COURSE SYLLABUS: CHEM 206 - GENERAL CHEMISTRY II

IMPORTANT: ALL PARTS OF THIS COURSE WILL BE DONE IN PERSON, ON CAMPUS IN MONTREAL. IF PUBLIC HEALTH REGULATIONS FORCE A CHANGE TO ONLINE LEARNING: LECTURES/LABS/TUTORIALS WOULD REQUIRE SYNCHRONOUS PARTICIPATION VIA ZOOM, & EXAMS WOULD BE DONE IN COLE WITH PROCTORIO PROCTORING. IF FOR ANY REASON THESE REQUIREMENTS DO NOT WORK FOR YOU, PLEASE DROP THE COURSE BY THE DEADLINE.

1. GENERAL INFORMATION (Winter 2024: **on-campus** attendance required at lectures, tutorials & labs)

- **Course:** **General Chemistry II, Chem 206 (3 credits), Winter 2024**
  Lectures: 2.5h every week (synchronous classroom lectures +/- recorded videos, varies by professor), **on campus**
  Tutorials+Labs: **MANDATORY**; **weekly activities starting week of Jan. 22nd** (see p.5-6 for schedules)
  STARTING: **week of Jan. 15th** (see p.5-6 for schedules)

- ***IF REPEATING COURSE:*** *Lab exemptions must be requested before noon, **Fri.Jan.19th** by submitting the application form (visit https://www.concordia.ca/artsci/chemistry/programs/undergraduate/procedures-forms.html & see Student Requests) to the Chemistry Department (chemistry.reception@concordia.ca).* ***All repeating students must repeat all other parts of the course including the tutorials.*** *Students are eligible for a lab exemption if they passed (>60%) the Chem 206 labs in the past 24 months; students who partially completed the lab component must repeat all labs.*
  New Policy: Starting W2024, students receiving a DISC (DSC) grade in this course will be required to repeat all components (including labs) of the course upon retaking it. Students who received a DSC prior to W2024 (and passed the lab component) can still receive a lab exemption in Summer 2024 and going forward up to 2 years.

- **Instructors: for Office hours & Zoom IDs see Moodle Lecture site**

- **Professor (Lec. 02): Dr. Rafik Naccache (**rafik.naccache@concordia.ca**),** Associate Professor, Dept. of Chemistry & Biochemistry
  Lectures: Synchronous = classroom lectures + problem-solving with iClicker questions
  Office Hours: See course Moodle site

- **Professor (Lec.51): Dr. Elham Ghobadi (e.ghobadi@concordia.ca) ,** Part-Time Faculty, Dept. of Chemistry & Biochemistry
  Lectures: Synchronous = classroom lectures + videos & readings before class + in-class problems & participation
  Office Hours: after each lecture or by previous appointment

- **Course Coordinator: Dr. Elham Ghobadi** (e.ghobadi@concordia.ca) - course policies, tutorial issues/absences

- **Lab Coordinator: Dr. Jennifer Romero** (Jennifer.Romero@Concordia.ca) - lab issues/absences, on-campus labs

- **TAs (lab/tut):** contact information provided on course's Moodle website (Core Materials page)

- **Moodle sites:** Core Materials site: tutorial materials, lab information, TA contact information, FAQs,
  Lecture site: lecture slides & videos, useful links, additional information from your own professor

