

General Chemistry for Engineers, Chem 1024a, Sept. - Dec. 2010

COURSE OUTLINE

Notice from the Registrar: Unless you have either the prerequisites for this course or written special permission from your Dean to enroll in it, you will be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites (OAC or Grade 12 U (SCH4U) chemistry). Antirequisites are Chem 1050, or the former Chemistry 020, 021, 023, and 025. The website of the Office of the Registrar is <http://www.registrar.uwo.ca>.

Course website

The course can be found at <http://webct.uwo.ca>

Check the website of the course on a regular basis for updates and important information on the lectures, labs, tutorials.

Lectures

- MWF 10:30 – 11:30 am, North Campus Building (NCB), Lecture Room 113.
- Instructor: Dr. Styliani Conostas, Chemistry Building, Room 071.

Phone number: 519-661-2111 x 86338, e-mail : sconstas@uwo.ca

Tutorials and labs

- Friday 14:30 – 17:30 pm.
- You will alternate between lab and tutorial on a two-week cycle (see schedule for details).
- Labs: Materials Science Addition, Room 1220
- Tutorials: Western Science Center, Room 55

Office hours : Wednesdays 4:30 pm-6:30 pm and Fridays 12:30-2:30 pm in Chemistry Building, Room 071.

Required materials

- 2010-11 "Laboratory Manual and Past Exams", for Chemistry 1024a/b, Chemistry for Engineers, *2010-11 edition*, which contains laboratory experiments and past exams (available at the UWO book store).
- Sharp EL-510R calculator (available at the UWO book store). This is the *only* calculator model that is allowed on quizzes and exams.

- *Required text:* "Chemistry: Principles and Reactions" by Masterton and Hurley, 6th edition, Brooks/Cole Cengage Learning (available at the UWO book store). The solutions manual and study guide are optional. Wait and see whether you need the optional manuals.
- Lab coat, proper footwear (shoes must cover the entire foot), socks, and ankle-length pants must be worn.
- Safety glasses (for sale during lab orientation).

Course evaluation

- The course grade, out of 100, will be calculated as listed below.
 - o 5 labs (9 marks)
 - o Lab orientation exercise (1 mark)
 - o 5 tutorial quizzes (10 marks).
 - o Two-hour midterm exam (35 marks). The date is to be announced.
 - o Three-hour final exam (45 marks), date set by the Registrar. This exam is cumulative, but the emphasis will be on the material not covered in the midterm exam.

THERE ARE NO MAKE-UPS FOR LABS, TUTORIAL QUIZZES, OR MIDTERM EXAM

- Exams are multiple-choice and consist of both lecture- and lab-derived questions.
- Students who are repeating Chemistry 1024 are not exempted from the tutorial/lab parts of the course and must attend Lab Orientation.
- To pass this course, you must:
 - o Obtain a minimum of 4.5 out of 9 on the practical laboratory component
 - o Complete at least 3 out of 5 labs
 - o Obtain a minimum of 50 out of 100 on the course
 - o Students completing fewer than 3 labs and reports will receive a maximum course grade of 45 regardless of the performance in the mid-term and final exams
- You must arrive at the lab before the doors are closed. If the doors are closed you will not be permitted to do the experiment (resulting in a zero mark). In this case, no credit will be given for the completed pre-lab exercise.

- You should be familiar with the Scholastic Offense Policy in the Academic Calendar. Scholastic offenses are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offense, at http://www.uwo.ca/univsec/handbook/appeals/scholastic_discipline_undergrad.pdf. Experiments (pre-lab exercises, lab work, and data sheets) are to be done on an individual basis.
- Plagiarism: If a prelab exercise contains data from a previous year, the data have been copied. This is considered plagiarism. The prelab exercise will be given a mark of zero. A penalty of 5 marks will be deducted from the report mark. The Lab Coordinator and Instructor will be informed of this offense.
- Computer-marked multiple-choice tests and/or exams may be subject to submission of similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.
- Copies of lab reports from previous years are not permitted in the lab and will be confiscated.

Accessibility

Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 x 82147 for any specific question regarding an accommodation.

Tutorials and lab schedule

On Friday, September 24, all chemistry 1024a students will attend Lab Orientation. Your instructor will give instructions *in class* indicating the time you are to attend. Before Lab Orientation, please read the introductory section of the lab manual: Introduction, Safety Regulations and the Waiver. Bring the lab manual and your calculator to Lab Check In. If you wish to purchase safety glasses, bring \$10 cash. The dress code will not be in effect.

At Lab Orientation, you will be assigned to a Lab Group (1 or 2), a Lab Zone (an area of Room 1220) and a Lab TA. You will read pages vii and viii, sign and hand in the waiver on pages vii and viii of the Lab Manual. On the Lab Orientation Video you will see some of the features of the lab room, hear about lab preparation, marking, the prelab exercise and video exercises, the dress code and the lateness policy, among other things. You will be introduced to significant figures. You will carry out an exercise covering some of these topics. This exercise is part of your course mark.

Please be sure that you know the way to the Materials Science Addition (MSA), so you will be on time for Lab Orientation. The MSA is accessed through the main floor of the Chemistry building. Once you are on the main floor of the Chemistry building, the corridor to the MSA is on the east side of the hallway near Room 110.

The topics covered during the tutorials, and on the tests, will depend on the flow of lectures. The instructor will tell you, *in class*, what will be covered on the tutorial tests.

