

Loyola University Chicago

Syllabus Organic Chemistry A CHEM 223 Sec. 011; Monday, August 24 - Friday, December 04
Fall 2020

Prerequisite: CHEM 102 or 106; Lecture: T, R 08:00 AM - 09:15 AM

Instructor: Donald May Contact: Please include course and section in the heading; dmay4@luc.edu;

Office: Flanner Hall 403; OFFICE HOURS: Tuesdays before exams with the start-time to be announced

Discussions: 012 W 08:10 AM – 09:00 AM; 013 W 09:30 AM – 10:20 AM;
014 W 02:50 PM – 03:40 PM

Required Materials: Textbook: ORGANIC CHEMISTRY by David Klein; 3rd edition ISBN 978-1-119-37869-3

Optional: - Student Study Guide and Solutions Manual, ISBN 978-1-119-37869-3
- Molecular Model kit

As a possible study aid, you may want to consider purchasing, a paperback by D.R. Klein entitled “Organic Chemistry as a Second Language: Translating the Basic Concepts” (I&II); 2004 by John Wiley & Sons, Inc.; ISBN 0-471-27235-3; www.wiley.com/college/klein. These are to help the student develop the skills required to solve a variety of problems in organic chemistry and to point out the fundamental principles in organic chemistry. An additional study aid is a paperback by D.P. Weeks entitled “Pushing Electrons: A Guide for Students of Organic Chemistry,” Third Edition (Thomson Brooks/Cole); ISBN 0-03-020693-6. The first 3 chapters (pp. 1-161) of this workbook are intended to help a student understand “structure and bonding in organic molecules,” as well as techniques of “electron pushing” designed to comprehend reaction mechanisms.

Supplementary Textbooks: Organic Chemistry, Eighth Edition by Wade (Pearson; 2016)

Organic Chemistry, Tenth Edition, by T.W.G. Solomons and C. Fryhle (John Wiley & Sons, Inc., 2011).

Organic Chemistry, Eighth Edition, by J. McMurry (Brooks/Cole Publishing Co., 2012).

Organic Chemistry, by F.A.Carey and R.M. Giuliano, Eighth Edition (McGraw-Hill, Inc., 2011).

Organic Chemistry: Structure and Function, by K.P.C. Vollhardt and N.E. Schore, 6th Edition (W.H. Freeman and Co., 2011).

Method of Instruction: Lecture and discussion through synchronous (Zoom meetings; Meeting ID number in SAKAI ZOOM PRO) and asynchronous (Panopto videos also in SAKAI). Lectures and discussions will be supplemented with use of multimedia, and/or use of computer-based materials as well as individual and/or group problem solving. Supplemental suggested textbook homework problems, for each chapter may be given but are not to be turned in for grading. Discussions may incorporate explanation of theory, review of homework questions, review of or completion of lecture material. Graded exams will be available as soon as possible. Issues with graded exams must be submitted within 48 hours, otherwise no regrade will be considered and scores will be considered final. Any single regrade will be considered the final score and no subsequent regrade request will be considered. Each student is responsible for meeting course requirements. Students must attend scheduled graded discussions to possibly earn credit: there are no make-up discussion handouts; there are no make-up exams.

ELECTRONIC MATERIALS (REQUIRED):

1. Expect to use both a laptop computer and a mobile device (phone, tablet) for connectivity to online resources, including use of a camera or connected webcam during scheduled discussions and exams. There is a possibility that exams will eventually use the EXAMITY or a different program for proctoring of exam. This is a process which incorporates a single device for proctoring.

2. Preliminary list of electronic resources:

Loyola email: messages to be sent to the class from Sakai (possibly LOCUS)It , linked to your Loyola UVID

Loyola Sakai login with your Loyola UVID; e-mails may also come from LOCUS

Zoom conferencing: luc.zoom.us meeting ID & password will be provided, login with Loyola UVID

WileyPlus: SEE ACCESS CODE INFORMATION IN SAKAI RESOURCES: Students can register for the Fall course by following the steps on the attached student flyer, or by visiting the following direct link: www.wileyplus.com/class/778441

GradeScope: I will upload a course roster and send notification via email prior to first class

CamScanner: free application converts photos to pdf's of your work (alternative: Genius Scan)

Loyola Information Technology Services Support: <https://www.luc.edu/its/support/>

3. Exams & Proctoring will be conducted electronically, additional (free) software downloads may be required

Grading: Semester grades will be determined by the following criteria:

