Academic Consideration, refer to the Undergraduate Calendar:

www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml

7. Course Resources

(a) CHEM*1040 Website - access through the portal <http://www.uoguelph.ca/courselink/>
Your Username is your Central Login ID (that part of your University of Guelph e-mail address before the "@" sign). Your password is your Central Login Account Password. The course website provides a wealth of resources (i.e., e-lectures, animations, and sample midterms), practice quizzes and a discussion board to post your course questions.

(b) Your Instructor

Your instructor will be available at certain times for consultation and assistance. Office hours will be arranged at the first class meeting.

(c) Chemistry Learning Centre (3rd Floor Library – Science Commons – LIB 360)

Graduate teaching assistants are available to answer questions and assist you with either the lecture or laboratory material. Hours are posted on the course website under "News".

(d) Supported Learning Groups (SLGs) –

www.lib.uoguelph.ca/assistance/supported_learning_groups/

SLGs are regularly scheduled small group study sessions. Attendance is voluntary and open to all students enrolled in the course. The study groups are facilitated by successful students who have recently completed the course. SLG leaders attend all lectures and work with faculty and staff to create study activities that integrate course content with effective approaches to learning. They are not tutors. The peer-supported group study format exposes students to various approaches to learning, problem solving, and exam preparation. Session time(s), location(s) and further information are available on the SLG website.

8. CHEM*1040 EXPECTATIONS AND LEARNING OBJECTIVES

The pre-requisite for CHEM*1040 is two full high school chemistry courses (e.g., 3U and 4U or grade 11 and 12 chemistry). In reviewing the course content of CHEM*1040 you may feel you know most of the material already. Don't be misled! The topics may be familiar, but we will be providing a deeper understanding of the fundamental concepts within chemistry. The purpose of CHEM*1040 (and CHEM*1050) is to build upon your previous exposure to the subject. You will need to move away from just memorization terms and definitions and spend more time thinking about the processes and concepts within chemistry. This will lay the foundation for more advanced courses such as analytical chemistry (i.e., CHEM*2400 or CHEM*2480), biochemistry (i.e., BIOC*2580), organic chemistry (i.e., CHEM*2700), inorganic chemistry and physical chemistry (i.e., CHEM*2060, CHEM*2880 and CHEM*2820). Note that the course is **not designed to "teach" you chemistry**. It is, however, constructed to help you learn chemistry.

For some of you, it may have been more than a year since you last took a chemistry course and it is not unrealistic to assume that you have forgotten some of what you have already learned. We will review some basic concepts but this will not be a comprehensive review. You must review carefully the sections of the textbook that have been assigned as review on your own.

What You Are Expected to Already Know/Understand: (some of these topics will be discussed further in class)

the classifications of matter and terms associated with its physical properties (e.g., temperature; density, homogeneous vs. heterogeneous mixtures). (Refer to Sections 1.4 and 1.7)

how to report the number of significant figures in a given quantity and how to round off the result of a calculation to the correct number of significant figures. (Refer to section 1.5 in text as well as the introductory notes within your laboratory manual.)

the SI base units and SI prefixes (from tera through to femto) and are able to convert between units. (Section 1.6 & 1.8)

the basic concepts and terminology associated with atoms and atomic structure (e.g., electron, proton, neutron, atomic number, mass number, atomic mass unit, isotope, natural abundance, mole, molar mass) (Section 2.3 – 2.4) meaning of terms such anion; cation; (Section 2.6)

the information provided by any periodic table (e.g., atomic symbols and names, period versus group), and be familiar with the overall structure and organization of the modern periodic table. (Section 2.5)

the names of groups 1, 2, 17 and 18; how to classify an element as a metal, non-metal or metalloid based on its position in the periodic table; the common forms of the most common non-metals: H₂, F₂, Cl₂, Br₂, I₂, N₂, O₂, P₄, S₈. (Section 2.5)

and are familiar with the names and formulas of simple inorganic and organic compounds. Familiarize yourself with Tables 2.4 to 2.6. Sections 2.6 – 2.8 and pages 1 – 22 in the Organic Notes. Meaning of oxidation state.

