Chemistry 212-001, Quantitative Analysis Lecture

Summer 2017 Syllabus

Chem 212-001, Quantitative Analysis Lecture (3 credit hours), May 23rd through June 29th, 2017
Meets on *Tuesdays, Wednesdays, & Thursdays 12:00 pm – 2:40 pm* in Cudahy Hall, Room 206

Prerequisite: Chem 106 or Chem 102 & 112

Instructor: Dr. Katrina Binaku
Office: Flanner Hall 104
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Email: kbinaku@luc.edu
Office Hours: Mondays 11:30 am - 12:30 pm, Wednesdays 3 - 4 pm, and scheduled appointments.

When sending emails put *Chem 212-001* in the subject line or there will be a delay in my reply. Any weekday emails sent after 8:45 pm will not be replied to until the following morning. Do not wait until the last minute to email with questions. I check email twice a day on weekends but respect the fact that email replies take longer [up to 24-hours] as I am not at a computer 24/7.

Course Description:
This course focuses on the fundamental aspects of analytical chemistry from experiment design, calculations, statistics, acid/base chemistry, redox chemistry, electrochemistry, and ionic equilibria, etc. Theory of techniques and applications used in biomedical, forensic, environmental chemistry, etc. will also be highlighted during the course.

Course Goals & Outcomes for Students:

- Acquaint students with some of the classical and modern techniques in analytical chemistry
- Teach chemical equilibrium, acid/base chemistry, buffers, titrations, redox chemistry, and other chemical theory
- Review conventional data collection methods, interpretation, evaluation of experimental data

By completing Chem 212, students will be able to:

- List 3 classical and 3 modern analytical techniques and briefly explain them.
- Demonstrate proficiency in chemical equilibrium, acid/base chemistry, redox chemistry and other chemical topics [covered this term] through completion of chapter homework problems.
- Demonstrate proficiency in evaluation of accuracy/precision of data using basic statistics

Required Materials:

- *Exploring Chemical Analysis*, 5th Edition by Daniel C. Harris (the hard copy or the e-Text is fine) AND *Sapling Exploring Chemical Analysis 6 months Access Card* ISBN-13: 9781319088880
  OR If you have the textbook, you still need the *Sapling Exploring Chemical Analysis 6 months Access Card* (LUC bookstore or via Sapling directly, comes with e-Text) ISBN-13: 9781319088859
- *Inexpensive calculator* for logarithmic (base 10 and base e), exponential, trigonometric functions OR a graphing calculator [cannot be a model that has internet, wifi, or texting features]. Cell phone/tablet/laptop or other electronic devices are NOT calculators and cannot be used.
- *Notebook* (note taking, sample problems, or in-class discussion problems).

- *Sakai* is used to post grades and other course material (syllabus, instructor information, discussion keys, etc.). Check Sakai daily. If a student is unfamiliar with Sakai, talk to the Instructor ASAP. Instructor will briefly show the class the course Sakai site on the first day.

Read the textbook as supplement to what is covered in lecture. Major points are discussed in lecture and the textbook enhances the material. Emphasis of this course is understanding the material, not memorization. Achieve understanding in lecture, outside independent review/practice, Sapling, exams.

Attendance Policy:

It is expected students attend every scheduled lecture class and are *on time!* The schedule is on page 6. Understanding the demands/schedule of summer school is a student's responsibility. Students elect to take summer courses, which are optional; therefore, a student's schedule must commit 100% to the course's scheduled days/time documented in LOCUS. Do not be absent on days of exams; if you choose to be, you are required to make-up the exam within 36 hours of the exam date so if you have to stay late or come in on a FRIDAY or SATURDAY you must. If a make-up exam is not completed within 36 hours it is an automatic zero (0) out of 125, an F. If you miss more than one exam, you will be reported to the University, your academic advisor, and the Wellness Center and Instructor will not offer a make-up; it will be an automatic zero (0). **Discussion worksheets cannot be made up; if a student is absent for a discussion worksheet, the student earns a zero**, no exceptions! Students are required to initial a sign-in sheet on each day of lecture, documenting/verifying their attendance. The sheet serves as formal record. If an absence does occur, it is the absent student's responsibility to contact the Instructor.

