Description: CHEM 225 is a laboratory course designed to accompany organic chemistry lecture courses. In this course, students begin by learning how to safely handle organic chemicals while attempting to characterize them by measuring selected physical properties. Student then move on to methods of purifying organic compounds and determining their structures. Lastly, students attempt to run a chemical reaction to convert one organic compound into a different structure.

Class Times, Locations, and Instructors:

Section Number	Day and Time	Location	Instructor
001	Mondays 11:30 AM - 2:15 PM	LSB 115	Dr. Lin
002	Mondays 2:45 PM - 5:30 PM	LSB 115	Mr. Thomas
003	Tuesdays 8:30 AM - 11:15 AM	LSB 115	Dr. Eisenberg
004	Tuesdays 11:30 AM - 2:15 PM	LSB 115	Dr. Eisenberg
005	Wednesdays 8:30 AM - 11:15 AM	LSB 115	Dr. Eisenberg
006	Wednesdays 11:30 AM - 2:15 PM	LSB 115	Mr. Thomas
007	Wednesdays 2:45 PM - 5:30 PM	LSB 115	Mr. Thomas
008	Thursdays 8:30 AM - 11:15 AM	LSB 115	Dr. Eisenberg
009	Thursdays 11:30 AM - 2:15 PM	LSB 115	Dr. Eisenberg
010	Tuesdays 6:00 PM - 8:45 PM	LSB 115	Dr. Lin
011	Fridays 11:30 AM - 2:15 PM	LSB 115	Dr. Eisenberg
012	Fridays 2:45 PM - 5:30 PM	LSB 115	Dr. Eisenberg
013	Wednesdays 6:00 PM - 8:45 PM	LSB 115	Mr. Thomas
014	Thursdays 6:00 PM - 8:45 PM	LSB 115	Dr. Lin
015	Thursdays 11:30 AM - 2:15 PM	FH 204	Mr. Thomas

The names of Teaching Assistants and their contact information will be posted on Sakai.

Pre-requisites: Grade of 'C-' or better in 1 year of General Chemistry Lecture and Lab.

Required Materials: Making the Connections[3] By Anne B. Padias (ISBN: 978-0-7380-7436-8)
Full-length lab coat
Safety goggles (will be provided during safety training)

Recommended Materials: Bound composition book

Course Homepage: Announcements, assessments, extra copies of the handouts, the grade book, etc. are posted on Sakai.luc.edu. You are responsible for this material, so you should check Sakai frequently.

Grading: Lab grades consist of the following components:

Safety Training Quiz	5 pts
Information Resources Assignment	10 pts
Chemical Structure Drawing and Molecular Modeling Assignment	10 pts
9 Pre-lab Exercises, 5 pts each	45 pts
9 Lab Completion Checks, 5 pts each	45 pts
9 Experimental Results, 5 pts each	45 pts
Exam 1	120 pts
Exam 2	80 pts
Synthesis Lab Write-Up	40 pts
	400 pts total

A>93%, A->90%, B+>87%, B>83%, B->80%, C+>77%, C>73%, C->70, D+>67%, D≥60%, F<60%

Lab Safety Quiz: This quiz is completed via Sakai and covers the important lab rules that all students are expected to follow in order to maintain a safe working environment. All score of 5/5 must be obtained before a student can work in the laboratory.

Information Resources Assignment: This assignment is completed via Sakai in order to familiarize students with authoritative, reliable resources to consult for finding physical property data on organic chemicals.

Structure Drawing Assignment: This assignment will expose students to chemical structure drawing programs, such as ChemSketch and ChemDraw.

Pre-Lab Preparation: Success in organic lab depends on advance preparation. Therefore, there are several things you must do before coming to lab. One major component of the pre-lab assignment is to thoroughly read and understand the experimental procedure and the assigned background reading listed on Sakai. Additionally, before coming to lab, students must complete the pre-lab exercise via Sakai. Some of the pre-lab questions will come directly, word-for-word out of the reading assignments to ensure students are completing the readings. Students are allowed unlimited attempts until the due date, and assessments must be submitted to count. Work that is saved but not submitted before the deadline will be ignored. Spelling, grammar and significant figures count. No late pre-labs will be accepted by Sakai.

Lab Completion Checks: At the end of each experiment and before leaving lab, all students must check-out with their TA to confirm that the experiment was completed and all materials were cleaned up and put away properly. Students are strongly encouraged to record their results in a laboratory notebook. A properly-maintained notebook keeps the experimental results in one place. The format of the notebook is described in the Padias text and in a handout posted on Sakai. One of the most important facets of experimental work is that data should be recorded as completely and accurately as possible. Sometimes, important discoveries are made when things don't behave as expected. Therefore, it is critical that students report their actual data and not what it is thought that the correct answer should be. Students who complete the entire experiment in good faith should automatically receive the Lab Completion points, minus any relevant deductions. Point deductions will be made for things such as safety violations, not participating in collecting the data, not finishing the experiment, not cleaning up, etc.

Experimental Results: After the experiment is over, students have until the next lab period to complete the Results section on Sakai for that experiment. Results points will be awarded based on things such as identification of unknowns, accuracy and completeness of the data, creation of graphs, spectral analysis, etc.