Exams will incorporate theory up to and including all lectures/discussions/homework, prior to the exam. Many concepts build upon previously covered concepts. Discussion handouts with the lowest score dropped (Ex: best 3 out of 4); with any single, missed discussion handout, the associated zero score will be given and will serve as a single dropped score; additional missed discussion handouts will be scored as zero and will not be dropped; Three (3) in-class unit exams; Each unit exam will have about 100 points possible; There will be multiple-choice questions (about 10-12) and several long-answer/ free-response questions of varying point values. The comprehensive final exam will be about 200 points and have a similar format to the unit exams. Final grades will be determined from one of the following exam contribution options, whichever gives the higher grade/percent:

OPTION 1: All three (3) unit exams at 20% each = 60% + final exam 30% = 90%

OPTION 2: Best two (2) unit exams at 20% each = 40% + final exam 50% = 90%

OPTION 1: Discussion Homework: 10%

3 Unit Exams@60% + Final Exam@30%

Total: 100%

OPTION 2: Discussion Homework: 10%

2 Unit Exams@40% + Final Exam @50%

Total: 100%

No early and no make-up in-class exams; No late discussion handouts. For a single, missed unit exam, Option 2 automatically will be utilized to determine the final course grade. Any subsequent missed exams will be scored as zero. The student must have a valid and verifiable reason for missing the final exam, such as an extreme emergency or serious illness requiring hospitalization, and so forth, to be eligible for a make-up final exam. Official documentation must be provided by the student and will be evaluated. A make-up final exam will be in a different format. If a verifiable and valid reason cannot be provided, a zero score for the final exam will be recorded. See attached schedule.

Exam Dates (tentative): **EXAM I: WEDNESDAY, September 23; EXAM II: WEDNESDAY, October 21; EXAM III: WEDNESDAY, November 18;**

THE ADMINISTRATION HAS ADJUSTED THE PUBLISHED FALL 2020 FINAL EXAM SCHEDULE: FINAL EXAM: THURSDAY, December 10, 05:30 PM – 07:30 PM

Final course grade assigned: A: 100% – 93.0% A- : 92.9% - 88.0%

B+: 87.9% - 83.0% B: 82.9% - 78.0% B-: 77.9% - 73.0% C+: 72.9% - 68.0% C: 67.9% - 63.0%

C-: 62.9% - 58.0% D+: 57.9% - 53.0% D: 52.9% - 48.0% F: < 48.0%

Students are not allowed to leave the proctor's view during exams. See Academic Integrity Violations. If you leave for any extended period of time, you will be considered finished with the exam. Students must turn in all exam pages when finished as a single pdf file to be uploaded. **The instructor reserves the right to amend any and/or all constituents, requirements and policies of this syllabus at any time: exam dates; the grading policy, components and scale.**

• **Student Conduct:** Only students officially enrolled in the course may access course materials and components. Students must attend the discussion for which they are officially enrolled. Students are not allowed to share any course materials with anyone outside the class. At all times students are expected to conduct themselves in a mature and professional manner, which includes but is not limited to: treating everyone with courtesy and respect. Students are expected to take care of their personal/professional matters before lectures/discussions/exams since students are not allowed to be un-proctored, through Zoom, during scheduled graded meetings. Panopto videos utilized will be uploaded and made available on SAKAI. Other graded discussion and exam instructions will be given and thus it is expected that students will be on time and ready for the start of each Zoom meeting. It is each individual student's responsibility to meet course requirements, which include:

- **Required** student's full availability during the scheduled times of Lectures and Discussions. Students must attend the discussion Zoom meetings for which they are officially enrolled.
- **Required:** Windows or Mac computer (these will not be compatible: Chromebook, iPad, any other devices)
- **Required:** Webcam (external or built-in in the device), earphones, microphone.
- **Required:** any scanning app (free good Apps: Built-in Notes App in iPhones, free apps: CamScanner, Genius Scanner etc.)