Blanket statement about "technical difficulties:"

It is *strongly encouraged* that all required online Sapling Homework, opening course/data or other applicable files in Sakai, or other be done on a reliable wired internet connection [not wireless], that of which the University itself provides in the Information Commons and various computer labs on the Lake Shore Campus. Under NO circumstances will excuses of "technical difficulties" be accepted as this syllabus is stating all students should use a wired internet University computer [not wireless internet] to submit work in Sapling Homework online, open course/data or other applicable files, view or download items from Sakai, etc. This list is not exhaustive and do note that any activities this course may require a computer or internet connection for should be completed using University computers with wired internet connection. Use of home internet [wired or wireless], University wireless, or public wireless is at your, the student's, own risk. It is not prohibited but as the Instructor has stated in this syllabus, the Instructor is not responsible for ANY technical difficulties of non-University devices [cell phone, tablet, home/work/public wireless internet or computer]. The Instructor will not accept any excuses of the sort. Do not submit items using a cell phone or tablet device. These are not reliable internet connection tools.

Academic Honesty:

Academic dishonesty in this course will not be tolerated. The Instructor encourages students to converse with each other about chemistry outside of the classroom. Group study sessions as well as practicing end of chapter questions in the textbook with others is appropriate and encouraged. However, the Sapling (online) homework must be completed individually; it is not group work.

There is a difference between sharing knowledge and cheating. Copying others work and presenting that work as one's own is an example of academic dishonesty. Cheating and plagiarism take many forms. Academic dishonesty during an exam can take many forms, including but not limited to: sharing materials/information with another student during the exam, looking at another student's quiz/exam sheet, talking, sharing a calculator, using a cell phone, using lecture notes, etc. This list is not exhaustive

but highlights several dishonest situations. Copying a student's discussion worksheet answers is another form of plagiarism/cheating. If it is determined that materials in this course are plagiarized or have been shared between students (current or past), no credit will be given for the work in question. Again, Sapling (online) Homework should be completed as an individual. Cases of suspect academic dishonesty will be handled according to University policy/guidelines.

Review Loyola University Chicago's policy on Academic Integrity:
http://www.luc.edu/academics/catalog/undergrad/reg_academicintegrity.shtml

Services for Students with Disabilities (SSWD) Policy:
Necessary accommodations will be made for students with disabilities who procure a SSWD letter. Do discuss your academic needs with the Instructor as soon as possible! To receive accommodations self-disclosure, proper documentation, and registration with the SSWD office at Loyola University Chicago is required. Accommodations cannot be made until the Instructor receives proper documentation. Furthermore, accommodations are not retroactive; they begin only once appropriate documentation has been received by the Instructor in a timely manner. Only accommodations specifically listed in the formal SSWD letter will be provided. Find SSWD Policies here: http://www.luc.edu/sswd/

Exams:
There will be a total of three one-hour exams given during the semester and a cumulative final exam. Exams #1, 2, and 3 are each worth 125 points. Exams begin promptly at 12:00 pm; students who are late to class lose time, as extra exam time for late students is not granted. **Students must take all exams on the assigned dates noted in the syllabus.** If you are absent for one of the three one-hour exams, you have 36 hours to take a make-up exam or you receive a 0 out of 125 points for that particular exam. If you are absent again, for a second exam, a make-up is not offered AND you are reported to the University, your academic advisor, and the Wellness Center. **The final exam is cumulative. No make-up exams are granted for the final exam under *any* circumstances!** Students are not allowed to take the final exam early. If a student does not show up on the final exam day [Thursday, June 29, 2017] to take the final exam at the scheduled course start time of 12:00 pm, the student receives a zero (0) for the final exam. There is NO make-up final exam. **All exams are closed book, closed note unless otherwise specified.** Graphing/scientific calculators *are* allowed. Calculators cannot be shared by students. It is the student's responsibility that their calculator is in working order. The cover of the calculator must be removed and not be in plain view. A periodic table will be provided. Cell phones/tablets/computers do NOT count as calculators and cannot be used.

Exam materials *must be handed directly* to the Instructor after completion of an exam. This verifies the student's attendance and completion of the exam. Exams are graded as soon as possible. Students' exams and/or answer sheets are photocopied. Any discrepancies or questions about grading on any one-hour exams (#1, 2, and 3) must be discussed with the Instructor no later than two business days after the graded exam has been returned to the student. After two business days of students having a graded exam in their possession, no grading changes will be made on exams. No exceptions. The final exam will be graded by Monday July 3, 2017. Students can stop by July 3rd from 9 am – 2 pm to see their graded final exam. After July 3rd, final exams are sealed and can no longer be viewed.

