Winter 2015 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) or CHEM*1060
Department(s): Department of Chemistry

Instructor: R. de Laat
Office: SCC 3244 **Office Hours: To Be Determined**
E-mail: rdelaat@uoguelph.ca

Lectures: Tues, Thur 4:00PM - 5:20PM ROZH, Room 104

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, $\log_{10}$ 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 5TH!
Bring your lab manual. The laboratory is an integral part of CHEM*1040 and a schedule is provided below. 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., 0108 = lecture section 01 and lab section 08). If your lab section is an odd number (e.g., 0113 = lab section 13), then you follow the "Week Acid Schedule". If your lab section is even (e.g., 0108 = lab section 08), 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. 04, 2014 or later of "My Class Schedule" from WebAdvisor to your first lab meeting.

Pre-laboratory Quizzes – delivered through CHEM*1040 W15 (LAB) General Chemistry I Wet Lab Cmpnt 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. To prepare for these quizzes, review the material provided in your lab manual. Pre-lab quizzes close the Thursday before the Experiment starts.

Quizzes must be completed by 2 PM on the dates given below.

Thurs. Jan. 15	Pre-lab Quiz on Safety and Exp't 1
Thurs. Jan. 22	Pre-lab Quiz on Exp't 3
Thurs. Feb. 5	Pre-lab Quiz on Exp't 2
Thurs. Feb. 12	Pre-lab Quiz on Exp't 4
Thurs. Mar. 5	Pre-lab Quiz on Exp't 5

Laboratory Reports

You will be using General Lab Marker System for lab reports 1, 2, 3, 5 (Part II & III Buffers). 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 CourseLink site, under "Content". Lab reports are normally due 1 week after your lab by 11:55 PM unless otherwise indicated (see the dates below).

Experiment 4 and Experiment 5 (Part I Titration Curves) will be handed in on paper - see the Laboratory Schedule.

Lab Reports are Due:

Jan. 26 - 30	Experiment 1: Introduction to Laboratory Equipment
Feb. 9 - 13	Experiment 3: Standardization of Sodium Hydroxide
Feb. 23 - 27	Experiment 2: Chemical Reactions in Aqueous Solutions (no Part D)
Feb. 23 - Mar. 6	Experiment 4: Synthesis of Aspirin (Hand in report at the end of lab)
Mar. 16 - 20	Experiment 5: Buffers, Titration Curves and Indicators (Titration Curve Part I of Experiment) - handed in on paper during your lab period 1 week after you have completed this part of the experiment.
Mar. 23 - 27	Experiment 5: Buffers, Titration Curves and Indicators (Buffer Parts II & III of Experiment)

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 7th - 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'14, W'14 or F'13).

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

CHEM*1040 W15 (LAB) General Chemistry I Wet Lab Cmpnt CourseLink Website

This is where you will find the pre-lab quizzes (see "Content" tab), lab information and this is where your final laboratory grades will be posted.

3. WINTER 2015 CHEM*1040 LABORATORY SCHEDULE

DATE	"**Week Acid**" Schedule (ODD lab section numbers)	"**Week Base**" Schedule (EVEN lab section numbers)
Week 1: Jan. 5 - 9	**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.
Week 2: Jan. 12 - 16	Online Computer Lab - **DO NOT GO TO THE LAB ROOM THIS WEEK.** Dry Lab A: Atomic Spectroscopy on the CHEM*1040 courselink website. **Marking Module Due 1 week after your lab day by 11:55 PM** on the CHEM*1040 courselink website.	
Week 3: Jan. 19 - 23	**Arrive at regular starting time.** Experiment 1: Introduction to Laboratory Equipment **Lab Report Due 1 week after your lab day by 11:55 PM** on the online General Lab Marker System.	**Arrive 90 min after regular starting time.** Experiment 1: Introduction to Laboratory Equipment **Lab Report Due 1 week after your lab day by 11:55 PM** on the online General Lab Marker System.
Week 4: Jan. 26 - 30	**Arrive at regular starting time.** Experiment 3: Standardization of Sodium Hydroxide - Part 1 (first half of experiment) Your lab report will be submitted in Week 6 after finishing the experiment in Week 5.	**Arrive 90 min after regular starting time.** Experiment 3: Standardization of Sodium Hydroxide - Part 1 (first half of experiment) Your lab report will be submitted in Week 6 after finishing the experiment in Week 5.
Semester Test 1: Monday, Feb. 2 in ROZH 104 - 5:40 to 6:40 PM - All Multiple Choice Questions		
Week 5: Feb. 2 - 6	**Arrive at regular starting time.** Experiment 3:Standardization of Sodium Hydroxide - Part 2 (second half of experiment) **Lab Report Due 1 week after your lab day by 11:55 PM** on the online General Lab Marker System.	**Arrive 90 min after regular starting time.** Experiment 3: Standardization of Sodium Hydroxide - Part 2 (second half of experiment) **Lab Report Due 1 week after your lab day by 11:55 PM** on the online General Lab Marker System.
Week 6: Feb. 9 - 13	**Arrive at regular starting time.** Experiment 2: Chemical Reactions in Aqueous Solutions (Part D will not be completed in the lab) **Lab Report Due during week 7 on the day of your lab by 11:55 PM** on the online General Lab Marker System.	**Arrive 90 min after regular starting time.** Experiment 2: Chemical Reactions in Aqueous Solutions (Part D will not be completed in the lab) **Lab Report Due during week 7 on the day of your lab by 11:55 PM** on the online General Lab Marker System.
Winter Break - February 16 to 20 - NO CLASSES - NO LABS		

