

CHE 725-1001

UNIVERSITY OF NEVADA LAS VEGAS Department of Chemistry and Biochemistry Spring Semester/Term 2022

Time: Monday and Wednesday - 4:00 p.m. to 5:15 p.m.

Class Location: HOS 210

Office Location: CHE 218A

Office Hours: Monday & Wednesday, 9:45 am – 10:30 am or by appointment.

Phone: 702-895-4859

All course information, updates, and announcements are posted via WebCampus:

<https://webcampus.unlv.edu>

Email: junyong.kang@unlv.edu

Note: The instructor reserves the right to change the syllabus as it relates to how the course is administered.

Lecture Days:	MW
Lecture Times and Locations:	16:00– 17:15 in HOS 281
First and Last Days of Lecture:	Wednesday, January 22 and Wednesday, May 6
Exam 1:	Wednesday, March 4 (16:00– 17:15) in HOS 281
Exam 2:	Wednesday, April 8 (16:00– 17:15) in HOS 281
Final Exam:	Monday, May 11 (18:00– 20:00) in HOS 281

Course Description

CHEM 725 focuses on advanced study of structures and reactions of organic compounds. Reactive intermediates, reaction mechanism, stereochemistry and asymmetric synthesis will be discussed in this course.

Course Prerequisite(s):

CHEM 242 and 421

Learning Outcomes/Course Objectives

1. Explain the difference of chemical reactivity of organic molecules based on bonding theory, Frontier Molecular Orbital theory, and stereoelectronic effects.

- Predict organic reaction mechanisms by applying the pushing electrons in a wide range of organic reactions such as nucleophilic substitution reactions, addition / elimination reactions, pericyclic reactions, aromatic substitution reactions, and radical reactions.
- Demonstrate organic synthesis of small molecules.

Required Text

Resources and Materials:

<http://unlv.bncollege.com/webapp/wcs/stores/servlet/TBWizardView?catalogId=10001&langId=-1&storeId=19074>

Advanced Organic Chemistry, Fifth Edition - Part A: Structure and Mechanisms, by Francis A. Carey and Richard J. Sundberg. Springer: New York, 2007. ISBN-13: 978-0387683461 <i>downloadable as E-book from the library.</i>	Required
Strategic Applications of Named Reactions in Organic Synthesis, by Laszlo Kurti, Barbara Czako. Elsevier: Boston, 2005. ISBN-13: 978-0124297852.	Required
Organic Chemistry, Second edition: Jonathan Clayden, Nick Greeves and Stuart Warren: Oxford University Press, USA, 2012. ISBN-13: 978-0199270293.	Optional

Evaluation Methods

Examinations:

Two exams will be administered in class (see the exam date on the Course Outline). Because exams are promptly marked and returned to the students, no make-up exams can be administered except for medical emergencies with doctor's note. A missed exam will receive a score of zero.

Final Examination:

The final exam will be administered in class (see the exam date on the Course Outline). Please be on time. A late student may disturb the other students. No make-up exams can be administered except for medical emergencies with doctor's note. A missed final exam will receive a score of zero.

Problem Sets:

Eight problems sets will be given throughout the semester. You are encouraged to work with your fellow students to answer the questions, but you should have your own answers. Due dates are listed on the course outline on the last page of this syllabus.

	Maximum Points
Midterm Examination 1	100
Midterm Examination 2	100
Final Examination	150
Problem Sets	80
Final Score	430

Attendance Policy

Class attendance is mandatory.

Grading Scale

Letter Grade	Minimum Score Needed out of 430	Corresponding Percentage
A	396	92%
A-	387	90%
B+	378	88%
B	353	82%
B-	344	80%
C+	335	78%
C	310	72%
C-	301	70%
D+	292	68%
D	267	62%
D-	258	60%
F	less than 258	<60%

University Policies

Public Health Directives

Face coverings are currently optional for all faculty and students in the classroom.

