

Chemistry 223-001 – Summer 2022 – Syllabus

The purpose of this syllabus is to describe the course, resources, and policies. It is meant help all students understand the expectations and requirements for the course, and it should be used as a reference for questions about policies. When updates to the syllabus are made during the term, a new version will be posted electronically, and all students will be notified.

Course: Chemistry 223, Organic Chemistry A, 3 Credits, Lecture and discussion
Prerequisites: Chemistry 102 or 106 and MATH 118 – student missing prerequisite(s) may be withdrawn
Lecture: MWF 8:20-11:10 am Flanner Hall 007

Instructor & Contact Information Dr. Sandra Helquist (Ph.D.), Flanner Hall 200B (shared office suite)

Email policy: if you are emailing me about this course, you may either: (1) reply directly to one of my messages, which are sent via Sakai and therefore automatically labeled with our course number or (2) type "Chem 223-001" in the subject line of your email (and nothing else) and send to shelquist@luc.edu. Doing either of these will ensure that I read your message and reply within 24 hours Monday-Friday or 48 hours on weekends during this term. You are welcome to email me in the evenings/nighttime – I never have email notifications activated – and the same response times will apply.

Office Hours policy: informal, in person, after class MWF. Online drop-in hours (just show up!) via Zoom, Sunday afternoons, TBA weekly on Sakai [Resources for Help](#). You are also welcome to stop by my office with questions, thoughts, concerns, and other issues. Additional office hours, in person and online, may be held by announcement or by appointment.

Course Materials Organic Chemistry, Klein, 4th edition, hard copy or eText (Required); WileyPlus online (Required) Highly recommended: Molecular Modeling Kit. Daily access to Loyola email, Sakai site sakai.luc.edu and WileyPlus are also required to receive communications, and to access course materials, assignments, and scores. Calculators are not used. We also use Gradescope (Required, www.gradescope.com) and you will receive registration information via email.

Additional Content, Copyright & Intellectual Property Statement By default, students may not share any course content outside the class without the informed written consent of the owner of that content. This includes any materials posted by students, materials provided by the instructor, and publisher-provided materials. For example, lectures, assignment/test questions, book figures/slides, and videos may not be shared online outside the class. In some cases, copyright/IP violations may overlap with breaches of academic integrity. Remember that obtaining consent to share materials is an active process.

Course Content & Learning Outcomes Topics will include: nomenclature, structures, properties, reactions, mechanisms and synthesis of alkanes, alkyl halides, alkenes, alkynes, alcohols and ethers; study of molecular structure, geometry, and properties; functional groups; reactive organic species; stereochemistry; spectroscopy; spectrometry. If successful, the student will be able to:

1. identify the various classes of organic compounds, their methods of preparation, and typical reactions.
2. name and draw specific organic compounds.
3. visualize and interpret multiple representations of organic molecules depicting connectivity, configuration, and conformations.
4. postulate logical reaction mechanisms for organic reactions.
5. discriminate among relative stabilities of reactive intermediates.
6. plan and write out single and multi-step syntheses using known reagents and conditions.
7. identify and compare general physical properties of organic compounds.
8. analyze, interpret, and predict spectral data (MS, IR, NMR) used in identifying organic compounds.
9. describe and analyze how organic chemistry affects the way we live and die.

Peer Tutoring Group peer tutoring study sessions through the Tutoring Center are available for this course. Sessions are free and anonymous meaning professors do not know who is attending. While attendance is open to all, it is extremely beneficial for those who attend regularly. To view times and Zoom information, please visit the Tutoring Center website (luc.edu/tutoring). Students who attend these interactive sessions find themselves working with peers as they compare notes, demonstrate and discuss pertinent problems and concepts, and share study and test-taking strategies. Research shows students whom regularly attend sessions have higher grades and more deeply understand course concepts than those who do not. Students are asked to arrive with their Loyola ID, lecture notes, and textbook. For questions, please contact: tutoringcenter@luc.edu.