2. COURSE DESCRIPTION

- **Calendar description:** Thermochemistry, solutions & their properties, equilibrium, ionic equilibrium, pH, buffers, kinetics, reaction mechanisms, other selected topics related to biochemistry, biology, and engineering. Lectures and laboratory. NOTE: Students in programs leading to the BSc degree may not take this course for credit to be applied to their program of concentration. **Prerequisite:** CHEM 205
- **Required background knowledge/skills:** proficiency in high-school mathematics necessary (**see Moodle for skills list**)
- **Expanded course description:** General Chemistry II uses the chemical "language" learned in Chem 205 – atomic theory, properties of elements, molecular structures, chemical reactions and stoichiometry – and applies it to build an understanding of what drives chemical processes. In this course, theoretical understanding, critical thinking and mathematical approaches are combined to solve chemical problems; the course leans heavily on mathematical calculations. Chem 206 is a course about learning to think like a scientist, by digging through everything you know in order to determine what knowledge is relevant and how best to approach the problem at hand. The laboratory experiments further demonstrate how textbook chemistry is used to solve chemical problems. Together, the theory and lab work will give you a well-rounded introduction to some of the quantitative aspects of chemistry.
- **To succeed in Chem 206:** You must regularly work through problems from the textbook (in addition to doing the readings). Emphasize the end-of-chapter *"General Questions"* - these test your understanding and build your problem-solving skills by mixing topics together, as they are encountered in the real world and on exams (see samples on course website). Go back to the dozens of earlier *"Study Questions" & "Practicing Skills"* questions when you've identified a particular topic with which you need extra practice. If you start at question #1 in each chapter, you will run out of study time before you have ever tested your ability to apply

your knowledge (which is the emphasis of this course). Write out all problems/calculations in full to forge a strong link between your brain and your pen - your course work will be graded on both correctness and completeness.

3. GENERAL OBJECTIVES

- **Students are expected to:**
  - Draw on background: routinely use previously studied chemistry knowledge (Chem 205) and mathematics (algebra)
  - Acquire knowledge: memorize factual information, assimilate scientific concepts, learn calculations to apply concepts
  - Build competencies: attention to detail, explanation of cause & effect, application of knowledge to real situations
  - Develop skills: discipline, logic, qualitative & quantitative problem-solving, data analysis, laboratory techniques
  - Lay groundwork: for science courses: critical thinking, understanding chemical driving forces & relevance to science
  - Build soft skills: explain to peers, make consensus decisions in groups, make clear verbal & written arguments

4. EXTRAORDINARY CIRCUMSTANCES

- In the event of extraordinary circumstances and pursuant to the Academic Regulations, the University may modify the delivery, content, structure, forum, location and/or grading scheme. If this happens, students will be informed of the changes.

5. COURSE MATERIALS *(All materials are available online and/or on campus via Concordia Stores.)*

- **Required: Textbook:** **free pdf textbook**: *Chemistry 2e* https://openstax.org/details/books/chemistry-2e ***OR…***
  $80-100 ebook *Chemistry & Chemical Reactivity,* 10th Ed, Kotz, Treichel, Townsend & Treichel.
  Lab manual: **~$20** hard copy at Loyola campus bookstore, OR, pdfs on Moodle Core Materials site (if on backorder)
  Equipment: lab coat, safety glasses, and spatula (available at campus bookstore)
- **Readings:** Kotz *10th Ed.*: Ch. 5, 18, 11, 13, 14, 15, 16, 17.1-17.5 ***OR*** OpenStax *2e*: Ch.5, 16, 10.1-10.2, 11, 12, 13, 14, 15.1.

6. GRADING

- **Breakdown:**

Tutorial activities:	15 % (5 two-stage quizzes, each: 1% group quiz + 2% individual quiz)
Midterm exam:	20 % (in class Mar. 4th - 8th , covers roughly the first 4 chapters of course material)
Class participation:	5 % (Weekly in-class completed exercises/work submitted on Moodle)
Final examination:	40 % (on campus & cumulative, during Apr. 18th - May 1st exam period)
Laboratory reports:	20 % (4 reports worth 5% each, including mandatory pre-lab activities)

Note: If a student who has written the midterm exam performs better on the cumulative final exam, their midterm will not count at all & their final exam will count for 60%.

Theory Pass Requirements: >45% average on final exam AND >50% average on combined theory
Lab Pass Requirement: >60% average on lab reports required to pass course.