Students must follow all active UNLV public health directives while enrolled in this class. UNLV public health directives are found at [Health Requirements for Returning to Campus](https://www.unlv.edu/coronavirus/health-requirements), <https://www.unlv.edu/coronavirus/health-requirements>. Students who do not comply with these directives may be asked to leave the classroom. Refusal to follow the guidelines may result in further disciplinary action according to the [UNLV Student Conduct Code](https://www.unlv.edu/sites/default/files/page_files/27/StudentConduct-Code.pdf), https://www.unlv.edu/sites/default/files/page_files/27/StudentConduct-Code.pdf, including being administratively withdrawn from the course.

Academic Misconduct

Academic integrity is a legitimate concern for every member of the University community. We 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 to always take the ethical path whenever faced with choices. Students enrolling at UNLV assume the obligation to conduct themselves in a manner compatible with UNLV's educational mission. An example of academic misconduct is plagiarism. Plagiarism is using the words or ideas of another person, from the Internet or any other source without proper citation of the source(s). See the [Student Conduct Code](https://www.unlv.edu/studentconduct/student-conduct), <https://www.unlv.edu/studentconduct/student-conduct>.

Auditing a Course

Auditing a course allows a student to continue attending the lectures and/or laboratories and discussion sessions associated with the course, but the student will not earn a grade for any component of the course. Students who audit a course receive the same educational experience as students taking the course for a grade, but will be excused from exams, assessments, and other evaluative measures that serve the primary purpose of assigning a grade.

Classroom Conduct

Students have a responsibility to conduct themselves in class and in the libraries in ways that do not interfere with the rights of other students to learn, or of instructors to teach. Use of devices such as cellular phones and pagers, or other potentially disruptive activities are only permitted with the prior explicit consent of the instructor.

Students are specifically prohibited to record classes without instructor authorization, including online/remote classes (either audio only, or video and audio). The instructor may rescind permission at any time during the class. If a student does not comply with established requirements or obstructs the functioning of the class, the instructor may initiate an

administrative withdrawal of the student from the course.

Since the COVID-19 pandemic forced some instruction to be delivered remotely starting in Spring 2020, numerous students have asked instructors to record their synchronous classes, so that they can access them at their convenience. Instructors who agree to record their classes (audio only, or video and audio) should inform students in advance. Recorded lectures may not be broadly released to anyone, but made available exclusively to those students enrolled in the class during the particular academic term. Recorded lectures must be stored securely, and are subject to the Nevada System of Higher Education's Records Retention Policy, meaning that the recordings can only be deleted 120 days after the end of class (i.e., after grades are posted). Once this requirement is met, the recordings should be deleted. Class recordings are protected from disclosure, as they are deemed part of an educational record under the Family Educational Rights and Privacy Act (FERPA).

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 student or employee 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 [copyright policy information](https://www.unlv.edu/provost/copyright) is available at <https://www.unlv.edu/provost/copyright>.

Disability Resource Center (DRC)

The [UNLV Disability Resource Center](https://www.unlv.edu/drc) (Student Services Complex, SSC-A, Room 143, <https://www.unlv.edu/drc>, telephone 702-895-0866) provides resources for students with disabilities. Students who believe that they may need academic accommodations due to a permanent disability, temporary or permanent medical need, or academic support due to pregnancy are encouraged to contact the DRC as early as possible in the academic term. A Disabilities Specialist will discuss what options may be available to you. Students who are already registered with the DRC should request their accommodations online each semester, and make an appointment to discuss their accommodations with their instructors.

Final Examinations

The University requires that final exams given at the end of a course occur on the date and at the time specified in the Final Exam schedule. The Final Exam schedule is typically available at the start of the semester, and the classroom locations are available approximately one month before the end of the semester. See the [Final Exam Schedule](https://www.unlv.edu/registrar/calendars), <https://www.unlv.edu/registrar/calendars>.