Expectations I expect you to show up on time for each class and to come prepared, having kept up with the material by working homework, reading in the textbook and accessing resources for help. I expect you to use class and office hours to learn the material by engaging with classmates and asking questions. You will need to contact a classmate for notes, topics, sections, covered if you miss a class. Make-up assignments are not available in this course. Be courteous: save electronic messaging for after class. Plan your schedule so you have at least 25 hours per week outside of class for reading, working

problems, asking questions, i.e., studying (learning) the material on a Daily Basis. You may require up to 40 hours per week depending on prior preparation for this course. Make time (hours) for this course every day: do not count on cramming on weekends or just before quizzes and exams as you will be much less likely to master the course objectives.

Classroom & Group Work Guidelines The classroom is a space designed for learning. My expectations are that all voices will be heard and appreciated in the classroom, and that we will invite each other to engage while recognizing that contributions can take multiple forms.

Health, Safety, and Well-Being On-Campus Please be familiar with and adhere to all policies and protocols posted on the *Campus Info & Resources* site: <https://www.luc.edu/healthsafetyandwellbeing/campusinforesources/>

Classroom Masking Requirement It is Departmental policy that, even in the event the University relaxes its universal requirement for indoor mask-wearing during the Summer 2022 term, it will remain a principle of this class section that, out of respect for the health of housemates and others in regular contact with members of our community, in this class we properly wear masks at all times (e.g., over nose, mouth, and chin).

Student Accommodations The Student Accessibility Center, Sullivan Center (773.508.3700), <http://www.luc.edu/sac>, has the mission “to support, service, and empower Loyola University Chicago students with disabilities” and to “Partner with faculty and staff to provide opportunities for collaboration, professional development, personal growth, and staff interaction, as they relate to students with disabilities.” Please direct all questions concerning accommodations of disabilities to the Student Accessibility Center. Academic accommodations afforded to students require documentation and review. The Student Accessibility Center will issue accommodation letters for registered students. Students with testing accommodations will submit all test requests via [Accommodate](#) at least seven days in advance. If students’ accommodations involve attendance or deadlines, instructors and students will jointly complete and execute an Agreement Form articulating their terms. See <https://www.luc.edu/sac/faculty/facilitatingaccommodations/> for guidance about implementing various kinds of accommodations in a way that is appropriate. The Student Accessibility Center stands ready to work with you.

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). The Department advises that it is preferable to complete a course with a grade of C or C-, and to demonstrate growth in future coursework, than to withdraw from a course. 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.

Academic Integrity You are encouraged to study with other students in and out of class, however, anything submitted for an individual grade during or outside of class must represent your own knowledge and understanding of the material. At times you may have questions about what level of collaboration is consistent with honest work, especially for group work or activities completed outside of class: when this happens, please ask! For the Undergraduate Catalog statement on academic integrity, visit: http://www.luc.edu/academics/catalog/undergrad/reg_academicintegrity.shtml. The following is a brief excerpt: *Academic integrity is the pursuit of scholarly activity in an open, honest, and responsible manner. Academic integrity is a guiding principle for all academic activity at Loyola University Chicago, and all members of the University community are expected to act in accordance with this principle.* The College of Arts & Sciences (CAS) also has a full statement, linked here: <https://www.luc.edu/cas/advising/academicintegritystatement/>. Evidence of cheating in this course will result in, at a minimum, a score of zero (which cannot be dropped from grade calculations) and penalty up to failure of the course. College policies include that instructors will report incidents of academic misconduct to their chairperson as well as to the Assistant Dean for Student Academic Affairs in the CAS Dean’s Office. I will report incidents to the Chemistry & Biochemistry Department for further action(s).