Week 7: Feb. 23 - 27	**Arrive at regular starting time.** Experiment 4: Synthesis of Aspirin **(Hand in report on paper at the end of the lab).**	Online Computer Lab - **DO NOT GO TO THE LAB ROOM THIS WEEK** . Dry Lab B:Volumetric Analysis on the CHEM*1040 courselink website. **Marking Module Due 1 week after your lab day by 11:55 PM** on the CHEM*1040 courselink website.
Week 8: Mar. 2 - 6	Online Computer Lab - **DO NOT GO TO THE LAB ROOM THIS WEEK** . Dry Lab B:Volumetric Analysis on the CHEM*1040 courselink website. **Marking Module Due 1 week after your lab day by 11:55 PM** on the CHEM*1040 courselink website.	**Arrive at regular starting time.** Experiment 4: Synthesis of Aspirin **(Hand in report on paper at the end of the lab)**.
Semester Test 2: Monday, March 9 in ROZH 104 - 5:40 to 6:40 PM - Multiple Choice and Short Answer Questions		
Week 9: Mar. 9 - 13	**Arrive at regular starting time.** Experiment 5: Buffers, Titration Curves and Indicators (Titration Curve Part I of Experiment) **Lab Report Due 1 week after your lab** on paper (see special instructions on the courselink website) during your next lab period.	**Arrive 90 min after regular starting time.** Experiment 5: Buffers, Titration Curves and Indicators (Titration Curve Part I of Experiment) **Lab Report Due 1 week after your lab** on paper (see special instructions on the courselink website) during your next lab period.
Week 10: Mar. 16 - 20	**Arrive at regular starting time.** Experiment 5: Buffers, Titration Curves and Indicators (Buffer Parts II & III of Experiment) **Lab Report Due 1 week after your lab day by 11:55 PM** on the online General Lab Marker System (see special instructions on the courselink website).	**Arrive 90 min after regular starting time.** Experiment 5: Buffers, Titration Curves and Indicators (Buffer Parts II & III of Experiment) **Lab Report Due 1 week after your lab day by 11:55 PM** on the online General Lab Marker System (see special instructions on the courselink website).
Week 11: Mar. 23 - 27	Online Computer Lab - **DO NOT GO TO THE LAB ROOM THIS WEEK**. Dry Lab C: Gaseous Equilibrium on the CHEM*1040 courselink website. **Marking Module Due 1 week after your lab by 11:55 PM** on the CHEM*1040 courselink website.	
Week 12: Mar. 30 - Apr. 2	**Arrive at regular starting time.** YOU MUST ATTEND. Attendance will be taken. Clean-up and Exam Preparation. Solutions to exam prep questions will only be available in lab. Lab prep questions are on the courselink website. Please attempt them before coming to the lab this week. **This is the last day to submit notes for missed labs and to request lab regrades.**	**Arrive 90 min after regular starting time.** YOU MUST ATTEND. Attendance will be taken. Clean-up and Exam Preparation. Solutions to exam prep questions will only be available in lab. Lab prep questions are on the courselink website. Please attempt them before coming to the lab this week. **This is the last day to submit notes for missed labs and to request lab regrades.**

4. EVALUATION

Your course grade will be calculated based upon the scheme that produces the highest grade from the following:

	Scheme 1	Scheme 2
Assessment Quiz	1%	1%
In-class Clicker Score (optional)	3%	0%
Online "Wet" Pre-lab Quizzes (5 Quizzes)	3%	3%
Online "Dry" Lab Work (2 Dry Labs)	3%	3%
"Wet" Lab Reports (6 Lab Reports)	12%	12%
Chemistry Drills (5 min/day - 4 days/week in weeks 2-11)	5%	5%
Discussion Board (3 Discussions)	3%	3%
Semester TEST 1 (1 hour) - all multiple choice	15%	16%
Semester TEST 2 (1 hour) - multiple choice and short answer	20%	21%
Final Examination (2 hours)	35%	36%

Assessment Quiz (courselink.uoguelph.ca on the CHEM*1040 courselink website)
MUST BE COMPLETED BY 2 PM ON THURSDAY JAN 8th. This quiz will help you see how prepared you are for CHEM*1040.

