

Course Outline * * * * * Essential Information

You should file this Outline in your Chem 023 Notes for reference throughout the year.

- ★ **Welcome to Chemistry 023** -- a full-year lecture-plus-laboratory course in General Chemistry; specifically designed for students who have **not** obtained a recent OAC or SCH4U in Chemistry at the 80% or better level. This course provides a prerequisite for any Second Year course offered by the Chemistry Department. With 3 lectures per week, it contains 50% more lecture time than does Chemistry 020. [Students who have obtained an OAC or SCH4U Chemistry credit above 79% within the past three years should be registered in one of the six sections of Chemistry 020.]

★ **Instructor for Chemistry 023**

Ms. Kay Calvin Chem Room 117 *e-mail: kcalvin@uwo.ca

* Note that **only** messages from a **UWO e-mail address** will receive a response.

Sections for Chemistry 023

Section	Lectures	Room	Section	Lectures	Room
001	MWF 11:30 am	NSC 145	002	MWF 2:30 pm	NSC 145

Lab/Tutorial Times

		Room	
M	2:30 - 5:30 pm	S005	NSC - 7
M	6:00 - 9:00 pm	S007	NSC - 7
W	6:00 - 9:00 pm	S004	NSC - 7
Th	2:30 - 5:30 pm	S006	NSC - 7

- ★ **Course Website:** <http://instruct.uwo.ca/chemistry/023>

★ **Evaluation: The Six Components of the Chemistry 023 Course Mark**

Nov Term Test	Saturday, November 4 th , 9:30 am - 12:00 pm	10%
Dec mid-course Exam	(3 hours; date announced by Registrar's Office)	20%
Feb Term Test	Friday, February 23 rd , 7:00 - 9:00 pm	15%
Note: This is the Friday before Conference (Slack) Week!!		
Apr Final Exam	(3 hours; date announced by Registrar's Office)	35%
Lab Mark	Average of 9 laboratory marks	10%
Lab Attendance is essential! You must pass the lab to pass the course!!		
Tutorial Mark	Average of 11 tutorial quiz marks	10%

★ **To Pass Chemistry 023:** To pass the course, you must meet **all three** of the following conditions.....

- obtain an **overall mark of at least 50%**
- achieve a mark **greater** than 50% in at least **one** term test or examination, and
- score **at least** 5/10 in your **laboratory** mark.

Make-Up tests/exams are NOT OFFERED in Chemistry 023.

All term tests and examinations must be written as scheduled. Room assignments and course materials covered will be announced in lectures shortly before each test/exam.

Students missing a term test or the December Exam through illness or other unavoidable cause (documented through their Dean's office) will have the 80% test component of their course mark based on the remaining tests/exams.

Students who do not write the final exam for any reason may apply through their Dean's office for Special or Deferred exam privileges, otherwise they may receive a failing grade in the course.

★ **Course Materials to be Purchased**

All of the following (except for safety glasses) are to be purchased from the Book Store.

Lecture Notes for Chemistry 023; 2006 - 2007 edition [UWO production, \$54.85]

This book contains partial (fill - in - the - blanks) lecture notes for the entire year. You will be expected to bring your Lecture Notes to all classes.

Tutorial Problem Sets and Test and Examination Papers; 2006-2007 edition [UWO production, \$54.85]. You will need these problem sets which will be used in the tutorials beginning week of September 26th. A complete set of Chemistry 020 test papers for the last three years (with answers!) is included for review purposes.

Laboratory Manual; 2006-2007 edition [UWO production, \$44.65] will be needed for the labs beginning week of October 3rd.

Note: Both the **Tutorial Problem Sets** and **Laboratory Manual** have pink - coloured covers and have been extensively revised for the 2006 - 2007 year. Second hand or old editions of these productions should **NOT** be used.

Textbook: Chemistry: Principles and Reactions, Masterton and Hurley, 5th edition, Used copies of the 4th edition may be available in the Used Book Store. It is still suitable for use in this course, but section division and pagination are different in some chapters. **NOTE:** While the text is strongly recommended, it is **not required**. You may wish to wait to see if you think you need to purchase the textbook. There are several copies of this text on reserve at the Heavy Demand Desk in the Taylor Library.