- **Expectations:** application of pre-requisite knowledge (& common sense) to new concepts, situations and problems
  logical explanation of concepts/situations, supported by facts and full calculations where appropriate
  objective, reasonable analysis and interpretation of laboratory observations and quantitative data

Note: Concordia's Short-Term Absence form (https://www.concordia.ca/students/absence-form.html) may be used to notify an instructor of a 1-2 day absence due to emergency/illness/acute mental health issues, without supporting documents (*e.g.* medical note). It **cannot** be used for final exams, work worth ≥ 30% of course, planned absences, or absences > 2 days. IMPORTANT: This form can be used a maximum of 2 times from Sept.-April and 1 time in any summer term. Contact instructor **within 2 days** to see how missed work can be made up.

- **Attendance:** **Labs/tutorials: if miss > 1 lab report or >1 tutorial (ANY REASON), an R grade is earned for course**. Contact Coordinator to plan for religious holidays or medical appointments or to ask if a make-up is possible. Missed labs/tutorials may be made-up during the 2-week period the same activity is being done. Un-excused missed activities earn zero grades. Absences without submission (max.1 each) might be excused if justified - see Coordinator.
- **Submitted work:** Lab reports must be submitted directly to TAs/Moodle before or on the due date; late penalties apply (10% per day) must be legible, organized & show full calculations and explanations (justification counts for grades) if uploaded, must be a pdf file made from a clear photo of handwritten work (unless ACSD says typed) will be graded by TAs (lab & tutorial work) and by professors (participation, midterm exam, final exam) must be in your own words; logic flow & proper terminology worth more here than perfection of writing may be submitted in French, according to Concordia policy (talk to your professor if you require this)
- **Grading scale:** A+ (≥ 90%), A (85.0-89.9%), A- (80-84.9%); B+ (76.7-79.9%), B (73.4-76.6%), B- (70-73.3%); C and D grade ranges similar to Bs.
- **Failing grades:** Fail (F): if earn < 50% on theory vs Repeat (R): if earn < 60% on labs, or miss >1 lab or >1 tutorial
  If repeating: apply for lab exemption (see p.1 top); must repeat tutorials & all other parts of course

7. SCHEDULE (May be subject to change.)

- **Important dates:**

Lectures: **start week of Jan.15th**
Lab/Tut. check-in: **mandatory, Jan. 22 -25, at scheduled lab start time in SP-236**
Chem 101: mandatory **seminar on Jan. 30th or Feb.1st via Zoom**; **Moodle quiz deadline Feb. 18th (11:55 PM)**
Drop deadlines: **DNE (tuition refund) deadline: Mon. Jan. 29th; DSC Wed. Apr.17th**
Midterm exam: **in person during class on campus week of Mar. 4th - 8th** (on COLE if forced online by health regulations)
Final exam: **Apr. 18th - May 1st exam period**, **in person on campus** (on COLE if course forced online)

8. USE OF THIRD-PARTY SOFTWARE AND/OR WEBSITES

- Students are advised that external software and/or websites may be used in this course. Students may be asked to submit or consent to the submission of personal information (*e.g.*, name and email) to register for these online services. Students are responsible for reading and deciding whether or not to agree to any applicable terms of use. Use of this software and service is voluntary. Students who do not consent to the use the software or service should identify themselves to the course coordinator as soon as possible, and in all cases before the DNE deadline, to discuss alternate modes of participation.
- **Institution tools:** Moodle, Zoom, Yuja, COLE, Proctorio, Office365 (O365) are recognized as institutional tools by Concordia. Professors are not required to accommodate students who wish to opt-out of sharing data with these sites/tools.