- **Required format of all handwritten submissions is PDF. Other files/formats will not be accepted.**
- **Required: Stable internet connection for all synchronous meetings and for submission of graded materials.**
- **Required: Smartphone or any mobile device**
- **Required: Reduced noise environment or room. For the exams discussions student are required to be arranged in a room in which they are clearly visible via Zoom and not interrupted and no other people, but the student are present.**
- **Required: Sakai access: Communication will go through Sakai and Zoom synchronous sessions. It is student's responsibility to follow the announcements, and all policies of the class.**
- **Required: Sakai, Zoom and Panopto access associated with Loyola UVID (access given automatically for each individual discussion for those officially enrolled).**
- **Required: Wide ruled composition notebook (25 lines per page ONLY). Any other ruled notebooks will not be read by the homework system and as a result will be graded as Zero.**
- **Required: WileyPlus account. The homework will be given and available on WileyPlus. The registration flyer with the access code will be posted under Resources on SAKAI by August 21st.**

Recommend but NOT required: Any digital ink device: such as iPad with Apple Pencil, Surface Pro with any pen, android Tablet with pen, etc. This course was designed in such a way that lack of any of these devices will not affect the performance in the class. This digital device is very useful during group discussions

Academic Integrity: Consult the Undergraduate Studies Handbook for additional information. 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. For on-line homework, students creating multiple accounts will be considered in violation of academic integrity. Anything submitted that is incorporated as part of your grade in this course must represent your own work, unless indicated otherwise. All exams are self-contained: closed book and closed note. No external materials/notes/books or personnel are allowed: no unauthorized resources. During exams, violations include but are not limited to: cell phone ringing, using unauthorized notes or books, communicating with another student, utilizing any on-line resource. Depending on the seriousness of the incident, different sanctions may be imposed. Please note that materials from this course cannot be shared outside the course without the instructor's written permission (as reminded by the CAS Dean's Office memo, Jan. 2020).

Trust and integrity are important qualities in students. All submitted work must represent your own work and your own work only. Academic dishonesty of any kind, such as plagiarism and cheat sheets on exams, will not be tolerated. Any student caught cheating on an assignment in any way will receive at minimum a "zero" for that assignment and be reported to Chairperson of the Chemistry Department and the Dean of the School of Arts and Sciences. A zero on an exam for cheating will not allowed to be dropped and grading Option 1 will be utilized. For further information regarding the Academic Integrity policy and disciplinary procedures, refer to the Undergraduate Studies Catalog: http://www.luc.edu/academics/catalog/undergrad/reg_academicintegrity.shtml.

Academic Dishonesty also includes such infractions as:

- Obtaining a copy of tests or scoring devices
- Using another student's answers during an examination
- Providing another student questions or answers to or copies of examination questions
- Having another person impersonate the student to assist the student academically
- Impersonating another student to assist the student academically
- Representing as one's own work the product of someone else's creativity
- Using, or having available for use, notes or other unpermitted materials during "closed book" examinations
- Duplicating any portion of another student's homework, paper, project, laboratory report, take-home examination, electronic file or application for submission as accepting a copy of tests or scoring devices
- Having someone other than the student prepares any portion of the student's homework, paper, project, laboratory report, take-home examination, electronic file or application,

other than for a teacher-approved collaborative effort.

- Permitting another student to copy any portion of another student's homework, paper, project, laboratory report, take-home examination, electronic file or application other than for a teacher-approved collaborative effort
- Using any portion of copyrighted or published material, including but not limited to electronic or print media, without crediting the source
- Any other action intended to obtain credit for work that is not one's own.

Materials from the course cannot be shared outside the course without the instructor's written permission. Students may not be aware of copyright and intellectual property rights.

Students engaged in official university off-campus activities will need to make proactive arrangement for missed course assignments, in providing the appropriate signed documentation in advance of the date missed.

Recording of Zoom class meetings

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 course has concluded. *Students who have a need to participate via audio only must request audio participation only without the video camera enabled.* 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.

Materials from the course cannot be shared outside the course without the instructor's written permission. Students may not be aware of copyright and intellectual property rights.

Course Practices Required: Watching all recorded lectures and attending all discussions through Zoom on time; College-level writing skills on exams; Communication skills for discussion and articulation of questions; Completion of homework and reading assignments. It is recommended that the student read through each chapter before viewing recorded lectures and eventually work through the suggested problems before graded assignment dates.