Safety glasses (Mandatory for lab work). Available for \$10 from Chemistry Club members in Chemistry Bldg during week of September 18th.

A Lab Coat. For safety reasons, a buttoned-up, approved lab-coat must be worn while you are working in the laboratory.

The Scientific Calculator (with the Instruction Book if unfamiliar with Calculator)

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

This model, priced under \$10, is quite adequate for chemical calculations.

Calculators with extensive memories, capable of storing text, equations, problem-solving programs, etc., are **NOT** allowed. Your instructors reserve the right to examine and confiscate other models of calculator.

Note: Students are responsible for ensuring that their calculator is in working order. Under no circumstances is exchange or sharing of calculators permitted.

STUDENTS ARE GIVEN NO SPECIAL CONSIDERATION ON A TEST OR EXAMINATION WHEN A CALCULATOR FAILS OR MALFUNCTIONS. 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. **UNDER NO CIRCUMSTANCES WILL SHARING OR EXCHANGE OF CALCULATORS BE ALLOWED IN A TEST OR EXAMINATION.**

Note: The Bookstore and your instructors in the Faculty of Science have been able to negotiate a price reduction through bulk purchases of the calculators and lab-coats.

Course Policy on Electronic Devices: Only the Sharp EL-510R calculator can be used in laboratories, tutorials, test and examination rooms.

Cellular phones, hand-held computers and other such electronic devices are **not** allowed, and will be confiscated for the duration if found in your possession.

★ **Lab Check In** [September 18th (S005 & 007), 20th (S004) or 21st (S006)]

For lab check in **DURING THE WEEK OF SEPTEMBER 18th** each Lecture Section is divided in half.

Those with surnames beginning with A to L will do lab check in at the lab during the first 90 minutes of the 3-hour period (**in the week of Sept 18th**). Those with surnames beginning with M to Z will do lab check in at the lab during the second 90 minutes.

This division is only approximate; the actual alphabetical division will be given in classes before your scheduled check in time.

Go to the first year Laboratory Rooms (10 - 13) on the Ground Floor in the Chemistry Building at the time set for your group. **All students must complete Lab Check-In!!**

Before Lab Check-In, read the introductory section of your lab manual and **bring the manual to Check-In with you**. At Lab Check-In you will be assigned to a Group (which are called Group I and Group II), Lab Room and a teaching assistant (TA). You will read, sign and hand in the waiver on page 9 of the manual. This waiver must be handed in or your name will not be on a class list. The TA will show you the safety features of the lab room, talk to you about the expectations for the lab such as preparation, marking, the prelab exercise and the dress code, show you how to use the balances and give a brief talk about significant figures. You will then do a brief exercise that will familiarize you with the equipment and give you practice with significant figures. A calculator is required. This will count toward your lab mark!! At the completion of Lab Check-In, **you must be aware** of which Group, I or II that you have been assigned!!

★ **Lab Information on the Website**

For Lab Check In and for each experiment, there will be notes and pictures of the experiment on the course website. You may find these useful!

★ **Review of Calculator Skills** [Sept 18th (S005 & S007), 21st (S004) or 22nd (S006)]

BRING YOUR CALCULATOR (with its Instruction Book) to this 90-minute mini-tutorial; designed to bring **calculational skills** up to the level required for Chemistry 023.

Students in Group I will do it in the second 90 minutes of the 3-hour period and students in Group II will do it in the first 90 minutes. This exercise is posted on the course website and may be attempted ahead of time; if students successfully complete this exercise attendance at the **tutorial** is not necessary.

Students **by Group** should go to their designated tutorial room at the appropriate time:

Section 005	Mon	2:30 - 5:30	Natural Sciences Centre 7
Section 007	Mon	6:00 - 9:00	Natural Sciences Centre 7
Section 004	Wed	6:00 - 9:00	Natural Sciences Centre 7
Section 006	Thur	2:30 - 5:30	Natural Sciences Centre 7

★ Laboratories and Tutorials

In the week of **September 25th**, **ALL** students will do the first Stoichiometry tutorial. Those in Group I go to the laboratory while those in Group II go to the tutorial room. The purpose of the tutorial program is to provide a non-stressful environment where you can focus on the quantitative aspects of chemistry. It helps you prepare for the tests and examinations in the course.