Identity Verification and Online Course Requirements

All UNLV students must use their Campus-issued ACE ID and password to log in to

WebCampus-Canvas.

UNLV students enrolled in online or hybrid courses are expected to read and adhere to the [Student Academic Misconduct Policy](#), <https://www.unlv.edu/studentconduct/misconduct/policy>, which states that “acting or attempting to act as a substitute for another, or using or attempting to use a substitute, in any academic evaluation or assignment” is a form of academic misconduct. Intentionally sharing ACE login credentials with another person may be considered an attempt to use a substitute, and could result in investigation and sanctions, as outlined in the Student Academic Misconduct Policy. UNLV students enrolled in online courses are also expected to read and adhere to the [Acceptable Use of Computing and Information Technology Resources Policy](#), <https://www.it.unlv.edu/policies/acceptable-use-computing-and-information-technology-resources-policy>, which prohibits sharing university accounts with other persons without authorization. To the greatest extent possible, all graded assignments and assessments in UNLV online courses should be hosted in WebCampus-Canvas or another UNLV-managed platform that requires ACE login credentials for access.

Incomplete Grades

The grade of “I” (Incomplete) may be granted when a student has satisfactorily completed three-fourths of course work for that semester/session, but cannot complete the last part of the course for reason(s) beyond the student’s control and acceptable to the instructor, and the instructor believes that the student can finish the course without repeating it. For undergraduate courses, the incomplete work must be made up before the end of the following regular semester. 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 period indicated, a grade of “F” will be recorded, and the student’s GPA will be adjusted accordingly. Students who are fulfilling an Incomplete grade do not register for the course, but make individual arrangements with the instructor who assigned the “I” grade.

Library Resources

Librarians are available to consult with students on research needs, including developing research topics, finding information, and evaluating sources. To make an appointment with a subject expert for this class, please visit the [Libraries’ Research Consultation](#) website, <https://guides.library.unlv.edu/appointments/librarian>. You can also [ask the library staff](#) questions via chat and text message at <https://ask.library.unlv.edu/>.

Missed Classwork

Any student missing class, quizzes, examinations, or any other class or laboratory work because of observance of religious holidays will be given an opportunity during that semester to make up the missed work. The make-up opportunity will apply to the religious holiday absence only. It is the responsibility of the student to notify the instructor within the first 14 calendar days of the course for Fall and Spring courses (except for modular courses),

or within the first 7 calendar days of the course for Summer and modular courses, of their intention to participate in religious holidays which do not fall on state holidays or periods of class recess. For additional information, please visit the Missed Classwork policy, under Registration Policies, on the [Academic Policies](https://catalog.unlv.edu/content.php?catoid=39&navoid=10666) webpage, <https://catalog.unlv.edu/content.php?catoid=39&navoid=10666>.

In accordance with the policy approved by the Faculty Senate regarding missed class time and assignments, students who represent UNLV in any official extracurricular activity will also have the opportunity to make up assignments, provided that the student submits official written notification to the instructor no less than one week prior to the missed class(es).

The spirit and intent of the policy for missed classwork is to offer fair and equitable assessment opportunities to all students, including those representing the University in extracurricular activities. Instructors should consider, for example, that in courses which offer a “Drop one” option for the lowest assignment, quiz, or exam, assigning the student a grade of zero for an excused absence for extracurricular activity is both contrary to the intent of the Faculty Senate’s policy, and an infringement on the student’s right to complete all work for the course.

This policy will not apply in the event that completing the assignment or administering the examination at an alternate time would impose an undue hardship on the instructor or the University that could be reasonably avoided. There should be a good faith effort by both the instructor and the student to agree to a reasonable resolution. When disagreements regarding this policy arise, decisions can be appealed to the Department Chair/School Director, College/School Dean, and/or the Faculty Senate Academic Standards Committee.