9. BEHAVIOUR (RIGHTS AND RESPONSIBILITIES OF THE STUDENT)

- **Be professional:** All individuals participating in this course are expected to be professional and constructive throughout the course, including in ALL communications (verbal, written, face-to-face, on-line) with ALL faculty, staff & students. Concordia students are subject to the Code of Rights and Responsibilities (https://www.concordia.ca/content/dam/common/docs/policies/official-policies/BD-3.pdf) when engaged physically and/or virtually in any University activity, *e.g.*, classes, seminars, labs, *etc*.
- **Contribute to a positive learning environment:** Disruptive or disrespectful behaviour will not be tolerated in any Concordia environments: classrooms, labs, tutorials or on-line. Students engaging in inappropriate behaviour will be asked to leave, without the opportunity to make up the missed work.
- **Read the Core Materials Moodle site during the first week of classes:** Full explanations of the course policies, activities, and helpful tips are provided as FAQs (frequently asked questions). Please read it before the end of the 1st week of class. By registering for the course, you are agreeing to follow these rules. The information will remain accessible all term for your reference. If you have questions, please ask the Course Coordinator, Lab Coordinator or Professor (depending on topic).
- **Be prepared for lectures, tutorials & labs: (for lab/tutorial "check-in", no preparation required)**

Lectures: Read/watch the lecture materials before class & answer any feedback questions required by your professor, and then be ready to (i) answer questions (including calculations) during the lecture and (ii) engage in discussion with classmates to clarify each others' understanding.

Tutorials: Do exercises & study assigned topics, and then be ready to (i) participate in TA-led review exercise and (ii) write a two-stage quiz (complete a quiz in small groups, then write similar quiz individually).

Labs: Read the experiment & complete the pre-laboratory quiz (individually, submitted on Moodle), and then be ready to (i) complete & discuss the experiment with peers & TA + (ii) do the lab report (individually) based on data from the experiment.

- **Complete the MANDATORY "Chem 101" seminar + quiz on the Academic Code of Conduct & Ethical Use of Information Sources:**

As part of your CHEM course, you are ***required*** to i) attend a Chemistry and Biochemistry Departmental Seminar on the academic conduct code and the appropriate use of information sources and ii) pass the online quiz associated with this seminar (the passing grade for the quiz is 100%). (**Note:** this quiz is graded by the Department of Chemistry and Biochemistry, and you do not have access to it until after you have attended the seminar. Therefore, any other quiz you may have taken on the academic code of conduct does not count toward the CHEM 101 requirement.) The aim of this seminar and quiz is to clarify the academic conduct code in terms of which practices will be considered unacceptable with regards to work submitted for grading in your CHEM course. **You are only exempt from repeating the seminar and the quiz if you have done both in Winter 2019 or more recently*,** otherwise you are required to repeat both this term. This short seminar (1 hour) will be held at the following times (note that you will not be given credit if you join too late and/or leave too early):

Date (Winter 2024)	Time	Mode	Registration link
Jan.30 (Tuesday)	21:00-22:00	Zoom	https://concordia-ca.zoom.us/meeting/register/tZEpduiqqj8rHNA4t_dWhFwnImOSHyjND38f
Feb.1 (Thursday)	21:00-22:00	Zoom	https://concordia-ca.zoom.us/meeting/register/tZIvf-ysrz8pGNFJEOnE8CqWvRYv_ADZ4arT

As space for each of the Zoom seminars is limited, please **register early** for your preferred slot (copy the corresponding link above into your browser). **Look out** for the Zoom email with the link to the actual seminar. Then do not forget to **attend** that seminar slot on the date above. You will **not** receive a reminder on or before the date!

We will take attendance at the Zoom seminar; this means that you must log in with the code that was supplied for your registration. Do not "join a friend" in watching at their computer.

If you do not complete Chem 101, your final CHEM 205 grade will be lowered by one letter grade and carry an incomplete notation (*e.g.,* C+/INC if you earned a B-) until such time as this requirement is completed. Please refer to the undergraduate calendar (section 16.3.5) for details on removal of an incomplete notation.