The first two hours of each three hour tutorial period will be spent working on problems, with the assistance of the instructor and teaching assistants. In the third hour, a quiz will be written. Tutorial quiz questions are similar to exam questions and they allow you to monitor your progress. Although the quizzes count only 10% toward the final mark, you will find that effort expended in the tutorial pays big dividends at exam time and can make a pass/fail difference for borderline students.

The **regular** laboratory - tutorial program operating on a two-week cycle begins during the week of **OCTOBER 2ND**. In this week Group I will do a three hour lab while Group II will do a three hour tutorial, in the last hour of which there will be a Tutorial Quiz. The following week the two groups interchange. In the Second Term the lab/tutorial order will be reversed for the two Groups. All **regular tutorials** are held in the tutorial rooms. See the Lab/Tutorial Schedule page 13 for a detailed schedule.

EACH LAB MUST BE DONE WITH YOUR GROUP AND YOUR DEMONSTRATOR!

MISSED LABS CANNOT BE 'MADE UP'

ALL LABS AND TUTORIALS ARE COUNTED IN THE CALCULATION OF YOUR LAB AND TUTORIAL MARKS! THERE ARE 9 LABS AND 11 TUTORIAL QUIZZES.

★ Laboratory Safety and Dress Code

LAB WORK WILL BE PERMITTED ONLY WHEN SAFETY GLASSES OR GOGGLES ARE WORN. Students who normally wear prescription glasses must wear safety glasses or goggles over their regular glasses. **Contact Lenses** may be worn with safety glasses in the laboratory, but be sure to inform your teaching assistant that you are wearing contact lenses. **FOR ADDED PROTECTION AGAINST CHEMICAL SPILLS, ANKLE LENGTH PANTS (not shorts or skirts) MUST BE WORN IN THE LAB TOGETHER WITH SOCKS AND CLOSED SHOES (not sandals).**

In addition, an approved, buttoned up lab coat must be worn while you are working in the laboratory.. The teaching assistants and technical personnel have instructions to exclude from the laboratory any student who, in their opinion, does not conform to the code, and a mark of zero will be assigned. **Lab coats are NOT available for rent!!**

Students not in compliance with the safety rules will be dismissed from the lab.

Acknowledgement: You will be required to sign an acknowledgement (page 9 of the lab manual) that you have read the sections on safety and that you agree to abide by them before you will be allowed to start lab work.

★ **Lab Reports**

Most of the experiments require completed data sheets to be handed in at the end of the laboratory period. The exceptions are Experiment F (Thermochemistry) and I (Kinetics). For these labs, the reports are to be submitted within ten minutes of your arrival in the following tutorial period. You will not be permitted to work on your lab report during the tutorial period.

★ **Chemistry Study Room**

The Chemistry Department operates a Study Room or Help Centre in Room 203 of University College. Chemistry 020, 023 and 024 instructors are available in this room on a rotating schedule, which will be posted on the Chemistry 023 website each month. At the conclusion of a tutorial, complete answers to the assigned problems are posted in the cabinets outside the labs. Many students find it helpful to visit the Study Room for assistance with points on which they are having difficulty.

★ **The Chemistry 023 Website** <http://instruct.uwo.ca/chemistry/023/>

Chemistry 023 maintains an instructional website on which can be found all information relevant to the course.

- * The Message Board is where new information will be posted.
- * Follow the links to access information about classes, labs and tutorials (including assigned problems), tests and exams (including seating assignments, answers and marks).

★ **Class Code of Conduct**

All classes will be managed so that they do not run beyond their allotted time. This means that lectures must begin **promptly** at either 11:30 am or 2:30 pm.

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 persist in engaging in such behaviours will be asked to leave the class.

★ Cheating and Plagiarism

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

Plagiarism: Students must write their essays and assignments in their own words.

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 023 are in multiple-choice form, and are marked by computer. The marking software is **always** employed to check for unusual coincidences in answer patterns that may indicate cheating, and when detected they are investigated.