For purposes of definition, extracurricular activities may include, but are not limited to academic recruitment activities, competitive intercollegiate athletics, fine arts activities, liberal arts competitions, science and engineering competitions, and any other event or activity sanctioned by a College/School Dean, and/or by the Executive Vice President and Provost.

Rebelmail

Rebelmail is UNLV’s official email system for students and by University policy, instructors and staff should only send emails to students’ Rebelmail accounts. Rebelmail is one of the primary ways in which students receive official University communications, information about deadlines, major Campus events, and announcements. All UNLV students receive a Rebelmail account after they have been admitted to the University. Sending emails within WebCampus-Canvas is also acceptable.

Title IX

UNLV is committed to providing an environment free of all forms of unlawful discrimination including sexual and gender-based discrimination, harassment, and violence like sexual assault, intimate partner violence, and stalking. If you, or someone you know, has experienced or is experiencing these types of behaviors, know that you are not alone. Resources and

support are available. To learn more or to report an incident, please visit the [Office of Equal Employment and Title IX website](https://www.unlv.edu/compliance) at <https://www.unlv.edu/compliance>. Please be aware that as an instructor, I am not a confidential resource, and I will need to report incidents of sexual misconduct to UNLV's Title IX Coordinator. You can also report concerns directly using the [online reporting form](https://cm.maxient.com/reportingform.php?UnivofNevadaLasVegas&layout_id=18), at https://cm.maxient.com/reportingform.php?UnivofNevadaLasVegas&layout_id=18, or [via email](mailto:titleixcoordinator@unlv.edu) at titleixcoordinator@unlv.edu or 702-895-4055. For confidential support in matters of sexual violence, relationship/family violence, or stalking, contact [the Care Center](https://www.unlv.edu/carecenter) at <https://www.unlv.edu/carecenter> or 702-895- 0602.

Tutoring and Coaching

The Academic Success Center (ASC), at the Claude I. Howard Building, 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, please visit the [ASC website](https://www.unlv.edu/asc), <https://www.unlv.edu/asc>, or call 702-895-3177. The ASC is located across from the Student Services Complex (SSC). Academic success coaching is located on the second floor of SSC A, Room 254. Drop-in tutoring is located on the second floor of the Lied Library, and on the second floor of the College of Engineering building (TBE A 207).

UNLV Writing Center

One-on-one or small group assistance with writing is available free of charge to UNLV students at the [Writing Center](https://writingcenter.unlv.edu/), <https://writingcenter.unlv.edu/>, located in the Central Desert Complex, Building 3, Room 301 (CDC 3–301). Walk-in consultations are sometimes available, but students with appointments receive priority assistance. Students may make appointments in person or by calling the Center, telephone 702-895-3908. Students are requested to bring to their appointments their Rebel ID Card, a copy of the instructions for their assignment, and two copies of any writing they have completed on their assignment.

988 FREE 24/7 SUICIDE & CRISIS LIFELINE

In addition to campus resources such as the [Counseling and Psychological Services \(CAPS\)](https://www.unlv.edu/caps) website at <https://www.unlv.edu/caps>, visiting the [YOU@UNLV website](https://you.unlv.edu/) at <https://you.unlv.edu/>, and [Early Alert](https://www.unlv.edu/graduatecollege/academy/early-alert) (for graduate students, at <https://www.unlv.edu/graduatecollege/academy/early-alert>), you may now **call or text 988** or **chat at 988lifeline.org** if you or someone you know is in crisis and in need of support.

OPTIONAL BUT RECOMMENDED STATEMENTS FOR INCLUSION:

Diversity Statement

As an institution of higher learning, UNLV represents a rich diversity of human beings among its faculty, staff, and students, and is committed to aspiring to maintain a Campus environment that values that diversity. Accordingly, the University supports understanding and appreciation of all members of its community, regardless of race, sex, age, color, national origin, ethnicity, creed, religion, disability, sexual orientation, gender, gender identity, marital status, pregnancy, genetic information, veteran status, or political affiliation. Please see [University Statements and Compliance](https://www.unlv.edu/about/statements-compliance), <https://www.unlv.edu/about/statements-compliance>.