* You are exempt if you can locate your ID in the pdf file located on the Departmental web site (https://www.concordia.ca/content/dam/artsci/chemistry/docs/Compliance-list1.pdf) and if there is no entry in the "quiz" column for you.
The Academic Code of Conduct can be found in section 17.10 of the academic calendar and on the Academic Integrity site (https://www.concordia.ca/conduct/academic-integrity.html). Any form of unauthorized collaboration, cheating, copying or plagiarism found in this course will be reported and the appropriate sanctions applied. The mandatory seminar is a clear and fair opportunity to learn what our faculty regards as academic misconduct. Failure to take part in this learning opportunity and thus ignorance of these regulations is no excuse and will not result in a reduced sanction in any case where academic misconduct is observed.

- **Demonstrate academic integrity:** *(Source: Academic Integrity Website,* https://www.concordia.ca/conduct/academic-integrity/plagiarism.html).

- Plagiarism: The most common offense under the Academic Code of Conduct is plagiarism, which the Code defines as "***the presentation of the work of another person as one's own or without proper acknowledgement***". This could be material copied word for word from books, journals, internet sites, professor's course notes, *etc*. It could be material that is paraphrased but closely resembles the original source. It could be the work of a fellow student, for example, an answer on a quiz, data for a lab report, or a paper or assignment completed by another student. It might be a paper purchased through one of the many available sources. "Presentation" is not limited to written work – it can also refer to copying images, graphs, tables, ideas, oral presentations, computer assignments and artistic works. Finally, if you translate the work of another person into French or English and do not cite the source, this is also plagiarism. In simple words: DO NOT COPY, PARAPHRASE OR TRANSLATE ANYTHING FROM ANYWHERE WITHOUT SAYING FROM WHERE YOU OBTAINED IT!
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10. INTELLECTUAL PROPERTY RIGHTS (IP)

- **No sharing/reposting:** Content belonging to instructors shared in online courses, including, but not limited to, online lectures, course notes, and video recordings of classes remain the intellectual property of the faculty member. It may not be distributed, published or broadcast, in whole or in part, without the express permission of the faculty member. Any unauthorized sharing of course content may constitute a breach of the Academic Code of Conduct and/or the Code of Rights and Responsibilities.
- **Get permission to record:** Students are also forbidden to use their own means of recording any elements of an online class or lecture without express permission of the instructor.
- **Your work is yours:** As specified in the Policy on Intellectual Property, the University does not claim any ownership of or interest in any student intellectual property (IP). All university members retain copyright over their work.

11.CONCORDIA UNIVERSITY SERVICES FOR STUDENTS (partial list)

i. Counselling & Psychological Services: https://www.concordia.ca/health/mental-health/counselling.html
ii. Student Success Centre: https://www.concordia.ca/students/success.html
iii. New Student Program: https://www.concordia.ca/students/success/new.html
iv. Concordia Library Citation & Style Guides: *http://library.concordia.ca/help/howto/citations.html*
v. Academic Integrity Website: https://www.concordia.ca/conduct/academic-integrity.html
vi. Access Centre for Students with Disabilities: https://www.concordia.ca/students/accessibility.html
vii. Sexual Assault Resource Centre: *https://www.concordia.ca/conduct/sexual-assault.html*
viii. Academic advising: https://www.concordia.ca/students/registration/advising.html
ix. Advocacy & Support Services: https://www.concordia.ca/students/success/advocacy.html
x. Health Services: https://www.concordia.ca/health.html?utm_source=redirect&utm_campaign=health

Winter 2024 CHEM 206 – STRATEGY, LECTURE SCHEDULE, READINGS

TRAIN LIKE FOR SPORTS: LEARN RULES (theory), PRACTICE SKILLS (do exercises), PLAY (apply skills under pressure).

- **Lecture prep.:** Read posted notes & watch prof's' videos, do textbook exercises, figure out which topics you find hard *before* class.
- **Classes** are meant to help clarify difficulties & to work on problem-solving strategies. The more you put in, the more you get out.
- **Lecture participation:** Lecture participation earns points.
- **Take notes:** write during videos & class (key points/examples/issues). Writing builds link between brain & pen - **critical for tests**!
- **Repetition reinforces memory:** Revisit slides/videos & your own textbook for clarification. Avoid new sources for each query!
- **Teach to learn:** For calculations and chemical reactions, write out everything, like you are teaching it to a beginner. For phenomena, explain what is going on, step-by-step, starting from the molecular level & building up to what you observe. Find a study buddy: discuss problem-solving strategies, compare answers, practice explaining, help each other use correct terminology.
- **Practice regularly:** Do exercises from textbook (answers hidden!). Once confident, simulate test stress (no notes, short time…).

