CHEM 2080 – Analytical Chemistry
Fall 2020

Prerequisites: SC/CHEM 1000 3.00 and SC/CHEM 1001 3.00

Course Director: Dr. Cora Young

Laboratory Instructor: Carolyn Hempstead

Course email: chem2080@yorku.ca

Course Content:

Most lecture material

Videos available on demand

Extra practice calculations/tutorial

Live online MW 11:30 – 13:00, recorded for on demand viewing

Laboratory

Every other week on various days and times in room CB343

Course Description:

This course introduces the fundamental principles of analytical chemistry. Concepts of sampling, calibration, experimental uncertainty, and statistical data analysis are introduced and applied in laboratory experiments. The principles of solution equilibria including solubility, acid-base, and metal-ligand complexation, and titration experiments based on these principles are carried out in the laboratory. An introduction on various analytical techniques is presented.

Course Objectives:

At the end of the course students will have developed more in-depth understanding of chemical equilibria and acquired the skills and knowledge to carry out a variety of analytical chemistry measurements. Students will apply statistical and error analysis to correctly interpret, compare and comment on experimental results.

Required textbook:

Quantitative Chemical Analysis by Harris and Lucy 10th edition (9^{th} or 8^{th} editions are also fine).

Structure of Course Evaluation[a]	Evaluation Scheme 1	Evaluation Scheme 2[b]
Laboratory	40	40
Quizzes	15	45
Online assignments	10	10
Participation	5	5
Final exam	30	0
Total:	100	100

[a] A passing grade in BOTH the laboratory and course component (i.e. quizzes + online assignments + participation + exam) is required to pass the class.

[b] Students who complete at least 8 of 9 assignments and 5 of 6 quizzes may opt to have their grade assessed using evaluation scheme 2. For evaluation scheme 2, a passing grade in both the laboratory and course component is still required.

Tentative Schedule:

Classes: Sept. 9 – Dec. 7
Labs: start week of Sept. 14
Quizzes: Sept. 21, Oct. 5, Oct. 26, Nov. 9, Nov. 23, Dec. 7
Thanksgiving and reading week: Oct. 12 – 16
Final exam: during exam period Dec. 9 – Dec. 23

Course Evaluation Information

1. Laboratory

- There will be 5 in-person labs, 2 online data analysis assignments, and one online literature analysis assignment.
- Students must complete all in person labs.
- In person labs will work on a 2-week rotation. Students will perform an in-person lab every other week. Lab rotation assignments will be posted on eClass.
- Students will be expected to wear a non-medical face mask during all in person labs. The mask must cover the nose and mouth and must fit closely to the face. Students who cannot wear a non-medical face mask should contact Student Accessibility Services.
- Information for Lab 1 will be posted on eClass prior to the lab. Hard copy lab manuals will be provided at the first in person lab.
- Full details on lab evaluation can be found in the lab manual.
- Lab reports must be submitted on Crowdmark by the deadline (see lab manual, typically 1 week after the experiment) AND on the course TurnItIn.
- Students are encouraged to collaborate in the understanding of laboratory data. However, all submitted work must be independent. Copying other people's writing, using someone else's spreadsheet, tables, or equations as "templates" constitute acts of plagiarism.
- Missed labs:
    - No documentation is required for missed labs.
    - If students know they will miss a lab, they should notify their TA and the Lab Instructor as soon as possible.
    - Safety protocols implemented during the pandemic will make scheduling of make-up labs challenging. If a lab is missed, there is no guarantee that it can be made up prior to the end of the semester and may have to be made up at a later date.

2. Quizzes

- Quizzes will be completed online.
- It is the student's responsibility to ensure they have reliable internet access on the days of the quizzes.
- It is the student's responsibility to ensure they are able to generate and upload content for the quizzes (see "Preparing quiz and exam answers for upload" document on eClass).
- Once beginning the quiz, students will have one hour to complete it.
- On the date of the quiz, students will be able to access the quiz starting at 11:30 am. The quiz will remain open until midnight.
- The best 5 out of 6 quizzes will be counted in the final grade. Each quiz is worth 3 % (Evaluation Scheme 1) or 9 % (Evaluation Scheme 2).
- Missed quizzes:
    - No documentation is required for missed quizzes.
    - If a student misses a single quiz, the missed quiz will be the 1 out of 6 quizzes that is not counted in the final grade.
    - If a student misses more than one quiz, their grade must be assessed using Evaluation Scheme 1. The value of the missed quiz(zes) will be added to the value of the final exam.