how to write and balance simple chemical equations by inspection. (Sections 2.9 – 2.10)

the concepts and calculations that involve quantities of atoms, ions or molecules, Avogadro's number, molar mass and molecular formula. (Sections 3.1 – 3.2)

to use % composition & molar mass to determine empirical and molecular weights. (Sections 3.3 – 3.5) meaning of terms such as empirical formula, molecular formula; structural formula

how to use a balanced chemical equation to relate masses and moles of reactants and products. (Sections 3.6 – 3.7)

the meaning of terms such limiting reagent; excess reagent; actual, theoretical and percent yields; molarity (Sections 3.8, 4.7)

the units of pressure used for gas law problems and be able to convert between them. (Section 5.1)

the concepts and terminology associated with the ideal gas law ($PV=nRT$) (Sections 5.3 – 5.5)

the difference between wavelength and frequency and are familiar with the electromagnetic spectra and the different regions of the spectra (X-ray, UV, visible, IR, Microwave, radio). (Section 7.1)

the concept of a photon and how the energy of a photon is directly proportional to the frequency and inversely related to wavelength. (Section 7.2)

when and why the Bohr Theory of the atom is useful, and as well as its limitations, and why it is not really correct. (Section 7.3)

how to work with exponential (i.e., scientific) notation, logarithms (e.g., log & ln), exponentials (i.e., 10^x and e^x) and the quadratic formula. For practice, go to www.uoguelph.ca/numeracy/repository/index.cfm

how to solve for an unknown within a linear equation. In some instances it may be helpful if you can solve for two unknowns using two linear equations.

how to use a table of (x,y)-data pairs to construct a plot. For straight line plots, you will be expected to calculate slope. For practice, go to www.uoguelph.ca/numeracy/repository/index.cfm

CHEM*1040 Learning Objectives can be found in the Guided Readings on the courselink website.

9. CHEM*1040 Skills

Through the content and concepts presented and the problems discussed, another purpose of this courses is to help you further develop skills that will aid you in your future courses within your program and major as well as beyond. These skills are:

ability to think critically & apply knowledge to new problems (i.e., problem solving skills)

numeracy
(www.uoguelph.ca/registrar/calendars/undergraduate/current/c02/sec_d0e353.shtml)

inquiry
(www.uoguelph.ca/registrar/calendars/undergraduate/current/c02/sec_d0e396.shtml)

observing and the ability to design a simple experiment

work co-operatively with others and independently

depth and breadth of understanding as well as the capacity to know when you do not understand (www.uoguelph.ca/registrar/calendars/undergraduate/current/c02/sec_d0e403.shtml)

love of learning
(www.uoguelph.ca/registrar/calendars/undergraduate/current/c02/sec_d0e427.shtml)

10. University Policies

E-mail Communication

As per university regulations, all students are required to check their <uoguelph.ca> e-mail account regularly: e-mail is the official route of communication between the University and its students.

When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons, please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. See the undergraduate calendar for information on regulations and procedures for Academic Consideration: <http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

Drop Date

The last date to drop one-semester courses, without academic penalty, is Friday, March 7. For regulations and procedures for Dropping Courses, see the Undergraduate Calendar: <http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml>

Copies of out-of-class assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

Accessibility

The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability or a short-term disability should contact the Centre for Students with Disabilities as soon as possible.

For more information, contact CSD at 519-824-4120 ext. 56208 or email csd@uoguelph.ca or see the website: <http://www.csd.uoguelph.ca/csd/>

Academic Misconduct

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community – faculty, staff, and students – to be aware of what constitutes academic misconduct and to do as much as possible to

prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

The Academic Misconduct Policy is detailed in the Undergraduate Calendar:

<http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml>

Recording of Materials

Presentations which are made in relation to course work—including lectures—cannot be recorded or copied without the permission of the presenter, whether the instructor, a classmate or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

Resources

The Academic Calendars are the source of information about the University of Guelph's procedures, policies and regulations which apply to undergraduate, graduate and diploma programs:

<http://www.uoguelph.ca/registrar/calendars/index.cfm?index>