Best Practices & Suggestions for Success: Preparation, Practice, Self-Assessment Students often ask me, “How do I get a/an (fill in grade of choice here) in this class?” The answer is simple (see the grading policy for the course), but the process of learning is challenging and can even be uncomfortable as you are pushed to expand the boundaries of your knowledge and abilities. Grades are earned based on how well you demonstrate mastery of the Course Content and Learning Outcomes listed on Page 1 of this syllabus: please reread carefully and completely – and ask questions if you are not sure how/when we are working toward these and the more specific Course Objectives in class. Required preparation includes pre-lecture reading assignments to correlate with required practice which includes the WileyPlus assignments online and the Group Participations. Very Highly Recommended: active participation during lectures (problem-solving,

asking/answering questions, taking notes for follow-up), using additional resources for critical self-assessment – working extra problems – in WileyPlus and from your textbook, and during SI sessions. The required homework assignments include the minimum amount of preparation you will need pre-lecture; almost all students will need additional pre- and post-lecture practice with the material in order to achieve a satisfactory level of learning (in order to earn a passing course grade). Reading the textbook is not sufficient, reading solutions to problems is not sufficient: watching other people solve problems is not sufficient: you must solve problems and answer questions individually, without the aid of notes, textbook, google, tutors, solution manuals. What does this mean? You should study (learn) every day by answering questions: practicing until you can rapidly recognize problem types, state the concept(s) being addressed in any question (say it out loud to yourself when practicing), identify subtle differences between problems and correct your own mistakes. This amount of practice usually starts with the aid of your book and other resources, but must conclude with you correctly solving problems without any help – and knowing immediately why your answer is correct. When you cannot differentiate problem types, ask for help. When you cannot find and correct your mistakes, and when you do not understand the difference between your answers and posted solutions, ask for help. Study on your own and with classmates who will quiz you on mixed problems types so that you learn to expect the unexpected and do not learn to rely on brute force memorization or on your notes/book/other every time you encounter an unfamiliar problem type. The purpose of homework problems is to help you learn the material but this requires critical self-assessment as you work: you must know how completely you are learning the material so you do not overestimate your competency prior to testing.

Tentative Lecture Schedule & Attendance Policy

Our actual pace is highly likely to vary from this schedule: if you miss a class for any reason, it is your responsibility to immediately contact a classmate for notes/topics covered. I do not provide notes, outlines or summaries. We will not cover every topic in every chapter of the textbook this term. Focus first on the material that is directly covered and assigned or recommended. Explore the additional material in the textbook for your own interest and enrichment.

Week	Dates	Monday	Wednesday	Friday
1 Structure	May 23, 25, 27	Ch.1, 2: Structure, Bonding Theory & Geometry, Representations, Resonance	Ch.2, 14: Geometry & Representations, Functional Groups & IR Spectroscopy	Mastery Quiz 1 Ch.14: Mass Spectrometry; Ch.4: Alkanes, Isomers
2 Structure	May/June 30, 1, 3	HOLIDAY OBSERVED "make-up" content via Sakai	Ch.4: Alkane Newman Projections, Conformations, Cyclohexane Chair	Mastery Quiz 2 Ch.5: Stereoisomers, Chirality, Configurations, Fischer Projections
3 Reactivity	June 6, 8, 10	Ch. 3: Acids & Bases, Proton-transfer mechanisms, Acid-Base Equilibria	Ch.6: Energy, Equilibrium & Kinetics, Mechanisms; Ch.7: Alkyl Halides	Mastery Quiz 3 Ch.7: Substitution & Elimination Reactions
4 Reactivity	June 13, 15, 17	Ch.7: Reagents, Reaction Conditions & Selectivity	Ch.8: Alkene Electrophilic Additions, Reagents, Conditions & Selectivity	HOLIDAY OBSERVED "make-up" content via Sakai
5 Reactivity Synthesis	June 20, 22, 24	Mastery Quiz 4 Ch.7, 8: Retrosynthesis Ch. 9: Alkyne Reactions	Ch.9: Alkyne Syntheses Ch.10: Radicals, Mechanisms, Selectivity	Ch. 10: Radicals, continued Ch.11: Synthetic Strategies, Retroanalysis, continued
6 Reactivity Synthesis	June/July 27, 29, 1	Mastery Quiz 5 Ch.12, 13: Alcohol & ether Nomenclature, synthesis	Ch. 12, 13: Organic Redox; Alcohol, ether, and epoxide synthesis & reactions	Mastery Quiz 6 FINAL EXAM

Other Items

- A link to the official Loyola calendar can be found here: <https://www.luc.edu/academics/schedules/>
- The Withdraw deadline for the semester is on Friday June 24th.
- The deadline to convert a course into or out of the "Pass/No-Pass" or "Audit" status is May 27th.
- Loyola is using SmartEvals to provide instructor & course feedback. [OIE](#) will send emails near the end of the term.
- Additional resources, advice, and suggestions for success (from multiple sources) will be posted/updated on Sakai.
- Accommodations for religious reasons will be considered if the request is made to the instructors in person within the first week of the term. Absences for religious observances will be discussed in person.