Schedule of the labs and tutorials

date	Group 1	Group 2
Sept 24, 10	Lab Orientation at 2:30 pm	Lab Orientation at 4:00 pm
Oct 1, 10	Synthesis experiment	Tutorial 1
Oct 8, 10	Tutorial 1	Synthesis experiment
Oct 15, 10	Acid-Base Titration	Tutorial 2
Oct 22, 10	Tutorial 2	Acid-Base Titration
Oct 29, 10	Molar Volume experiment	Tutorial 3
Nov 5, 10	Tutorial 3	Molar Volume experiment
Nov 12, 10	Thermodynamics experiment	Tutorial 4
Nov 19, 10	Tutorial 4	Thermodynamics experiment
Nov 26, 10	Equilibrium constant experiment	Tutorial 5
Dec 3, 10	Tutorial 5	Equilibrium constant experiment

Laboratory Information and Rules

- **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 Orientation.
- Labs begin promptly at 2:30 pm. You must arrive at the lab before the doors to the room are closed. If the doors are closed you will not be permitted to do the experiment (resulting in a zero mark). In this case, no credit will be given for the completed pre-lab exercise.
- 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 Orientation.
- Students must wear **ankle length pants, socks that cover the ankles and shoes that cover the entire foot**. If you are not properly attired you will be asked to leave and a mark of zero assigned.
- **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 the Lab Coordinator. Safety glasses may be rented. If you wear glasses you must wear safety glasses that are designed to fit over them. Members of the Chemistry Club will be selling safety glasses at Lab Orientation. If you wish to purchase these bring \$10 in cash. Safety glasses are not needed for Lab Orientation.
- The **prelab exercise**, must be completed before the lab period. The prelab exercise is designed so that you must read the experimental strategy and procedure to complete the exercise.
- When the lab period begins, you will answer questions that will be shown on the video screen. This is called the **video exercise**. This is done individually but you may look through your lab manual. The prelab/video exercise is handed in before the video begins. This is part of your lab mark.
- 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.
- For every experiment we will post photos and information on the course web site. You will find this to be quite helpful.

- At the end of the lab you may prepare your lab report at the lab and hand it in to your TA or take the data home and prepare the report. Except for the lab reports, the reports are due on the Thursday following your lab, at noon. You should deliver the report into the designated box in the Resource Room, which is in the MSA across from the labs (there is a designated box in the back left corner of the room).
- **Late lab reports** : If you are unable to hand in your lab report on time due to a legitimate reason, you must, in a timely manner, submit appropriate documentation to the Dean's office and the Dean's office will inform the instructor. Your late report must also be submitted to the instructor. In this case the report will be graded as though it were handed in on time. If you submit a late report without a legitimate reason, then 2.5 marks will be deducted for a report that is one day late, 5.0 for a two-day and 7.5 marks for a three-day late report.

Tutorial Information

- Course TAs and, when possible, the instructor, will be available during the first two hours of each tutorial to answer any questions you may have regarding the lecture material or the recommended textbook problems. It is expected that you will have completed, or at least attempted, the problems prior to coming to a tutorial. Use these resources to the maximum extent by coming prepared and by making a list of where you are having difficulties.
- The third hour will be used for a quiz that pertains to the subject matter covered during the tutorial. Some questions on previous material may be included on these quizzes. The value of this quiz is covered under *Course Evaluation*.

Absences, Code of Conduct

- Failure to complete or write an experiment, a tutorial quiz, the midterm, or the final, will result in a mark of zero for the missed item, and potential failure in the course, unless a valid medical or compassionate reason has been approved and an exemption has been granted. The Policy of Accommodation for Medical Illness is found in the web site: <https://studentservices.uwo.ca/secure/index.cfm> and for further policy information please visit http://www.uwo.ca/univsec/handbook/appeals/accommodation_medical.pdf (notice the underscore in accomodation_medical.pdf in the above web address).
- If you miss a laboratory experiment for a valid reason, present documentation to an academic counselor in your Dean's office. If your documentation is approved, the grade for the lab component will be re-weighted such that your mark will be based on the other labs. **There are no make-up labs.**
- If you miss a tutorial quiz for a valid reason, present documentation to an academic counselor in your Dean's office. If your documentation is approved, the grade for the

tutorial quizzes will be re-weighted such that your mark will be based on the other tutorial quizzes. **There are no make-up tutorial quizzes.**

- If you miss the midterm exam for a valid reason, contact an academic counselor in your Dean's office. If your documentation is approved your final exam will be worth 80% of your course grade. **There is no make-up midterm test.**
- If you miss the final exam, contact your Dean's office to obtain an SPC form. Students who are ill, for all exams and tests yet choose to write the final exam, must accept the mark that they receive.
- We will not authorize SPC exams for students with three exams in 27 (or greater) hours, nor for those with exam conflicts. The Registrar will place those with conflicts in designated conflict rooms. However, we will be pleased to approve your SPC if you have a "three in 24."
- Students are reminded of the university's *Code of Conduct* found on the university website. To maintain a high standard of learning environment in our classrooms, laboratories, and tutorial rooms for the students, those who are disruptive, rude, or show unacceptable behavior, either to the instructor, the TA, or the other students, will be asked to leave.

Tentative outline of topics and MH6 text sections

1. Fundamentals, Stoichiometry	Chapters 1-3, 4.1
2. Reactions in Aqueous Solution	Chapters 4, 13.1 - 13.3
3. Gases	Chapter 5
4. Thermochemistry	Chapter 8
5. Rate of Reaction	Chapter 11
6. Chemical Equilibrium	Chapter 12
7. Weak Acids and Bases	Chapter 13.4 - 13.6
8. Buffers	Chapter 14
9. Precipitation Equilibria	Chapter 16
10. Spontaneity of Reaction	Chapter 17
11. Electrochemistry	Chapter 18
12. Organic Chemistry	Chapter 22
13. Liquids and Solids	Chapter 9