Disability Accommodations: Students requiring accommodations at the University need to contact the Coordinator of Services for Student Accessibility Center (SAC), Sullivan Center. Accommodations are provided after receiving documentation from SAC Testing and allowance of a reasonable time frame for arrangements (minimally, one week in advance). Accommodations cannot be retroactive. Contact: <http://www.luc.edu/sac/>

Academic Calendar, www.luc.edu/academics/schedules

Important Dates:

Monday, September 07: No classes: Holiday (Labor Day)

Monday, Tuesday, October 05, 06:

Friday, October 30: Last day for "W" otherwise "WF"

Monday, November 02: Spring 2021 Registration

Monday - Saturday, November 23- 28: No classes: Holiday (Thanksgiving)

Learning Objectives: Students who successfully complete this course will be able to do the following at an acceptable level, which includes but is not limited to: Relate molecular orbital hybridization to bonding types, angles, geometry; Name and draw simple and more complex organic structures; Predict both physical and chemical properties of alkanes, alcohols, alkenes, alkynes and alkyl halides; Differentiate between isomer types (structural and stereo) and conformers; predict and name different stereoisomers; Describe and differentiate between various mechanisms, such as elimination versus substitution; Relate reaction mechanisms to intermediates, stereochemistry, and kinetics; predict reaction mechanism from experimentally related data and vice versa; Work with multi-step reaction pathways; develop synthetic pathways to simple organic compounds; Use nuclear magnetic resonance (NMR), infrared (IR), ultraviolet (UV), and mass spectrometry (MS) data to identify structures; predict the spectroscopic data from the structure

Academic Calendar, www.luc.edu/academics/schedules Students wanting to drop lecture after midterm may stay in the co-req lab only if midterm grade, posted in LOCUS, is a D or better. Students should continue to attend lecture until the week of the drop date to gain as much background knowledge as possible. For Fall 2017 students wishing to drop lecture, and have a mid-term grade of D or better, can seek assistance from the Department of Chemistry and Biochemistry office. Students with a midterm grade of F must drop the co-req lab along with the lecture. No exceptions.

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 obtain a signature from 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.

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.

Lecture Outline (tentative, subject to change)

Week	Date	Chapter	Topic	*
1	08/25	01	Lewis structures, bonding, resonance,	
	08/26		Q&A ZOOM MEETING	
	08/27		formal charges	
2	09/01	01, 02	Molecular Orbital Theory, hybridization	
	09/02		Q&A ZOOM MEETING	
	09/03	02	bond rotation Alkanes, nomenclature	
3	09/08	02, 03	Acid-Base conjugates; Curved arrow notation	
	09/09		Q&A ZOOM MEETING DISCUSSION HANDOUT	
	09/10	03	Curved arrow notation	
4	09/15	04	Newman Projections/conformational analysis, Cycloalkane nomenclature	
	09/16		Q&A ZOOM MEETING	
	09/17	04	Chair conformations	
5	09/22	04	Chair conformations	
	09/23		<u>EXAM I ZOOM MEETING</u>	
	09/24	05	Stereochemistry, chirality/chirality centers enantiomers, optical activity	
6	09/29	05	Fischer Projections; Configurations; Alkyl halides, nomenclature, properties	
	09/30		Q&A ZOOM MEETING	
	10/01	06	Reaction rates and mechanisms,	
7	10/06	06, 07	Alkyl Halides; SN1, SN2	
	10/07		Q&A ZOOM MEETING DISCUSSION HANDOUT	
	10/08		Carbocations	
8	10/13	07	E1, E2 reaction mechanisms	
	10/14		Q&A ZOOM MEETING	
	10/15	08	Alkene nomenclature, alkene stability, degrees of unsaturation	
9	10/20	08	Alkene reactions, halogenation,	
	10/21		<u>EXAM II ZOOM MEETING</u>	
	10/22	08	hydration, carbocation rearrangements	
10	10/27	08, 09	Hydroxylation, oxidative cleavage; Syntheses	
	10/28		Q&A ZOOM MEETING	
	10/29	09	Alkynes, nomenclature, reactions; Syntheses	
11	11/03	10	Free radicals, bond dissociation energy;	
	11/04		Q&A ZOOM MEETING DISCUSSION HANDOUT	
	11/05	10, 11	Radical mechanisms, reaction profiles; Syntheses	
12	11/10	12	Alcohols, classification, properties, nomenclature	
	11/11		Q&A ZOOM MEETING	
	11/12	12	Alcohols: oxidation, halogenation, dehydration, carbocation rearrangements	
13	11/17	14	Infrared Spectroscopy; Mass Spectrometry (MS)	
	11/18		<u>EXAM III, ZOOM MEETING</u>	
	11/19	14	IR spectra interpretation, Mass Spectrometry (MS)	
14	11/23- 11/28		NO CLASSES Thanksgiving Break - Holiday	
15	12/01	13	Ethers; nomenclature, physical properties	
	12/02		Q&A ZOOM MEETING	

12/03 13 Synthesis and reactions of ethers,
16 12/10 THURSDAY, December 10: FINAL EXAM: 05:30 PM – 07:30 PM