

Quantitative Analysis CHEM 212-001/002/003/004 – Fall Semester 2022

3 Credit hours; Pre-requisites CHEM 105 or CHEM 102 and CHEM 112

Instructor:

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URL: <https://www.luc.edu/chemistry/facultystaff/schmelingmartina.shtml>

Course Materials:

Recommended Textbook: Daniel .C. Harris and Charles A. Lucy – *Quantitative Chemical Analysis*, 10th Edition, McMillan Publishing 2020. You can use any previous or electronic edition.

Please note that the textbook is not mandatory as there are many free resources available on-line or will be posted on Sakai. You should have some note taking device with you for lecture and discussion.

Course Description:

Quantitative Analysis interfaces with many aspects of life. It is necessary to monitor the quality of goods and food, guarantee the reliability of chemical and pharmaceutical processes, and to ensure a healthy and safe environment. This course will introduce you to the analytical process and teach you how to isolate and quantify an analyte or a set of analytes in a variety of samples. In the first part of the semester, we will go over the general process and in the second part we will discuss specific examples. The examples will be drawn from fields where quantitative analysis is commonly applied such as environmental monitoring, food safety, forensics, chemical process control, and cultural heritage. After completing the course you will be able to apply the most suitable analytical process for a variety of common analytes and samples.

Topics covered:

- Tools of Trade
- Complex Equilibria
- Sampling and sample preparation methods
- Measurement of the analyte(s) and instrumentation
- Data analysis and evaluation
- Examples/Applications

Class Procedures and Schedules:

Class lectures (CHEM 212- 001) will meet in *FH 133* on *MWF 8:15-9:05AM*. Classes will start promptly and will feature PowerPoint presentations and examples worked on the blackboard. Course presentations will be posted on the Sakai class website after the lecture is concluded,

typically within 24-48 hours. Specific details where to find the materials will be provided in lecture.

Discussions (CHEM 212 – 002/003/004) are scheduled for *Friday mornings* and will meet in person. Please consult the *Fall Semester 2022* course schedule for your discussion meeting time and location. Like the lecture, discussions will also start promptly. Participation in discussion sections is mandatory and will make up 20% of the final grade. Discussions are designed to facilitate learning and gain extra practice and there will be time to ask questions.

Lectures and discussion will not meet during Midsemester Break and Thanksgivings Break. For other important dates please check the detailed fall semester calendar:

https://www.luc.edu/academics/schedules/fall/academic_calendar.shtml

Exams and Grading:

Three **in-class** exams in addition to the final exam are scheduled for *September 28, October 26, and November 30*. The final exam will take place on *Thursday, December 15 from 9:00-11:00AM* according to the university schedule.

Exams will be distributed in a predetermined pattern and you should only sit where an exam sheet is laying and wait for instructions.

The lowest scoring exam will be dropped and the average of the top two scoring in-class exams counts 60% of the final grade.

Participation in the three in-class exam is mandatory and no make-up exams will be given. If a student misses for any reason one in-class exam, this exam will be counted as the lowest scoring exam.

The **final exam** is mandatory for everybody and will count 20% of the final grade.

There will be no make-up final exams given under any circumstances, and the exam will not be given earlier either. If for any reason a student misses the final exam he/she must consult with Dean *Patricoski* (apatricoski@luc.edu).

20% of the total grade will be comprised of the **discussion**.

Grade Composition in %:

Two top-scoring in-class exams: 60%

Final exam: 20%

Discussion: 20%

Grading Scale in %

100-94% A

93-88% A-

87-85% B+

84-79% B

78-75% B-

74-71% C+

70-64% C

63-60% C-

59-50% D

<50% F

Office Hours:

Office hours are scheduled for *Wednesday 11:00AM to 12:00PM.*

Academic Integrity:

All students in this course are expected to have read and to abide by the demanding standard of personal honesty, drafted by the College of Arts & Sciences, which can be viewed at:

<https://www.luc.edu/cas/advising/academicintegritystatement/>

A basic mission of a university is to search for and to communicate the truth as it is honestly perceived. A genuine learning community cannot exist unless this demanding standard is a fundamental tenet of the intellectual life of the community. Students of Loyola University Chicago are expected to know, to respect, and to practice this standard of personal honesty. Academic dishonesty can take several forms, including, but not limited to cheating, plagiarism, copying another student's work, and submitting false documents.

Any instance of dishonesty (including those detailed on the website provided above or in this syllabus) will be reported to The Chair of The Department of Chemistry & Biochemistry who will decide what the next steps may be. At the minimum the student will **receive a grade of “zero” for the item in question and this grade cannot be dropped.**

Student Accommodations:

Loyola University provides reasonable accommodations for students with disabilities. Any student requesting accommodations related to a disability or other condition is required to register with Student Accessibility Center (SAC), located in Sullivan Center, Suite 117. Professors receive the accommodation notification from SAC via Accommodate. Students are encouraged to meet with their professor individually in order to discuss their accommodations. All information will remain confidential. Please note that in this class, software may be used to record class lectures in order to provide equal access to students with disabilities. Students approved for this accommodation use recordings for their personal study only and recordings may not be shared with other people or used in any way against the faculty member, other lecturers, or students whose classroom comments are recorded as part of the class activity. Recordings are deleted at the end of the semester. For more information about registering with SAC or questions about accommodations, please contact SAC at 773-508-3700; SAC@luc.edu or visit the website <https://www.luc.edu/sac/>.

Other Policies:

Privacy Policy:

The covered course material will be posted on the Sakai class website within 24 -48 hours after lecture/discussion. Please be aware that the posted course material is copyrighted and cannot be shared with anybody outside the course without written permission by the instructor.

Students with Co-Curricular Activities:

Students missing classes while representing Loyola University Chicago in an official capacity (e.g., intercollegiate athletics, debate team, model government organization) shall be allowed by the faculty member of record to make up any assignments and to receive notes or other written information distributed in the missed classes.

Students should discuss with faculty the potential consequences of missing lectures and the ways in which they can be remedied. Students must provide their instructors with proper documentation i.e., "[Athletic Competition & Travel Letter](#)" describing the reason for and date of the absence.

This documentation must be signed by an appropriate faculty or staff member and it must be provided to the professor in the first week of a semester. It is the responsibility of the student to make up any assignments. If the student misses an examination, the instructor is required to allow the student to take the examination at another time.

(<https://www.luc.edu/athleteadvising/attendance.shtml>)

Students who will miss class for an academic competition or conference must provide proper documentation to their instructor as early in the semester as possible.

Course Repeat Rule:

Effective with the Fall 2017 semester, students are allowed only THREE attempts to pass Chemistry courses with a C- or better grade. The three attempts include withdrawals (W). After the second attempt, the student must secure approval for a third attempt. Students must come to the Chemistry Department, fill out a permission to register form or print it from the Department of Chemistry and Biochemistry website: <https://www.luc.edu/chemistry/forms/> and personally meet and obtain a signature from either the Undergraduate Program Director, Assistant Chairperson, or Chairperson in Chemistry. A copy of this form is then taken to the Academic Advisor of the student in Sullivan to secure final permission for the attempt.

Accommodations for Religious Reasons:

Students who observe religious holidays, which will cause missing class or otherwise effect performance in the class must alert the instructor within 10 calendar days of the first class meeting of the semester to request special accommodations, which will be handled by a cases by case basis.

Mask Policy:

According to current University policy wearing a mask is optional.