★ Ten Hints for Success in Chemistry 023

1. Attend class regularly.
2. Be prepared to work regularly outside of class time. This is university!
3. After each class, work through the relevant numerical problems in the Tutorial Manual. **Don't fall behind** in reviewing and understanding the lecture / tutorial material.
4. Read the introduction 'How to obtain maximum benefit' in the Tutorial Manual.
5. Prepare for each tutorial class in advance, working through as many of the 'assigned problems' as you can. At the very least you **must** try the problems assigned in class. Make a note of any difficulties and bring them to the tutorial.
6. Prepare for each laboratory class in advance by reading the lab manual and doing the pre-lab exercise. Pay attention during the pre-lab lecture.
7. Make regular use of the Chemistry Study Room.
8. Start revising for tests and exams well in advance. **Don't rely on last-minute 'cramming'.**
9. Use previous tests to show you the **type** of question to be expected, but don't rely on them for course coverage. Re-working assigned problems from scratch gives a more thorough revision.
10. On all tests and exams, **read the question carefully** both before and after answering it.
11. Attend class regularly!

★ **Future Course Selection:** Below are some suggestions regarding course selection in second year. It may seem early to be thinking about this, but it pays to plan ahead. Many courses have pre-requisites. Before, and at, Intent to Register time in February 2007, the Chemistry Department (and others) will provide you with lots of help and advice! However, Senate regulations require that we advise you now that.....

"Unless you have either the pre-requisites for a course, or written special permission from your Dean to enroll in it, you will be removed from the 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 pre-requisites."

- **Which Chemistry course?** If reading this, you're in Chemistry 023, which means that you do not have $\geq 80\%$ in OAC or SCH4U Chemistry, or their equivalent. Students with SCH4U/OAC Chemistry marks $>80\%$ must take Chemistry 020. Either course will serve as the prerequisite for any Chemistry program, but a switch must be made in the add/drop period at the beginning of the course. Go to the Chemistry Add/Drop desk on September 11-15 (10:30 am - 12:30 pm and 1:30 - 3:30 pm in the Chemistry Bldg; room to be announced) to see a counsellor if you would like to switch. (Permission to transfer to Chemistry 023 will **not** be given to students having SCH4U/OAC Chemistry marks $\geq 80\%$.)
- **Year 1 Math:** A full course in the mathematical area must be completed in Year 1 for entry to many Science modules, including Specializations, Majors and Minors in Applied Math, Specializations, Majors and most Minors in Physics and Astronomy, and Specializations and some Minors in Earth Sciences. For Specializations, Major and Minor involving Chemistry, this requirement may be met by 1.0 course from Calculus 050a/b plus 0.5 course from Calculus 051a/b or 081a/b or 091a/b, Linear Algebra 040a/b; or by Applied Math 026; or by Math 030 (with appropriate marks - see 2006 Academic Calendar, pages 148-149).
- **Year 1 Physics:** 1.0 courses in Physics from: Physics 020, 024, or 028a/b and 029a/b is required for entry to the Major and Specializations in Chemistry. For the mark requirements, you should again consult the Calendar, p. 148-149. If you haven't taken Physics in Year 1 you may, with special permission, proceed in your second year into the Major or a Specialization involving Chemistry, but you will have to make up this deficiency, normally in your second year. Beware - this will complicate your second-year timetable !
- **Year 1 Biology:** Biology 022/023 is required for Year 2 Biochemistry/Chemistry, Biology, Chemistry/Environmental Science, Medical Science, and is required or strongly recommended for all other Environmental Science programs. The Honors Specialization in Biochemistry and Chemistry requires Chemistry 023 with a final grade $\geq 70\%$.

★ **Topic Outline Keyed to Textbook Sections** [Lecture hours per topic]

First Term:

Sections in Masterton & Hurley 5th edition

- | | | |
|----|-----------------------------|---|
| 1. | Introduction to Course [1] | |
| 2. | Fundamental concepts [6] | MH 5 1.1 -1.3; 2. 1 - 2.6; 3.1 - 3.4; 4.1,4.2 |
| 3. | Strong Acids and Bases [2] | MH 5 4.2, 4.3 and 13.1 - 13.3 |
| 4. | Oxidation and Reduction [2] | MH 5 4.4 |
| 5. | Electrochemistry[5] | MH 5 18.1, 18.2, 18.5, 18.6; 20.1 - 20.3 |
| 6. | Gases [5] | MH 5 5.1 - 5.5; 10.1 |
| 7. | Equilibrium [2] | MH 5 12.1, 12.2, 12.4, 12.5 |

