

CHEM 242

Organic Chemistry II

(3 credits)

Text: David Klein, Organic Chemistry, 2nd Ed., 2012, Wiley

Prerequisites: CHEM 241

Course Description:

This course is a continuation of CHEM 241. Instrumental characterization of organic compounds including Mass-Spectrometry, FT-IR, ^1H and ^{13}C NMR Spectroscopy will be covered. Further, organic reactions involving various functional groups with mechanisms, also single- and multistep synthesis will be covered.

Expected Learning Outcome:

Upon completion of this course, the successful students are expected to:

- (a) Identify functional groups present in organic molecules using FT-IR spectra; (b) Interpret Mass-spectra to verify molecular weight and structures based on fragmentation pattern; (c) Assign resonances in $^1\text{H}/^{13}\text{C}$ NMR spectra to appropriate protons and carbons in organic molecules and identify the molecular structure.
- Know how to prepare alcohols and reactions of alcohols.
- Know how to prepare ethers and reactions of ethers including ring-opening reactions of epoxides. In addition, students should be able to describe how to prepare thiols and sulfides and the reactions involving these functional groups.
- Know nucleophilic addition reactions of aldehydes and ketones.
- Know how to prepare carboxylic acid derivatives such as acyl chlorides, acid anhydrides, esters, amides, etc. from carboxylic acids and reactions involving the carboxylic acid derivatives.
- Know alpha carbon chemistry involving enols and enolates such as alpha halogenation, Aldol reactions, Claisen condensation, alkylation, and Michael addition.
- Know how to prepare amines and understand the reactions of amines including reactions of aryl diazonium salts. In addition, students should know the reactions of nitrogen heterocycles.
- Know how to prepare polymers via addition and condensation polymerization.

Course Policies:

Attendance is mandatory. Students are responsible for reading materials before each class. Cell phones must be turned off, and no other disturbances are allowed during the class. Lecture style will be whiteboard-based, meaning the whiteboard will be used at all times rather than power point. The purpose of the lecture format is to allow students to learn by drawing molecules and mechanisms, which is the most effective way to learn organic chemistry. Therefore, students are responsible for taking their own notes. No lecture notes will be provided to students. If necessary, consult your classmates for their notes. There will be NO MAKE-UP EXAMS or QUIZZES.

Students are responsible for reviewing the academic policy and conduct expectations as stated in the UNLV F2014-SP2015 Undergraduate Catalog, Academic Policies, which can be found on the following website: <http://catalog.unlv.edu>

Evaluation:

3 Quizzes (Each Quiz: 50 pts):	150 pts
Exam 1:	200 pts
Exam 2:	200 pts
Exam 3:	200 pts
Final Exam:	280 pts
<hr/> Total:	1030 pts

Grading: Curves may be assigned at the instructor's discretion. Final Course Grades will be assigned according to the following scale:

	A: 100 – 90%	A-: 89.9 – 89%
B+: 88.9 – 88%	B: 87.9 – 77%	B-: 76.9 – 76%
C+: 75.9 – 75%	C: 74.9 – 67%	C-: 66.9 – 66%
D+: 65.9 – 65%	D: 64.9 – 54%	D-: 53.9 – 50%
F: 49.9% and below		

Disclaimer: The contents of this syllabus are tentative and may be altered by the instructor at his discretion. In such cases students will receive a single “hardcopy” notification for archival with this document.

UNLV POLICIES

Academic Misconduct — Academic integrity is a legitimate concern for every member of the campus community; all share in upholding the fundamental values of honesty, trust, respect, fairness, responsibility and professionalism. By choosing to join the UNLV community, students accept the expectations of the Student Academic Misconduct Policy and are encouraged when faced with choices to always take the ethical path. Students enrolling in UNLV assume the obligation to conduct themselves in a manner compatible with UNLV's function as an educational institution. An example of academic misconduct is plagiarism. Plagiarism is using the words or ideas of another, from the Internet or any source, without proper citation of the sources. See the Student Academic Misconduct Policy (approved December 9, 2005) located at: <https://www.unlv.edu/studentconduct/student-conduct>.

Copyright — The University requires all members of the University Community to familiarize themselves with and to follow copyright and fair use requirements. **You are individually and solely responsible for violations of copyright and fair use laws. The university will neither protect nor defend you nor assume any responsibility for employee or student violations of fair use laws.** Violations of copyright laws could subject you to federal and state civil penalties and criminal liability, as well as disciplinary action under University policies. Additional information can be found at: <http://www.unlv.edu/provost/copyright>.

Disability Resource Center (DRC) — The UNLV Disability Resource Center (SSC-A 143, <http://drc.unlv.edu/>, 702-895-0866) provides resources for students with disabilities. If you feel that you have a disability, please make an appointment with a Disabilities Specialist at the DRC to discuss what options may be available to you. If you are registered with the UNLV Disability Resource Center, bring your Academic Accommodation Plan from the DRC to the instructor during office hours so that you may work together to develop strategies for implementing the accommodations to meet both your needs and the requirements of the course. Any information you provide is private and will be treated as such. To maintain the confidentiality of your request, please do not approach the instructor in front of others to discuss your accommodation needs.