3. Online assignments

- Online assignments at loncapa.sci.yorku.ca are opened at least two weeks before the due date with the schedule posted online.
- There will be 9 online assignments throughout the semester.

- Each correct answer is awarded 1 point. The assignments are open at least a week before the due date, and as such, you will have plenty of time and opportunity to complete them. Most questions allow multiple attempts.
- Grades for all assignment will be weighted equally (each worth 1.25 %). The final assignment grade will be based on the best 8 assignments.
- Website: loncapa.sci.yorku.ca. Log in name: York email address (XXX@my.yorku.ca), password: student ID. Do not use mobile phones as mobile browsers may not compatible (a known working browser app is Mercury). Extra problems not for credit are also posted.
- Missed assignments:
    - No documentation is required for missed assignments.
    - If a student misses a single assignment, the missed assignment will be the 1 out of 9 assignments that is not counted in the final grade.
    - If a student misses more than one assignment, their grade must be assessed using Evaluation Scheme 1. The value of the missed assignment(s) will be added to the value of the final exam.

4. Participation

- Participation will be assessed using iClicker REEF.
- iClicker REEF app can be downloaded for free on your mobile devices and tablets, also available at app.reef-education.com for laptops. York has free subscription to iClicker REEF, so do not make any purchase even if prompted.
- See iClicker REEF quick start-up guide.
- iClicker marks are gained based on participation only.
- Clicker questions will be provided in an "assignment" format and are designed to be completed while watching the on-demand lectures.
- Students will have one month from when videos are posted or until the end of classes (whichever comes first) to complete the iClicker assignments.
- Search for CHEM 2080 in iClicker Reef to locate the iclicker assignments.
- Clicker questions provide you with opportunities to put your learning to practice and gives you feedback on how well you understand course concepts. Using an account not registered to you (or answering iclicker questions for a friend) defeats the purpose of using iClickers and is considered a breach of Academic Honesty.

5. Exam

- The exam will be held online during the university's exam period.
- Students who have completed 5 out of 6 quizzes and 8 out of 9 assignments may opt out of the exam and choose to have their grade assessed by Evaluation Scheme 2.
- It is the student's responsibility to ensure they have reliable internet access during the scheduled exam time.
- It is the student's responsibility to ensure they are able to generate and upload content for the exam (see "Preparing quiz and exam answers for upload" document on eClass).

Additional course policies:

1. Email etiquette:

- Students must use their YorkU email address and send their email to the course email address (chem2080@yorku.ca).
- Students must include their full name and student number in their email.
- Emails should be written professionally (i.e. text-messaging language is unacceptable). Questions regarding calculations or involving equations should be avoided and are best discussed in person.

- Emails not conforming to the rules will not receive a response.

2. Re-grading of quizzes:
- If students believe a written answer on a quiz was marked incorrectly, a detailed rationale must be submitted to the Course Director within 5 business days of the return of the quiz. NOTE: re-marking can result in the mark being raised, confirmed, or lowered.

3. Accessibility and religious accommodations:
- Students registered with Accessibility Services must submit accommodation letters to chem2080@yorku.ca by Sept. 14, 2020.
- Any religious observance conflicts occurring at any point during the term should be communicated by Sept. 14, 2020, especially when it concerns the lab. Note that most lab sections are full and while the instructor will try to accommodate as much as possible; but sometimes it is difficult to reschedule your lab to your desired time.
- Please note: "Senate policy states that students are expected to monitor their progress in courses, taking into account their personal and academic circumstances, and to make the necessary adjustments to their workload to meet the requirements and deadlines." (from Senate Policy of Students' Responsibilities in the Petition/Appeal Processes). The drop deadline is Nov. 6, 2020.

4. Academic honesty:
- Any student who breaches York's Academic Honesty Policy will be reported. Some offences include:
    - Plagiarism.
    - Students who misrepresent themselves during iClicker activity, a quiz, or examination or provide documentation for absence from any of these that is not legitimate.
    - Students who submit any material for remarking that has been modified in any manner to misrepresent the original assessment.
- Information regarding the consequences for academic dishonesty at York University can be found in the “Academic dishonesty consequences” document on eClass.

Important Information for All Students:
Students must make themselves aware of university policies on Academic Honesty/Integrity, Access/Disability, Student Conduct, Religious Observance and other matters. University policies can be found at: https://secretariat-policies.info.yorku.ca/.