Mid Term Test 1, November 4th , covers topics 1 – 5

- | | | |
|-----|--------------------------|------------------|
| 8. | Weak Acids and Bases [6] | MH 5 13.1 - 13.6 |
| 9. | Buffers [4] | MH 5 14.1 - 14.3 |
| 10. | Solubility Product [4] | MH 5 16.1 - 16.2 |

Mid Year Exam, date TBA, covers topics 1 – 8 with emphasis on 6 – 8

***** Christmas Vacation *****

Second term:

- | | | |
|-----|--|----------------|
| 11. | Thermochemistry [5] | MH 5 8.1 - 8.6 |
| 12. | Atomic Structure and Periodicity [5] | MH 5 6.1 - 6.8 |
| 13. | Bonding, Lewis Structures, and Molecular Shape [8] | MH 5 7.1 - 7.4 |

Mid Term Test 2, February 23rd covers topics 1 – 12 with emphasis on 9 – 12

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|-----|-----------------------|------------------------|
| 14. | Chemical Kinetics [7] | MH 5 11.1 - 11.7; 19.2 |
| 15. | Organic Chemistry [8] | MH 5 22.1 - 22.6 |
| | | plus Tutorial Manual |

Final Exam, date TBA, covers the whole course with emphasis on topics 13 - 15

★ Some Frequently Asked Questions

Q. How can I make up a missed : i) lab ii) tutorial quiz iii) exam

A. i) You can't. You will be excused without penalty for valid health or other reasons. Contact your instructor (NOT YOUR TA!) in all cases

ii) see i), but your instructor may be able to arrange for you to sit the quiz at an alternate time

iii) see i), except for the Final Exam, when you **MUST** contact your Dean's Office.....see below.

Q. I missed an exam/lab/tutorial because: (pick one). I overslept. I missed the bus. I couldn't find the right room. My hamster died. I had a date. I had tickets for a showwhat should I do?

A. Tough!

Q. I was feeling unwell when I sat the exam and so I did poorly...What should I do?

A. If you write the exam, you have deemed yourself fit and it is too late to do anything after the fact. If you are genuinely unwell, do not sit the exam. See student health services or your doctor. In all cases, missed exams will require a medical note. If you miss the final, you must apply for a special exam through the Deans office.

Q. My high school commencement falls on the same day as the first mid term in November...can I miss the exam

A. You must provide a letter from your school showing the date and time of your commencement. Your instructor will give you the option of missing this exam and having the other exams reweighted. **There are no make up exams**, and this particular exam (November mid term) is usually the one for which the class average is the highest...it is your choice.

- Q. I have an exam/lab/quiz which coincides with a religious observance. What should I do?
- A. The answer is basically the same as above. Most of the standard religious observances are already noted by UWO. If you are asking for consideration for one which is not on this list, you may be asked for some kind of proof or documentation.
- Q. A mid-term make up exam has been scheduled for another course that I'm taking but it conflicts with my lab/tutorial. What should I do?
- A. In **all** cases, a regularly scheduled class (be it a class, lab or tutorial) takes precedence over such things as make-up exams. You must ask the instructor of the **other** course to accommodate you in this regard.
- Q. I am leaving on a trip on the Friday night before reading week in February. I have already paid a lot of money for this and it is non-returnable, but I am going to miss the mid term. You can reweight my other exams..right?
- A. Wrong! Unless you can prove that you booked this trip before the start of term in September, you will get no sympathy.
- Q. Is it true that the lowest lab and tutorial mark are not counted?
- A. NO, all marks count
- Q. Are there any extra assignments, labs, quizzes or tests that I can do at the end of the year if my final grade is not as good as I need?
- A. NO...**not under ANY circumstances!** You are graded as per page 1 of this document...and that is it!
- Q. Can I use an alternate calculator? My regulation one was eaten by the dog, and the other one I have is just a simple cheap calculator too...
- A. Again...no. The strict calculator policy was introduced to combat a growing trend to bring very high powered calculators, or even hand-held computers to quizzes and exams. Some of these devices are capable of storing a LOT of information. We felt that a strict calculator policy, using a cheap, but adequate calculator was the fairest way to ensure that no student gets an unfair advantage. This policy will be applied on an absolute basis.

