

Syllabus for Chem 212, Quantitative Analysis Spring Semester 2020

Quantitative Analysis, 3 credit hours;

Lecture: TuTh 8:30-9:45am

Discussion Th or F

Prerequisite: Chem 106 or 102 and 112 and Chem 222 or Chem 224 and Chem 226 or permission of the instructor.

Instructor: Dr. Conrad Naleway <cnalewa@luc.edu>

Flanner Hall 200C, Phone 773-508-3115

Office hours: Tuesday 3-4pm plus always by appointment and review session (tba)

SI: Maddy Roddy <mroddy@luc.edu>

Textbook: "Exploring Chemical Analysis" (4th or later edition), by Daniel C. Harris (textbook is a resource, exams based upon class coverage and discussion problems assigned)

Other Materials: You will need a laptop computer or equivalent tablet (such as a iPad Pro) to perform calculations using software programs EXCEL and MATHEMATICA, you will also need a calculator having logarithmic (base 10 and base e), exponential, and trigonometric functions.

Topics to be included:

1	Stoichiometry Review, Math Tools	6	Acid Base Titrations	11	Ionic Strength & Activity
2	Sampling Error	7	PolyProtonic Acid/Bases	12	Electrode Potential
3	Statistics & Quality Assurance	8	Gravimetric	13	Spectroscopy
4	Fundamental Acid Base Chemistry	9	Complexation (EDTA)	14	Atomic Absorption
5	Buffers	10	Redox Titrations	15	Chromatography & GC/MS

Objectives

- 1) To teach fundamental aspects of acid/base chemistry, redox chemistry, electrochemistry, and ionic equilibria.
- 2) To acquaint the student with some of the fundamental techniques and state-of-the-art applications of chemical quantitative analysis used in biomedical, forensic, and environmental chemistry.

Exams: **Midterms:** T: [2/4] Th: [2/27] T: [3/24] Th: [4/16] **Final:** Saturday 5/2 9:00am

Final Grade will be determined by:

Class Comparative Participation during Lecture (5%)

Group Discussion (10%) Homework (5%)

Exam Grade (80% total): Top 3 of 4 in class exams (20% each) plus final exam (20%)

Final Grading Scale:

A 100-93;

A- 92-89;

B+ 88-85;

B 84-81;

B- 80-77;

C+ 76-73;

C 72-69;

C- 68-65;

D 64-55;

F <55.

Discussions: Groups will work through problem sets and a single collective answer sheet will be submitted for grading. **Homework Problems** will be assigned and will be due the NEXT lecture class.

Exam Problems will be largely variants of problems done in class or problems done in discussion period! Plus there also may be a few conceptual questions on each Exam/Quiz

All exams must be signed in the front, upper right hand corner. This signature will be taken as a statement of honest and completely independent work. There will be no tolerance whatsoever for cheating or plagiarism. Simply, **any instance of dishonesty (including those detailed on the website provided below or in this syllabus) during exams will result in a failing grade for the course.** The Dean of Arts & Sciences and The Chair of The Department of Chemistry will also be notified. I truly hope to never have to invoke these processes. Please be honest with your work. Instances of academic dishonesty will warrant immediate failure of the course plus referral to the Dean's office. For more information on university policy, please read:

http://www.luc.edu/academics/catalog/undergrad/reg_academicintegrity.shtml.

Exams will be graded and returned as soon as possible, usually the next class period. ALL grading questions, points of clarification and grading errors must be brought to the instructor's attention during office hours **no later than one week after exam is returned.** There will be no exceptions to this rule! Each returned exam must be copied with original being returned to instructor with a hand written note stapled to exam addressing concern(s). **Only exams completed in INK are eligible for possible re-grading.**

There will be no make-up quizzes, or exams given unless extreme and documented circumstances might occur.

Students with Disabilities: If you have any special needs, please let me know in the first week of classes. The university provides services for students with disabilities. Any student who would like to use any of these university services should contact the Services for Students with Disabilities (SSWD), Sullivan Center (773) 508- 3700. Further information is available at <http://www.luc.edu/sswd>

Loyola University Absence Policy for Students in Co-Curricular Activities: This documentation must be signed by an appropriate faculty or staff member, and it must be provided as far in advance of the absence as possible. It is the responsibility of the student to make up any assignments. If the student misses an examination, the instructor is required to give the student the opportunity to take the examination at another time. <https://www.luc.edu/athletheadvising/attendance.shtml>

Information regarding disability services: www.luc.edu/sswd

Loyola Official Academic Calendar: www.luc.edu/academics/schedules

Accommodations for Religious Reasons: If you have observances of religious holidays that will cause you to miss class or otherwise effect your performance in the class you must alert the instructor **within 10 calendar days of the first class meeting of the semester** to request special accommodations, which will be handled on a case by case basis