Grading information is on the next pages, and I hope that the measure of what you gain from this course will include much more than the letter on your transcript. Your success in this course is important to me. Let me know what I can do to help you meet your needs and fulfill the requirements to succeed.

– Dr. Helquist

Course Grading System

Design

There are three basic principles that I have used to design the grading system for this course. These are for you to:

1. Understand what the standards and requirements are for each letter grade so that you can choose what level of academic achievement to pursue in this course. I encourage each of you to strive for high achievement because I believe in the potential of all students to learn and improve their abilities in Chemistry.
2. Expect a challenging but flexible learning environment. The standards for demonstrating your Mastery of the course material are high in each area, but the methods for meeting the standards are designed to give you chances to revise and improve the quality of your work throughout the term.
3. Learn from mistakes. Deep, connected learning involves hard work and reflection on your progress. Chemistry is a cumulative subject where the new topics build on prior knowledge and this system is designed for cycles of learning.

Standards

The standards for each letter grade are listed here according to all required course components. We will revisit the standards and expectations after the early rounds of testing to help you gauge your progress in the course. Grades are only based on the criteria listed in the syllabus: no substitutions, and no additions.

WileyPlus	10%
Participation	10%
FO Mastery	25%
SSM Mastery	25%
Midterm Exam	5%
<u>Final Exam</u>	<u>25%*</u>
Total score	100%

Letter Grade Cutoffs*:

A	90.0%	C+	65.0%
A-	85.0%	C	60.0%
B+	85.0%	C-	55.0%
B	75.0%	D	40.0%
B-	70.0%	F	< 40%

*the final exam is mandatory to earn a passing grade

Posting of Grades

Final course grades at the end of the semester are posted only LOCUS. Grades are never sent via email. WileyPlus scores are automatically recorded in the gradebook for that system. Other scores are posted on Gradescope or Sakai.

WileyPlus: Required Homework

Registration information is on Sakai; use of this system includes eText access. The purpose of these assignments is to help you keep up with the course material by preparing ahead for each class. You will get as much benefit from these assignments as you choose to put forth in your effort to solve the problems on your own: a list of textbook sections will be continually updated on Sakai to correlate with the WileyPlus pre-lecture assignments. There will be 2-3 required assignments per week, always due at 11:59pm, posted at least 1-2 days in advance. Assignments will be submitted completely online with the individual grading policy listed with each assignment. Contact [Wiley Support](#) for help with technical aspects of using WileyPlus. Additional practice assignments will be posted that will not count toward the point total for your course grade.

Participation Assignments

2-3 assignments per week, usually completed in assigned groups. Most assignments will be completed in class and submitted to Gradescope. The purpose of participation is to improve your learning by: 1) cooperation, communication and support among your classmates as you practice the skills required for success in the course; and 2) providing feedback on your progress to encourage reflection and improvement. Assignments will include test questions from previous semesters. You will get as much benefit from these assignments as you choose to put forth in your effort and you are expected to correct your work after receiving feedback. Refer to the Universal Absence Accommodation Policy for missed assignments.

