

Description: CHEM 226 is the second semester of organic chemistry laboratory and builds upon the topics learned in CHEM 225. In this course, students learn how to run organic chemical reactions, characterize organic compounds, and write up the results of experiments.

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) is preferred, but WI-FI is acceptable as long as 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. Additionally, students need access to word processing software (such as Microsoft Word, which is included in Microsoft 365 and [available free for LUC/summer students](#)) to complete a formal lab report. The lab instructor is not responsible for coordinating these resources for students.

Recommended Materials: Bound composition notebook

Course Homepage: Announcements, assessments, videos, gradebook, etc. will be posted on Sakai.luc.edu. Students are responsible for all of this material and should become familiar with the Sakai layout and check it frequently. New materials will be released on Sakai every week throughout the course.

Meeting Times and Locations:

Section Number	Day and Time
001	All sections of CHEM 226 meet online for summer session II 2020 (July 29-Aug 7).
002	
003	

Schedule: This course is set up to run asynchronously, but it will follow a weekly schedule. The content has been divided into 6 main topic areas for the 6 weeks of the course. **New materials will be released on Sakai under the "Lessons" tab every Monday at 12:05am CDT (Central Daylight Time).** Students are expected to read through the uploaded files, watch the posted videos, and work their way through the assignments at their own pace throughout the week until the due date. **All weekly assignments will be due on Sundays at 11:55pm CDT.** Students will be able to reach the instructor and TA throughout the course via email and also ask questions "live" during weekly meetings/office hours via Zoom. The times for these will be posted on Sakai.

Contact Info: Instructor: Dr. Jessica Eisenberg, jeisenberg2@luc.edu
 TA section 001: Monika Rasic, mrasic@luc.edu
 TA section 002: Sara Abuhadba, sabuhadba@luc.edu
 TA section 003: Jordan Delev, jdelev@luc.edu

Grading: Lab grades will consist of the following components:

Topic Quizzes	20%
Forum Posts	10%
1 Virtual Lab Summary	15%
5 Virtual Lab Notebook Submissions	20%
1 Formal Lab Report	15%
<u>4 Labster Simulations</u>	<u>20%</u>
Total:	100%

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

Topic Quizzes: Since this is an online-only course, much of the content consists of videos posted on Sakai that students are expected to watch. There will be multiple lab technique videos posted each week in the corresponding folder under the “Lessons” tab on Sakai from the Journal of Visualized Experiments (JoVE), a peer-reviewed scientific video journal that shows experiments from laboratories at top research institutions worldwide. After watching the JoVE videos, students should answer the questions in the corresponding topic quizzes. A link to each quiz will be located below the posted video(s) and will also show up under the “Tests & Quizzes” tab on Sakai. Students are allowed unlimited attempts on topic quizzes until the due date; students with no submission prior to the due date will only be allowed one submission for up to 24 hours past the due date and will receive an automatic 10% late deduction. All assessments must be submitted by the student to count; spelling, grammar, and significant figures apply in order to receive full credit.

Forum Posts: Every week, students are expected to respond to a prompt that the instructor will post under the course “Forums” tab on Sakai. A link to each topic will also be posted in the corresponding weekly folder under the “Lessons” tab. In order to receive full credit, students should **WRITE** at least 1 post containing a meaningful comment or question (not just “yes, I agree” or “what’s the answer to #4 in the quiz?”) and **READ** at least 3 posts from fellow students relating to the weekly topic. The purpose of the weekly 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 each week by Sunday at 11:55pm CDT; there will be no points awarded for late Forum posts.

Virtual Lab Summary: In order to facilitate students learning how to properly write up the procedure, observations, and results of an organic synthesis experiment, the first virtual lab experiment taking place during week 2 of the course has a lab summary exercise associated with it. Students will watch a presentation where the Oxidation of Benzyl Alcohol experiment is being performed and then complete an assessment where they will be asked several questions about the experiment. The format of the summary exercise will mimic the various sections of a proper synthesis lab notebook entry and consist of two main parts: 1) a 30-point portion with a series of multiple choice, fill-in-the-blank, and calculation questions completed under the “Tests & Quizzes” tab on Sakai, and 2) a 10-point portion with a type written experimental procedure section that will be submitted under the “Assignments” tab on Sakai. Students will have unlimited attempts to achieve their highest score submission on part 1 until the due date of Sunday, July 12 at 11:55pm CDT; after the due date, students with no prior submission will be allowed only one submission attempt up to 24 hours past the due date with an automatic 10% late deduction. Students will only be allowed one PDF file submission for part 2 of the assignment with the same due date and same late submission policy. The file submissions for part 2 will be scanned with Turnitin to ensure students submit their own original written work.

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 to keep experimental results all in one place. Students should write and submit notebook entries with enough detail that someone else could recreate the experiment exactly on their own using only the lab notebook entry.