- Q. Do the marks ever get 'belled' if the class average is not high enough.
- A. No, not unless something has gone drastically wrong with an exam. This has not happened in **MANY** years.
- Q. I prefer to use my (hotmail, Yahoo, Rogers, Sympatico) email account. Can you please send my emails to this address
- A. No. We will only use your UWO email account.
- Q. How can I contact my TA for extra help?
- A. Your TAs are not obliged under University policy, to be your tutor as well. Many of the TAs are glad to help as much as they can and you can ask for their email address during a lab or tutorial. You have other help resources available such as the Study Room (see page 6 of this document), your instructor and various study groups that are organised in residences.
- Q. So what about a paid tutor...do you recommend them?
- A. As an absolute last resort, you may seek a for-pay tutor. The chemistry club keeps a list of students, graduate students and post-docs who offer their services as paid tutors...but please note a few very important things:
1. This is a private arrangement between you and the other person
 2. We do not vet, grade or test the suitability of anyone on this list
 3. You must NOT get into a for-pay arrangement with any of the TAs from your chem 023 section. **This last point is a legal matter and should be taken very seriously....if in doubt, ask.**



Laboratory/Tutorial Schedule: 2006 - 2007

Week Of.....	Group 1	Group 2
Sept. 18 - 22	Lab Check In/ Math Skills	Math Skills/Lab Check In
Sept. 25 - 29	Tutorial 1: Fundamentals	Tutorial 1: Fundamentals
Oct. 2 - 6	Lab A: Synthesis of a Complex	Tutorial 2: Stoich. & St. Acid-Base
Oct. 9 - 13	No Lab or Tutorial for either Group 1 or Group 2	
Oct. 16 - 20	Tutorial 2: Stoich. & St. Acid-Base	Lab A: Synthesis of a Complex
Oct. 23 -27	Lab B: Acid Base Titrations	Tutorial 3: Redox & Electrochem
Oct. 30 - Nov. 3	Tutorial 3: Redox & Electrochem	Lab B: Acid Base Titrations
Mid Term on Saturday, November 4 th ; 9:30 am - 12:00 pm		
Nov. 6 - 10	Lab C: Molar Volume of N₂	Tutorial 4: Gases & Equilibrium
Nov. 13 - 17	Tutorial 4: Gases & Equilibrium	Lab C: Molar Volume of N₂
Nov. 20 - 24	Lab D: Equilibrium Constant	Tutorial 5: Weak Acids & Bases
Nov. 27 - Dec. 1	Tutorial 5: Weak Acids & Bases	Lab D: Equilibrium Constant
Dec. 4 - 8	Incomplete Week: No lab or tutorial , Classes end Dec. 7	
Jan. 8 - 12	Tutorial 6: Buffers & K _{sp}	Lab E: Spectrophotometry
Jan. 15 - 19	Lab E: Spectrophotometry	Tutorial 6: Buffers & K _{sp}
Jan. 22 - 26	Tutorial 7: Thermochemistry	Lab F: Thermochemistry
Jan. 29 - Feb. 2	Lab F: Thermochemistry	Tutorial 7: Thermochemistry
Feb. 5 - 9	Tutorial 8: Atoms, Periodicity	Lab G: Redox Titrations
Feb. 12 - 16	Lab G: Redox Titrations	Tutorial 8: Atoms, Periodicity
Feb. 19 - 23	No formal lab or tutorial; Mid Term on Friday, February 23 rd : 7:00-9:00pm	
Feb. 26 - Mar. 2	Slack Week	
Mar. 5 - 9	Tutorial 9: Molecular Shape	Lab H: Qualitative Analysis
Mar. 12 - 16	Lab H: Qualitative Analysis	Tutorial 9: Molecular Shape
Mar. 19 - 23	Tutorial 10: Kinetics	Lab I: Kinetics
Mar. 26 - 30	Lab I: Kinetics	Tutorial 10: Kinetics
Apr. 2 - 6	Tutorial 11 : Organic Chemistry for both Group 1 and Group 2	

