

Description: CHEM 226 is the second semester of organic chemistry laboratory. In this course, students learn how to run organic chemical reactions and how to isolate and characterize organic compounds.

Meeting Times and Locations: All sections of CHEM 226 meet online and are asynchronous for Spring 2021.

Section Number	Instructor	Teaching Assistant
001	Mr. Thomas	Zach Liveris
002	Mr. Thomas	Zach Liveris
003	Mr. Thomas	Zach Liveris
004	Mr. Thomas	Bart Iwan
005	Mr. Thomas	Bart Iwan
006	Dr. Eisenberg	TJ DiPuma
007	Dr. Eisenberg	TJ DiPuma
008	Dr. Eisenberg	TJ DiPuma
009	Dr. Eisenberg	Bart Iwan
010	Dr. Eisenberg	Oliwia Ozog
011	Dr. Eisenberg	Oliwia Ozog

Pre-requisites: Grade of 'C-' or better in CHEM 223 and CHEM 225.

Required Items: This is an online-only course, and a desktop or laptop computer with high-speed Internet access is required. Some of the virtual lab simulations used in this course DO NOT work on tablets or mobile devices. Wired (ethernet cable) internet is preferred, but WI-FI is acceptable if the connection is reliable. If you do not have a desktop/laptop computer or Internet service, you need to contact the [Information Commons extended loan equipment program](#) within the first few days of the start of the course and arrange for these resources. The lab instructor is not responsible for coordinating these resources for students.

Recommended Materials: Bound composition notebook

Course Homepage: Announcements, assessments, videos, the grade book, etc. are posted on Sakai.luc.edu. Students are responsible for the material and should check Sakai frequently.

Schedule: This course is set up to run asynchronously, but the due dates have been broken down into three parts. All the course content will be released at the beginning of the semester under the "Lessons" tab on Sakai. The due dates for everything in Folders 1 through 5 will be **5 PM on Friday, March 5, 2021**. The notebook submissions for the Aldol and Ketone virtual labs will be due at **5 PM on Friday, April 9, 2021**. The due date for the rest of the material will be **5 PM on Friday, April 30, 2021**. All times are Central Time. Students are expected to read through the uploaded files, watch the posted videos, complete the simulations, and work their way through the assignments at their own pace until the due dates. Students will be able to reach the instructors and TAs throughout the course via email. There will also be "live-help" sessions via Zoom at multiple times during the week. The times and links for these sessions will be posted on Sakai.

Contacts: Instructor: Dr. Jessica Eisenberg, jeisenberg2@luc.edu
Instructor: Mr. Tim Thomas, tthoma1@luc.edu

Grading: Lab grades will consist of the following components:

Labster Simulations	40%
Virtual Lab Notebook Submissions	40%
Unknowns	10%
Forum Posts	10%
	100% total

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

Labster Simulations: Labster gives students exposure to laboratory procedures and the ability to manipulate a variety of experiments in a virtual space. Students will complete 10 different Labster simulations during the course. The links to the actual simulations are located on Sakai under the "Labster" tab. Points will be awarded as students work through the simulations by answering quiz questions and completing simulated lab tasks. Student progress is saved after certain stages of the simulations, allowing students to stop working and resume later if so chosen. The score from a student's "best completed attempt" at a simulation (i.e.; the highest score for a simulation at 100% completion) will be entered into the Sakai Gradebook. There are recommended due dates, but all the simulations will remain open and available to students for the duration of the course and may be repeated as often as desired. Labster will turn off at 5 PM CDT on Friday, April 30, 2021, and no scores will be accepted after this.

Lab Notebooks: The ability to keep good records is a valuable, widely applicable skill. One of the most important facets of experimental work is that the data should be recorded as completely and accurately as possible. This means that the lab notebook entries should accurately reflect everything that happened during the experiment. A properly maintained notebook will make understanding a lab experiment easier and keep experimental results all in one place. Students should write notebook entries with enough detail that someone else could recreate the experiment exactly—on their own and using only the lab notebook entry. For this course, student notebook pages based on selected virtual lab videos will be scanned and submitted via Sakai as files in the pdf format. Notebook assignments that are submitted late will receive a 10% deduction for each day or portion of a day, including weekends, they are late after that. The Polymers notebook due date is the same as the hard deadline for the class, and no late submissions will be accepted.