Exam Dates:	Wednesday, May 31, 2017	Exam #1, Chapt. 0-6 (one hour, 12:00 – 1:00 pm)
	Tuesday, June 13, 2017	Exam #2, Chapt. 8-11,13 (one hour, 12:00 – 1:00 pm)
	Thursday, June 22, 2017	Exam #3, Chapt. 12,14,16,18-20 (one hour, 12:00 – 1:00 pm)
	Thursday, June 29, 2017	Cumulative Final Exam (2 hours, 12:00 – 2:00 pm)

Tutoring: To get more information on the Loyola University Tutoring Center visit www.luc.edu/tutoring. Chemistry is fascinating but challenging. Conscious, daily studying must be done to master principles taught in this course. Contact me if persistent troubles arise. Use office hours, tutoring center to help clarify subject matter/other questions. Do end of chapter textbook problems for extra practice study!

Sapling Learning (Online) Homework:

There are REQUIRED Sapling Learning (online) Homework problems assigned for each chapter covered. *They ARE graded* and meant for practicing the material [by no means is it the only 'practice' available, there are end of chapter textbook problems]. LATE Sapling homework submissions are not accepted; if homework is incomplete and the due date passes, the points earned are zero (0). Students cannot get credit for things not completed on time. Due dates are below and are non-negotiable; I assign due dates to keep students on track, completing homework problems little by little over the course's duration.

Chapters	**Due Date (by 11:55 pm / 23:55)**
Practice, 0,1	Monday, May 29th
3,4,5	Wednesday, May 31st
6,8,9	Thursday, June 8th
10,11,13	Friday, June 16th
12,14,16,18	Monday, June 26th
19–23	Thursday, June 29th

The "Practice Assignment" in Sapling is 5 points extra credit. It opens Tuesday, May 23, 2017 at 2:40 pm (14:40) and closes Monday, May 29, 2017 at 11:55 pm (23:55). After close time, stated here in the syllabus & Sapling, the extra credit is no longer available. If a student neglects to complete the extra credit within the defined period, no extra credit points (e.c.) are awarded nor other e.c. given. No exceptions.

Directions to access Sapling Learning (online) Homework:

1. Go to saplinglearning.com and click on "US Higher Ed" at the top right.
2. If you already have a Sapling Learning account, log in and skip to step 3.
    - If you have a Facebook account, you can use it to quickly create a Sapling Learning account. Click "Create an Account", then "Create my account through Facebook". You will be prompted to log into Facebook if you aren't already. Choose a username and password, then click "Link Account". You can then skip to step 3.
    - Otherwise, click "Create an Account". Supply the requested information and click "Create My Account". Check your email (and spam filter) for a message from Sapling Learning and click on the link provided in that email.
3. Find your course in the list (you may need to expand the Analytical Chemistry subject header and term categories) and click the link for your course.
4. If your course requires a key code, you will be prompted to enter it.
5. If your course requires payment, select a payment option and following the instructions.

- eTEXTBOOK: Your course text is available as a low cost online eTextbook. You may purchase the eTextbook in step 5 on the homework payment screen. Once registered and enrolled, log in to complete/review homework assignments. If you have technical problems or grading issues, email support@saplinglearning.com explaining the issue. **The Sapling Learning support team is usually faster and better able to resolve issues than your Instructor.**

In-class Discussions:
During most of the lectures, there will be a discussion period (~13). No discussions will be held on days of exams [just exam and lecture materials on those days]. Group work between students is encouraged through several sample questions, each group working on answering questions pertaining to the topic at hand. This is a part of class participation; students will turn in their group work on discussion sheets with group member names. The calculations/answers will be looked over for "good faith" effort. Group members are awarded 3 points each for the day's discussion worksheet. Absent students, whom are not present to participate, earn a zero (0) out of 3 points for that day's in-class discussion worksheet. Discussion work cannot be made up outside of class time if absent. Absent students can get a blank copy of the worksheet they missed in order to practice the material, but it will not be worth any points.