Foundational Objectives (FOs): Mastery Quizzes

The purpose of testing is to align your course grade with your level of learning, based on your mastery of Foundational Objectives (FOs). The FOs are all related to the Course Content & Learning Outcomes on the first page of this syllabus. A list of FOs will be updated for each unit as we progress through the material. There will be some overlap between chapters. Quizzes will be scored as Mastered or Not Mastered for each FO. A score of Mastered is earned for correctness and completeness of the problem(s), and each FO may only be counted once toward your FO Mastery score, which is calculated as the percentage of FO's mastered at the end of the term. You will have multiple chances to demonstrate mastery of all of the FOs during the term: for example, if you receive a score of Not Mastered for any FO on the first quiz (or if you choose not to attempt an FO), you can try again to earn a score of Mastered for that FO on the second quiz. Revision of work that does not meet mastery standards is expected for your learning. Because you will have more than one chance to master the FOs, you will also be able to choose which FOs to work toward for the course. Note that the standards for earning Mastery will be high: by definition there is no partial credit, but you will learn the standards from the examples for class activities. Quiz dates are listed in the tentative schedule. Refer to the Universal Absence Accommodation Policy for missed quizzes.

Spectroscopy/Synthesis/Mechanisms (SSMs): Mastery Quizzes

The purpose of testing is to align your course grade with your level of learning, based on your mastery of in-depth topics. The purpose of SSMs is to allow you to demonstrate your higher-level skills of applying and analyzing, requiring you to go beyond memorization of facts and processes and transfer your understanding of essential course concepts to new scenarios. The SSMs are all related to the Course Content & Learning Outcomes on the first page of this syllabus. A list of SSMs will be updated for each unit as we progress through the material. SSMs will be scored as Mastered or Not Mastered. A score of Mastered is earned for correctness and completeness of the problem(s). Note that the standards for earning Mastery will be high: by definition there is no partial credit, but you will learn the standards from the examples for class activities. Each round of testing on SSMs will be followed by an opportunity to resubmit work to earn a score of Proficient for an SSM that was Not Mastered in the first testing opportunity. Resubmissions for Proficiency will also earn reattempts of SSMs. Reattempts will take place with the next round of testing. There are 10 SSM's for this course, with a total contribution of 25% to the course grade. At the end of the term, each Mastered SSM is worth 2.5% and each Proficient SSM is worth 1% toward the SSM Mastery percentage. Note that your grade will not count both Mastery and Proficiency for the same item; an SSM that is scored Proficient and then is subsequently Mastered on a re-attempt is worth 2.5% toward the SSM percentage. Quiz dates are listed in the tentative schedule. Refer to the Universal Absence Accommodation Policy for missed quizzes.

Midterm Exam

The purpose of exams is to align your course grade with your level of learning, based on your ability to complete a cumulative and comprehensive test on the application of essential course concepts. The purpose of the midterm exam is to give you feedback on your progress in preparation for the final exam. The midterm will be a take-home test, and you will receive a paper exam copy in class that may include all material assigned during Weeks 1-4. The test will be "graded" to give you feedback for each question in order to help you understand the expectations for scoring of the final exam, but the score that is counted toward your course grade will be based on completing the requirements listed with the test.

Final Exam

The purpose of exams is to align your course grade with your level of learning, based on your ability to complete a cumulative and comprehensive test on the application of essential course concepts. The final is a 2-hour exam, completed on paper, in class on the last day of the term. Questions may include all material assigned for the semester; refer to the midterm exam feedback for expectations of scoring. The final exam will not be returned, and a score will be posted on Sakai. Note that taking the final exam is mandatory to earn a passing course grade (C- or higher).

Universal Absence Accommodation Policy

The purpose of a universal absence accommodation policy is to account for emergency circumstances (e.g., serious illness, caring for a family member, car accident) that require you to be absent from class, while maintaining fairness in grading for students who attend and complete all in-class graded assignments. We believe that class attendance and participation are essential for your success in this class, and that your health is important to us and our shared community. Please use good judgement and stay home if necessary/prudent for your circumstances.

This is the universal accommodation policy for in-class graded assignments:

- Participation: two assignments are dropped from the total scoring at the end of the term
- FOs: multiple attempts at Mastery are automatically provided during the term
- SSMs: you are eligible to submit for Proficiency after the first attempt at an SSM whether you complete the problems or not; reattempts at Mastery are available during the term

You may provide documentation for an absence, but it is not required. These accommodations are automatically available to all students.