Unknowns: For two experiments, "¹³C NMR Spectroscopy" and "Identification of an Unknown Ketone", each student will be given an unknown and corresponding data to use for the compound identifications via Sakai. One late submission for the ¹³C NMR unknown assignment will be permitted if it is submitted via Sakai within 1 week of the posted due date. The due date for the Ketone unknown assignment is the same as the hard deadline for the class, so no late submissions will be accepted.

Forum Posts: To facilitate and encourage dialog between students, the instructors have posted topics on the "Forums" tab on Sakai. In order to receive full credit, students should WRITE at least 1 original post in response to the prompt. Students must then READ and REPLY to at least 2 posts from fellow students for each topic. Posts must contain a meaningful comment or question (not just "yes, I agree" or "what's the answer to #4 in the quiz?"). The purpose of the Forums is to give students the chance to discuss ideas and questions related to various organic lab topics amongst themselves, with additional input from the instructor and TA. Forum posts must be written/read by the posted due dates. There will be no points awarded for late Forum posts.

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

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 226 and your section number.

Hard Deadline: All materials of any kind must be submitted by 5 PM CDT on Friday, April 30, 2021. No materials will be accepted after this time. This hard deadline supersedes any other normal deadlines and the normal late policy. Final grades will be calculated based only materials submitted by this deadline. If there are substantial materials that are missing and that cannot be submitted before this deadline, the student should request an Incomplete by completing [this form](#) and presenting it to their instructor prior to the close of the semester.

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: <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 your Academic Advisor in Sullivan to secure final permission for the attempt.

Student Accommodations: 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 <https://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/athletheadvising/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.

Syllabus Statement Regarding Course Recordings

In this class software may be used to record live class discussions. As a student in this class, your participation in live class discussions will be recorded. These recordings will be made available only to students enrolled in the class, to assist those who cannot attend the live session or to serve as a resource for those who would like to review content that was presented. All recordings will become unavailable to students in the class when the Sakai course is unpublished. Students who prefer to participate via audio only will be allowed to disable their video camera so only audio will be captured. Please discuss this option with your instructor.

The use of all video recordings will be in keeping with the University Privacy Statement shown below:

Privacy Statement

Assuring privacy among faculty and students engaged in online and face-to-face instructional activities helps promote open and robust conversations and mitigates concerns that comments made within the context of the class will be shared beyond the classroom. As such, recordings of instructional activities occurring in online or face-to-face classes may be used solely for internal class purposes by the faculty member and students registered for the course, and only during the period in which the course is offered. Students will be informed of such recordings by a statement in the syllabus for the course in which they will be recorded. Instructors who wish to make subsequent use of recordings that include student activity may do so only with informed written consent of the students involved or if all student activity is removed from the recording. Recordings including student activity that have been initiated by the instructor may be retained by the instructor only for individual use.

Topics:

1. Laboratory Notebooks and Safety, Stoichiometry, Glassware and Equipment
2. Methods for Product Analysis: NMR Spectroscopy
3. High-Performance Liquid Chromatography (HPLC) and Gas Chromatography (GC) w/FID Detection
4. Synthesis of Isopentyl Acetate via Fischer Esterification
5. UV-Vis Spectroscopy of Conjugated Systems
6. Aldol Reaction of Vanillin and Acetone
7. Anhydrous Reagents and Organometallic Reactions
 - a. Grignard Reaction
8. Identification of an Unknown Ketone
9. Organic Macromolecules: Polymers
 - a. Preparation of Nylon 6,10
 - b. Swelling Capacity of Crosslinked Sodium Polyacrylate
 - c. Hydrogels for Tissue Engineering
10. Organic Macromolecules: Biopolymers
 - a. Introduction to Food Macromolecules

Labster Simulations:

1. Organic Chemistry Reactivity Rules
2. Proton NMR: Spectrum interpretation
3. Nuclear Magnetic Resonance (NMR): Analyze small protein samples
4. HPLC
5. Simple Distillation: Recycle waste from biodiesel production
6. Pigment Extraction: Use photosynthesis to produce biofuel and reduce pollution
7. Recrystallization: Purify your solid
8. Nucleophilic Addition: Explore the Grignard Reaction
9. Tissue Engineering
10. Introduction to Food Macromolecules