Grading Policy:
The established grading policy is subject to change at Instructor discretion. Please note the University uses a +/- grading scale system and it will be implemented in this course. Grade rounding only applies to the final course grade percentage. Sakai reports course grades to TWO digits past the decimal (XX.XX%); this percentage is rounded to the closest integer. For example, an 89.50% or 89.90% (B+) rounds up to a 90% (A-), BUT an 89.30% or 89.45% (B+) round to the integer 89% (B+), as it is the closest. There is no extra credit assignments in Chem 212 (other than the 5 points in Sapling). Course grades will be entered in LOCUS on Monday, July 3rd at 2:05 pm, after the offered viewing period of graded final exams ends.

Grading Category	**Points**
Sapling (online) Homework	**106**
In-class Discussion problems	**39**
Exam #1 (one hour)	**125**
Exam #2 (one hour)	**125**
Exam #3 (one hour)	**125**
Cumulative Final Exam (two hours)	**150**
Total	**670**

The scale to determine the letter grade earned in the course is as follows:

A 100–93%, **A-** 92–89%, **B+** 88–85%, **B** 84–81%, **B-** 80–77%, **C+** 76–73%, **C** 72–69%, **C-** 68–66%, **D+** 65–63, **D** 62–59%, **F** $\leq$ 58%

Norms of Course Proceedings:
The classroom is a safe place to question and explore ideas involving chemistry! Student and Instructor voices are important to this work. Feel comfortable asking questions during lecture/discussion, office hours, etc. If disagreements arise with respect to an exercise answer or a topic of discussion, remember to respect fellow peers when proceeding to offer explanations or points of view.

Class sessions begin/end on time. Students should attend all class sessions and actively participate. Missing even one class puts a student significantly behind in terms of knowledge. If an absence is anticipated, discuss this with the Instructor as soon as possible.

Envision the following for lectures: class will promptly begin at 12:00 pm, starting with a ~50 minute lecture, followed by a 5 minute break, then a ~40 minute discussion/group work (sample problems, students ask questions, group work on practice problems, etc.), a 5 minute break, and finally a ~60 minute lecture. This plan is not guaranteed because as we all know, sometimes things in life do not always go according to plan; the timing may fluctuate depending on topic or pace of the class.

Chem 212-001 Tentative Lecture Schedule (subject to change*)

Date	Day	Chapter	Lecture Topics
5/23	T	0, 1, 2	Chemical Analysis; Terms; Stoichiometry; Units; Conversions Review
5/24	W	3, 4	Math Tools; Sig Figs; Errors; Statistics
5/25	Th	5, 6	Quality Assurance an Calibration Methods; Titrations
5/30	T	6, 8	Finish Titrations; Acids & Bases
5/31	W	8	**Exam #1 (**Ch. 0,1,2,3,4,5,6); Lecture on Acids & Bases
6/1	Th	9	Buffers
6/6	T	10	Acid/Base Titrations
6/7	W	10, 11	Acid/Base Titrations; Polyprotic Acids and Bases
6/8	Th	13	EDTA Titrations
6/13	T	12	**Exam #2** (Ch. 8,9,10,11,13); Lecture on Chem Equil., Ionic Strength
6/14	W	14	Electrode Potential
6/15	Th	16	Redox Titrations
6/20	T	18, 19	Light; Absorption; Beer's Law; Spectrophotometry; Instrumentation
6/21	W	20, 21	Atomic Spectroscopy, Instruments: Chromatography
6/22	Th	21	**Exam #3** (Ch. 12,14,16,18,19,20); Lecture on Chromatography and MS
6/27	T	22, 23	Chromatography; Gas, Liquid Chromatography; Components GC or LC
6/28	W	23	Gas, Liquid Chromatography; Ion Chromatography; Review if time
6/29	Th	N/A	**Cumulative Final Exam**; Last Day of Class!

*This guideline is based on previous experience of my teaching the course. The schedule is subject to change at the Instructor's discretion based on pace of the class. Six weeks will fly by and we have a lot of chemistry to cover! NOTE: I will not change exam dates under any circumstances.

IDEA (Individual Development and Educational Assessment):
IDEA is the course/instructor evaluation. *Essential* and *Important* objectives have been selected by the Instructor, representing goals/development to be achieved during and because of course completion.

Essential objectives:

1. Gaining factual knowledge (terminology, classifications, methods, trends)
2. Learning to apply course material (improve thinking, problem solving, making decisions)

Important objectives:

4. Developing specific skills, competencies, and points of view needed by professionals in the field most closely related to this course

Towards the end of the semester, you are sent an email requesting completion of the IDEA course/instructor evaluation for Chem 212–001. The objectives will be discussed the first day of class.