Religious Holidays Policy — Any student missing class quizzes, examinations, or any other class or lab work because of observance of religious holidays shall be given an opportunity during that semester to make up missed work. The make-up will apply to the religious holiday absence only. It shall be the responsibility of the student to notify the instructor within the first 14 calendar days of the course for fall and spring courses (excepting modular

courses), or within the first 7 calendar days of the course for summer and modular courses, of his or her intention to participate in religious holidays which do not fall on state holidays or periods of class recess. For additional information, please visit: <http://catalog.unlv.edu/content.php?catoid=6&navoid=531>.

Transparency in Learning and Teaching — The University encourages application of the transparency method of constructing assignments for student success. Please see these two links for further information:

<https://www.unlv.edu/provost/teachingandlearning>

<https://www.unlv.edu/provost/transparency>

Incomplete Grades — The grade of I—Incomplete—can be granted when a student has satisfactorily completed three-fourths of course work for that semester/session but for reason(s) beyond the student’s control, and acceptable to the instructor, cannot complete the last part of the course, and the instructor believes that the student can finish the course without repeating it. The incomplete work must be made up before the end of the following regular semester for undergraduate courses. Graduate students receiving “I” grades in 500-, 600-, or 700-level courses have up to one calendar year to complete the work, at the discretion of the instructor. If course requirements are not completed within the time indicated, a grade of F will be recorded and the GPA will be adjusted accordingly. Students who are fulfilling an Incomplete do not register for the course but make individual arrangements with the instructor who assigned the I grade.

Tutoring and Coaching — The Academic Success Center (ASC) provides tutoring, academic success coaching and other academic assistance for all UNLV undergraduate students. For information regarding tutoring subjects, tutoring times, and other ASC programs and services, visit <http://www.unlv.edu/asc> or call 702-895-3177. The ASC building is located across from the Student Services Complex (SSC). Academic success coaching is located on the second floor of the SSC (ASC Coaching Spot). Drop-in tutoring is located on the second floor of the Lied Library and College of Engineering TEB second floor.

UNLV Writing Center — One-on- one or small group assistance with writing is available free of charge to UNLV students at the Writing Center, located in CDC-3-301. Although walk-in consultations are sometimes available, students with appointments will receive priority assistance. Appointments may be made in person or by calling 702-895-3908. The student’s Rebel ID Card, a copy of the assignment (if possible), and two copies of any writing to be reviewed are requested for the consultation. More information can be found at: <http://writingcenter.unlv.edu/>.

Rebelmail — By policy, faculty and staff should e-mail students’ Rebelmail accounts only. Rebelmail is UNLV’s official e-mail system for students. It is one of the primary ways students receive official university communication such as information about deadlines, major campus events, and announcements. All UNLV students receive a Rebelmail account after they have been admitted to the university. Students’ e-mail prefixes are listed on class rosters. The suffix is always **@unlv.nevada.edu**. **Emailing within WebCampus is acceptable.**

Library Resources — Students may consult with a librarian on research needs. For this class, the subject librarian is https://www.library.unlv.edu/contact/librarians_by_subject. UNLV Libraries provides resources to support students’ access to information. Discovery, access, and use of information are vital skills for academic work and for successful post-college life. Access library resources and ask questions at <https://www.library.unlv.edu/>.

Final Examinations — The University requires that final exams given at the end of a course occur at the time and on the day specified in the final exam schedule. See the schedule at: <http://www.unlv.edu/registrar/calendars>.

Tentative Schedule:

Date	Content
1/21	Chap 15 Infrared Spectroscopy and Mass Spectrometry
1/26	Chap 15 Cont'd
1/28	Chap 16 Nuclear Magnetic Resonance Spectroscopy
2/2	Chap 16 Cont'd
2/4	Chap 16 Cont'd
2/9	Chap 13 Alcohols and Phenols
2/11	Chap 13 Cont'd Quiz 1 (Chapters 15 and 16)
2/16	Washington's Birthday Recess
2/18	Chap 14 Ethers and Epoxides; Thiols and Sulfides
2/23	Chap 14 Cont'd
2/25	Chap 20 Aldehydes and Ketones
3/2	Exam 1 (Chapter 13, 14, 15, and 16)
3/4	Chap 20 Cont'd
3/9	Chap 20 Cont'd
3/11	Chap 21 Carboxylic Acid and Their Derivatives
3/16	Chap 21 Cont'd Quiz 2 (Chapter 20)
3/18	Chap 21 Cont'd
3/23	Chap 21 Cont'd / Chap 22 Alpha Carbon Chemistry: Enols and Enolates
3/25	Chap 22 Cont'd
3/30	Spring Break Recess
4/1	Spring Break Recess
4/6	Exam 2 (Chapters 20 and 21)
4/8	Chap 22 Cont'd
4/13	Chap 22 Cont'd
4/15	Chap 23 Amines
4/20	Chap 23 Cont'd Quiz 3 (Chapter 22)
4/22	Chap 23 Cont'd
4/27	Chap 27 Synthetic Polymers
4/29	Exam 3 (Chapters 22, 23, and 27)
5/4	Study week
5/6	Study week
5/11	Final Exam (10:10am - 12 pm): ACS Standardized Test