For this course, students will complete lab notebook entries for five virtual experiments using information provided in background videos and virtual lab videos that will be posted in the weekly “Lessons” folders on Sakai beginning in week 2. The virtual experiments consist of the instructor performing the experiments in the organic chemistry lab at LUC (just as a student would do) and documenting the experiments in narrated presentations using photographs and videos taken as the experiment was being performed. Students will watch these presentations and write up the experiments following the lab notebook format posted on Sakai under the “Lessons” tab for week 1; a sample lab notebook entry is also posted there for reference. Completed notebook pages must then be scanned (using either a flatbed scanner/copier or a smartphone app), converted into a single PDF file, and submitted on Sakai following the posted link in the appropriate “Lessons” folder or under the “Assignments” tab. Even though students in an online course are not performing these experiments personally, the lab notebooks are meant to be done in a way to mimic the in-person lab experience. Because

much of a lab notebook is written while the experiment is being performed, a lab notebook is not meant to be “perfect,” meaning it may contain spelling errors, abbreviations, scribbled out sections, etc. Notebook points will be awarded based on things such as correct calculations, accuracy, completeness of the data and observations, identification of unknowns, etc. Additionally, in order to receive full credit, the file must be legible and a PDF. Students are only allowed one notebook submission per virtual experiment. If no prior submission has been made before the due date, one late submission will be allowed up to 24 hours past the due date and will receive an automatic 10% late deduction.

Formal Lab Report: To expand upon the more informal writing that students will be doing with the lab notebook entries, students will also be submitting one type written, formal lab report over the Esterification virtual experiment. The lab report will be due by the end of week 5, on Sunday, August 2 at 11:55pm CDT and submitted on Sakai under the “Assignments” tab or following the link that will be provided in the weekly “Lessons” folder. The formal lab report will be scanned with “Turnitin” to ensure students are submitting their own work. More detailed guidelines for the report as well as a sample report will be posted on Sakai under the “Lessons” folder for week 5. Similar to other written assignments for the course, students are only allowed one lab report submission, and if no prior submission has been made before the due date, one late submission will be allowed up to 24 hours past the due date but it will receive an automatic 10% late deduction.

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 4 different Labster simulations during this course during weeks that will be noted in the weekly “Lessons” folders. 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 at a later time if so chosen. The simulations will remain open and available for the duration of the course and may be repeated as often as desired, but **only the score from a student’s first completion of a simulation will be recorded and sent to the Sakai Gradebook**. At least one run through of a simulation must be completed by the weekly due date, but scores will be accepted late for up to 24 hours afterwards with a 10% deduction as per the late policy.

Late Policy: Unless otherwise specified above, the late policy for this course is that late assignments will be accepted only up to 24 hours past the due date and will receive an automatic 10% late deduction. Given the Monday-Sunday weekly schedule outlined for this summer session in this syllabus and on Sakai, the due dates for all weekly assignments during weeks 1-5 are the corresponding Sundays at 11:55pm CDT. **Please note the exception to this is the date marking the end of summer session II courses: Friday, August 7 at 5:00pm CDT.** All week 6 assignments must be submitted by this deadline in order to be calculated in the final course grade; **no late work for week 6 will be accepted.**

Re-grades: Any requests to have an assignment re-graded must be submitted in writing to the instructor within one week of the graded material’s release in the Sakai Gradebook.

Academic Integrity: All students in this course are expected to have read and to abide by the demanding [standard of personal honesty and academic integrity](#) drafted by the College of Arts & Sciences. 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 course grade.

Copyright/Privacy Statements: Course content is designed for use ONLY by students in this course. All materials are subject to privacy and copyright laws. Students are NOT allowed to share any course resources (Labster info, Panoptos, PowerPoints, quiz/test/exam questions, documents, etc.) with anyone not registered for the course, nor are students allowed to upload, post, copy, share them to any outside media sites without explicit permission from the instructor. If discovered that a student completes such action, the Chair of the Chemistry & Biochemistry Department will be notified immediately.

Additionally, software may be used to record live class discussions. As a student in this class, be aware that participation in live class discussions may be recorded. These recordings 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 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. 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.

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, and 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. Additionally, **PLEASE put Chem 226-the section number in the subject line of an email** in order to facilitate answering your question(s). Students should expect replies to email inquiries within 24 hours of sending. Please note that with weekly due dates of Sundays at 11:55pm CDT, last-minute emails sent on Sundays may go unanswered until Monday morning and late penalties still apply.

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 fill out a [permission to register form](#) from the Department of Chemistry & Biochemistry website and obtain a signature from either the Undergraduate Program Director, the Assistant Chairperson, or the Chairperson in the Chemistry & Biochemistry Department. A copy of this form is then sent to your Academic Advisor in Sullivan to secure final permission for the attempt.

Student Accommodations: Loyola provides services for students with disabilities. Any student who would like to use any of these university services should contact the [Student Accessibility Center \(SAC\)](#). If a student has any special accommodations, they must be discussed with the instructor within the first week of classes.

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.

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>).

Hard Deadline: As previously mentioned, **all course assignments of any kind must be submitted by 5:00pm CDT on August 7, 2020**. 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 summer session.

Topics Covered:

1. Lab Safety and Lab Notebooks
2. NMR Spectroscopy
3. Organic Redox Reactions: Oxidation of Benzyl Alcohol and Reduction of Benzophenone
4. Electrophilic Aromatic Substitution: Nitration
5. Nucleophilic Reactions of Carbonyl Compounds, Ketones Derivatives
6. Preparing Anhydrous Reaction Environments
7. Organometallic Reactions: Grignard and n-butyllithium
8. Carboxylic Acid Derivatives: Fisher Esterification and Acylation of an Amine
9. Organic Macromolecules: Polymerization and Intro to Biomolecules