Lab Exams: There will be two in-class exams. The first will be completed after the first six (6) experiments. The second exam will cover experiments 7-9 and material such as balancing reactions and stoichiometry that is necessary to complete a synthesis reaction. Be sure to bring a No. 2 pencil and Student ID to both exams. Goggles and lab coats are not needed. Points will be deducted for not following instructions.

Synthesis Lab Write-Up: In addition to the usual results submission, there will be an additional, more formal lab write up for the synthesis experiment including procedure, observations, results and conclusions. This assessment will be due at the start of the final lab period of the semester. Submission of this lab write up will be done and submitted via Sakai. The short answer essays for this write up should be clearly written in past tense to describe what happened during the experiment and should be written in proper scientific grammar (do not use first person tense like "I did this" or "we saw this"; use past tense, passive voice). More detailed guidelines for the report will be discussed in class and posted on Sakai.

Re-grades: All requests to have items re-graded must be submitted in writing within one week after the graded materials are returned to the student.

Attendance: Students are expected to attend every lab session. Due to safety constraints and size limitations, students are not allowed to make up an experiment in another section. Missing a lab period will result in an automatic zero for the Lab Completion and Results portions of that experiment. However, the Pre-lab Exercise can still be completed via Sakai. The normal due dates will still apply. Absent students are responsible for all

the material on exams. The missing Lab Completion and Results points can be recovered by completing an alternate experiment on the designated Make-Up day. If a student misses a second experiment with Department of Chemistry approval, the exam covering that experiment will be counted more heavily to replace the missing points. Missing more than 2 experiments will result in automatic failure of the course.

There will be an attendance sheet that students are required to sign upon entering the lab. It is critical that the attendance sheet exactly match who is present in the lab in the event of an emergency. If someone must leave the lab after signing in (e.g.; to use the restroom, get a drink of water, etc.) be sure to log out on the attendance sheet. For safety's sake, in order to better results and to be fair to both lab partners, limit time out of the lab. Students who leave the lab for a period longer than 10 minutes will receive a deduction from the Lab Completion points for that experiment.

Additionally, students must be signed in prior to the start of the pre-lab lecture to ensure everyone's on-time arrival to class. Tardiness or just not signing in will result in a point deduction from the Lab Completion points for that experiment. Students must be present for the pre-lab lecture because important safety-related information is covered. Any student who misses a significant portion of the pre-lab lecture will not be allowed to perform the experiment and will receive a zero for the Lab Completion points for that experiment. Safely working with chemicals requires undivided attention! As such, any behavior that indicates that a student is not paying attention during the pre-lab will result in the student not being allowed to perform the experiment. This includes, but is not limited to, sleeping, looking at one's phone or computer, talking, etc.

Safety Rules: Read the safety rules carefully and follow them throughout the course. Anyone who does not adhere to the safety rules will receive point deductions and may not be allowed to remain in the laboratory. A pair of safety goggles will be provided at the beginning of the course. Eye protection and a lab coat must be brought to every experiment, as well as appropriate clothing and footwear (see the Safety rules). Any student lacking safety goggles, a lab coat, or not dressed according to the safety rules will be dismissed from that experiment and receive a zero for the Lab Completion points. No items will be loaned out. Students will not be allowed to miss lab time to obtain forgotten items.

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: http://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. The penalty for academic dishonesty is a zero on the assignment and a possible letter grade reduction of the final course grade

Late Policy: Unless otherwise specified, materials that are submitted late but on the same date as they were due will receive a 10% deduction. There will be an additional 25% deduction for each day or portion of a day, including weekends, they are late after that.

Email: Faculty email addresses are posted on the open Internet for every software bot and spammer in the world to see. Therefore, faculty Outlook accounts are configured differently. An outside contractor also scans faculty email. Emails from outside sources are often blocked automatically. Because of this and a Federal law relating to student privacy (FERPA), students must use a Loyola email address when contacting the TAs or the instructor about this course. In the subject line of an email, please put Chem 225- section number and TAs name.

Course/Instructor Evaluation – SmartEval: The following information came from the University regarding course evaluations, "*Towards the end of the course, the students will receive an email from the Office of Institutional Effectiveness reminding them to provide feedback on the course. They will receive consistent*

reminders throughout the period when the evaluation is open, and the reminders will stop once they have completed the evaluation.

-The evaluation is completely anonymous. When the results are released, instructors and departments will not be able to tell which student provided the individual feedback.
-Because it is anonymous and the results are not released to faculty or departments until after grades have been submitted, the feedback will not impact a student's grade.
-The feedback is important so that the instructor can gain insight into how to improve their teaching and the department can learn how best to shape the curriculum."

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 & Biochemistry website: http://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 your Academic Advisor in Sullivan to secure final permission for the attempt.

Student Accommodations: 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 Student Accessibility Center (SAC), Sullivan Center, (773) 508-3700. Further information is available at http://www.luc.edu/sac/.

Loyola University Absence Policy for Students in Co-Curricular Activities (including ROTC): 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 (develop standard form on web) 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 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/athleteadvising/attendance.shtml).

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.

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Mr. Thomas, LSB 124, (773) 508-8115, tthoma1@luc.edu

Experiments

1. Functional Group Identification
2. Boiling Point Determination
3. Density of Organic Liquids
4. Distillation and Refractive Index
5. Melting Points and Crystallization of Organic Solids
6. Extraction
7. Natural Product Extraction
8. Chromatography and IR Spectroscopy
9. Synthesis: Elimination