Week	Dates	Topic	Approximate schedule (for Dr.Rogers' lectures) *(subject to change; dates may vary)*	Text readings Kotz 10th *(OpenStax 2e)*
1	**Jan 15 - 19**	Thermochem I	Energy, enthalpy, heat transfer, heat capacity, change of state 1st law of thermo., enthalpy changes in reactions, calorimetry	5.1 – 5.3 ***(5.1)*** 5.4 – 5.6 ***(5.2)***
2	**Jan 22 - 26**	Thermochem.I Thermodynamics I	Standard enthalpies, Hess's law, ΔH calculations Driving forces of chemical rxns: 2nd law of thermo., entropy	5.7– 5.8 ***(5.3)*** 18.1 – 18.4 ***(16.1-2)***
3	**Jan 29 - Feb 2**	Thermodyn. II IMFs	Entropy & Gibbs free energy changes in chemical reactions Spontaneity & equilibrium; …Intermolecular forces	18.5 – 18.7 ***(16.3-4)*** 11.1 – 11.4 ***(10.1)***
4	**Feb 5 - 9**	Liquid Properties Solutions I	Intermolecular forces & properties of liquids Concentration units, solution process, effects of T and P	11.5 – 11.6 ***(10.2)*** 13.1 – 13.3 ***(11.1-3)***
5	**Feb 12 -16**	Solutions II	Colligative properties: vapour P, bp elevation, fp depression true solutions *vs* colloids	13.4 ***(11.4)*** 13.4 – 13.5 ***(11.5)***
6	**Feb 19 - 23**	Kinetics I	Rates, experiments, rate laws, conc.-time relationships, ½-life Activation E, effect of temperature on rate, Arrhenius equation	14.1 – 14.4 ***(12.1-4)*** 14.5 ***(12.5)***
	Feb 26 - Mar 1		***No class – Concordia's Reading Week***	
7	**Mar 4 - 8**	***Midterm Exam*** Kinetics II	***75 min. test; 20%*** Particulate view of reaction rates, mechanisms, catalysis	***Content: TBA*** 14.7, 14.6 ***(12.6)***
8	**Mar 11 -15**	Equilibrium	Eqm constant, rxn quotient *vs* direction, Le Châtelier's principle Application of equilibrium concepts & calculations	15.1–15.3, 15.6 ***(13.1-3)*** 15.4–15.5 ***(13.4)***
9	**Mar 18 - 22**	Acids & Bases	Bronsted-Lowry definitions, pH scale, conjugate pairs, K_a & K_b Lewis acid-base theory, molecular structure & acidity/basicity, pH of weak acid/base solutions, acid-base properties of salts, acid-base rxn equilibria, dominant species at equilibrium	16.1 – 16.6 ***(14.1-4)*** 16.7, 16.9 – 16.10 ***(15.2)***
10	**Mar 25 – 28***	Titrations	pH after rxn, acid-base titrations, pH at equivalence point Titration curves, pH indicators	17.3 ***(14.7)***
11	**Apr 2 - 4**	Buffers	Speciation *vs* pH, polyprotic acids Common ion effect, buffers & controlling pH	16.8 ***(14.5)*** 17.1 – 17.2 ***(14.6)***
12	**Apr 8 – 12**	Solubility Equilibria	Ionic compound solubility, solubility product, precipitation rxns	17.4– 17.6 ***(15.1-2)***

**Tues, Apr 16: Makeup day for class scheduled on March 29*

Winter 2024 CHEM 206 – WEEKLY SCHEDULE –TUTORIAL / LAB

MANDATORY: Attendance at check-in, labs & tutorials is mandatory. If you miss >1 lab or >1 tutorial (ANY REASON), a Repeat (R) grade in earned in the course.