Online "Dry" Lab Work (on the CHEM*1040 courselink website)
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.

Dry labs are due 1 week after the time you are scheduled to perform the dry lab experiment - see the Laboratory Schedule. Dry Lab A: Atomic Spectroscopy and Dry Lab C: Gaseous Equilibrium will account for a total of 3% of your final grade.
Dry Lab B: Volumetric Analysis is to help prepare for Semester Test 2 - results from Dry Lab B will be added as a bonus to the results of Semester Test 2.

Chemistry Drills (on the CHEM*1040 courselink website)
In weeks 2 to 11 of the semester Monday to Thursday there will be a 5 minute quick drills each day of basic chemistry and math to increase your understanding of the material needed to succeed in CHEM*1040.
Math Mondays - basic math, significant figures, algebra, stoichiometry
Periodic Table Tuesday - names and symbols of elements, ion charges on elements, other information about elements that can be determined by their location on the periodic table
Nomenclature Wednesday - names and formulas of chemical compounds
Random Thursday - any basic chemistry ideas from the information you should know - see Section 8 below
Each drill will be open from 12:01 AM till 11:59 PM of the day of the drill. You will be able to do each drill as many times as you want and you will get the highest grade you achieve for that drill, but you must do each drill on the specific day. After the drill closes it will open for you to review your submission(s) for a period of 3 days.

Discussion Board
Postings must be made before 2 PM on the dates indicated
Discussion topics will be discussed in class and posted to the discussion board

Thurs. Jan. 29	Discussion 1
Thurs. Feb. 26	Discussion 2
Thurs. Mar. 19	Discussion 3

Semester Test 1: Monday Feb. 2, 5:40 - 6:40 PM - ROZH 104
Semester Test 2: Monday Mar. 9, 5:40 - 6:40 PM - ROZH 104
Final Examination: Tuesday, April 7, 7:00PM - 9:00PM (2015/04/07) - 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 semester tests and exam. 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/Note Outlines (under content) and the weekly announcements on the courselink website for further details

Week	Date	Topics	Text Sections you are responsible to know	Text Questions you should be able to do
Week 0		**Review - things to help you recall Chemistry you have taken before.** Measurement, Significant Figures, Atoms, Molecules, Ions & the Mole	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. 5 - 9	**Atoms** - Atomic structure, atomic spectroscopy, periodic trends	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. 12 - 30	**Molecules** - Lewis structures, VSEPR & bonding, Organic Functional Groups, Organic Isomers, Intermolecular forces	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. 2, 5:40 - 6:40 PM ROZH 104

Week 5-6	Feb. 2 - 13	**Reactions** - Precipitation, Acid-Base, Organic	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. 23 - Mar. 6	**Stoichiometry**	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. 9, 5:40 - 6:40 PM ROZH 104

Week 9	Mar. 9 -13	**Equilibrium**	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
Week 10-12	Mar. 16 - Apr. 2	**Acids-Bases** - Acids, Bases, Salts, Buffers, Titration curves	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

Final Examination: Tuesday, April 7, 7:00PM - 9:00PM (2015/04/07) - 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 – for missed "wet" labs see the Purple Page on the courselink lab or lecture websites)

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 but you should have a good understanding of these concepts before beginning CHEM*1040)

-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: H_2, F_2, Cl_2, Br_2, I_2, N_2, O_2, P_4, S_8. (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.

-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., 10x 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/Note Outlines 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:

(a) ability to think critically & apply knowledge to new problems (i.e., problem solving skills)
(b) numeracy (www.uoguelph.ca/registrar/calendars/undergraduate/current/c02/sec_d0e353.shtml)
(c) inquiry (www.uoguelph.ca/registrar/calendars/undergraduate/current/c02/sec_d0e396.shtml)
(d) observing and the ability to design a simple experiment
(e) work co-operatively with others and independently
(f) 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)
(g) 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 <mail.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.

Drop Date

The last date to drop one-semester courses, without academic penalty, is Friday, March 6 Fortieth class day--Last day to drop one semester courses. For regulations and procedures for Dropping Courses, see the Undergraduate Calendar.

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.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 advisort. The Academic Misconduct Policy is detailed in the Undergraduate Calendar.

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.