- **Tutorial prep.:** Study tutorial topics & do lots of problems to prepare for tutorial activities/quizzes (worth 3%/week). Each tutorial has a TA-led Pre-Quiz Task, a Group MCQ quiz, & an Individual quiz (written work submitted).
- **Laboratories:** On campus in LOY SP-236. Wear lab coat, safety glasses, fully covered legs/feet & closed shoes. Arrive prepared.
- **Pre-lab prep.:** Complete pre-lab quiz on Moodle **by 4pm the day before your lab time**. No pre-lab quiz ⇨ lab report NOT accepted.
- **Lab reports:** Each student writes own report. Report must be on Moodle. **Due with next pre-lab**. Late: -10%/day, no autoextension. Contact Lab Coordinator ASAP if sick.

Group A (assigned at mandatory TL check-in session)	**Dates**	**Group B** (assigned at mandatory TL check-in session)
NO LABS/TUTORIALS: review Gen.Chem.I on your own!	**Jan 15 to 18**	NO LABS/TUTORIALS: review Gen.Chem.I on your own!
****If register late,** email both Coordinators immediately! **T/L Check-in:** Meet at lab with tutorial & lab TAs for mandatory activities & division into Groups A/B. **Mandatory Health and Safety Quiz on Moodle Due Jan 28 at 11:59 pm**	**Jan 22 to 25**	****If register late,** email both Coordinators immediately! **T/L Check-in:** Meet at lab with tutorial & lab TAs for mandatory activities & division into Groups A/B. **Mandatory Health and Safety Quiz on Moodle Due Jan 28 at 11:59 pm**
Tutorial 1A: Topics TBA	*DNE Jan 29* **Jan 29 to Feb 1**	**Expt 1:** Gases (Parts 1 & 4 only + Excel training)
Expt 1: Gases (Parts 1 & 4 only + Excel training)	**Feb 5 to 8**	**Tutorial 1B: Topics TBA**
Tutorial 2A: Topics TBA	**Feb 12 to 15**	**Expt.2:** Calorimetry, + solution prep. for Exp.4 Part 2
Expt.2: Calorimetry, + solution prep. for Exp.4 Part 2	**Feb 19 to 22**	**Tutorial 2B: Topics TBA**
Reading week – no lectures, labs, tutorials	**Feb 26 to Mar 1**	**Reading week – no lectures, labs, tutorials**
Tutorial 3A: Topics TBA	**Mar 4 to 8** **Midterm Exam**	**Expt.3:** A Kinetic Study (Parts 1 & 3)
Expt.3: A Kinetic Study (Parts 1 & 3)	**Mar 11 to 14**	**Tutorial 3B:** Topics TBA
Tutorial 4A: Topics TBA	**Mar 18 to 21**	**Expt.4:** Chemical Equilibrium – Parts 1 & 2
Expt.4: Chemical Equilibrium – Parts 1 & 2	**Mar 25 to 28**	**Tutorial 4B:** Topics TBA
Tutorial 5AB: Topics TBA	**Apr 2 to 4, *Apr 8 (*in lieu of Apr 1)**	**Tutorial 5AB:** Topics TBA
ABSOLUTE LAST DAY TO HAND IN LAB REPORTS (Submit online using the Moodle link on or before…)	**Apr 15, 4 pm** *DSC Apr 17*	**ABSOLUTE LAST DAY TO HAND IN LAB REPORTS** (Submit online using the Moodle link on or before…)

- **Course Coordinator:** **Dr. Elham Ghobadi** – Contact re: tutorial rules/issues/absences, course material.
- **Lab Coordinator:** **Dr. Jennifer Romero** – Contact re: lab rules/issues/absences, labs.
- **TAs**: **see Moodle Core Materials site** (you can visit any TA's office hours for help)