A successful learning experience requires mutual respect and trust between the students and the instructor. Accordingly, the instructor asks that students be willing to listen to one another's points of view, acknowledging that there may be disagreements, keep discussion and comments on topic, and use first person, positive language when expressing their perspectives.

UNLV Land Acknowledgement

UNLV is situated on the traditional homelands of Indigenous groups, including the Nuwu or Nuwuvi, Southern Paiute People, descendants of the Tudu, or Desert People. We honor and offer gratitude for those who have stewarded the land; for the land itself; and for the opportunity to cultivate a thriving, diverse, inclusive, and just scholarly community here today that works for a better tomorrow for all.

Tentative Course Outline: Subject to change

Day	Date	Topic	Lecture	Required Reading (Chapters) / Problem Sets
Wed	Jan 22	Class Overview: Basic Structure & Bonding	Lecture 1	Ch.1
Mon	Jan 27	Basic Structure & Bonding	Lecture 2	Ch.1/ PS-1 out
Wed	Jan 29	Basic Structure & Bonding	Lecture 3	Ch.1
Mon	Feb 3	Stereochemistry	Lecture 4	Ch.2 / PS-1 due
Wed	Feb 5	Conformation and Stereoelectronic Effects	Lecture 5	Ch.2
Mon	Feb 10	Conformation and Stereoelectronic Effects	Lecture 6	Ch.2
Wed	Feb 12	Conformation and Stereoelectronic Effects	Lecture 7	Ch.2 / PS-2 out
Mon	Feb 17	<i>Washington's Birthday Recess</i>		
Wed	Feb 19	Conformation and Stereoelectronic Effects	Lecture 8	Ch.2
Mon	Feb 24	Pushing Electrons	Lecture 9	Ch.4 / PS-2 due
Wed	Feb 26	Nucleophilic Substitution	Lecture 10	Ch.4 / PS-3 out
Mon	Mar 2	Nucleophilic Substitution	Lecture 11	Ch.4
Wed	Mar 4	Exam 1, 16:00 – 17:15		
Mon	Mar 9	Acid-base Chemistry	Lecture 12	Ch.5 / PS-3 due
Wed	Mar 11	Addition and Elimination reactions	Lecture 13	Ch.5 / PS-4 out
Mon	Mar 16	<i>Spring Break</i>		
Wed	Mar 18	<i>Spring Break</i>		
Mon	Mar 23	Addition and Elimination reactions	Lecture 14	Ch.5
Wed	Mar 25	Baldwin's Rules	Lecture 15	Ch.10 / PS-4 due
Mon	Mar 30	Pericyclic Reactions	Lecture 16	Ch.10 / PS-5 out
Wed	Apr 1	Pericyclic Reactions	Lecture 17	Ch.10
Mon	Apr 6	Pericyclic Reactions	Lecture 18	Ch.10 / PS-5 due
Wed	Apr 8	Exam 2, 16:00 – 17:15		
Mon	Apr 13	Aromaticity and Aromatic Substitution	Lecture 19	Ch.8-9 / PS-6 out
Wed	Apr 15	Aromaticity and Aromatic Substitution	Lecture 20	Ch.8-9
Mon	Apr 20	Reactive Intermediates	Lecture 21	Ch.6 / PS-6 due
Wed	Apr 22	Reactive Intermediates	Lecture 22	Ch.6 / PS-7 out
Mon	Apr 27	Radical Reactions	Lecture 23	Ch.11
Wed	Apr 29	Radical Reactions	Lecture 24	Ch.11 / PS-7 due / PS-8 out
Mon	May 4	Asymmetric Synthesis	Lecture 25	Organic Chemistry (Ch. 45)
Wed	May 6	Asymmetric Synthesis	Lecture 26	Organic Chemistry (Ch. 45) PS-8 due
Mon	May 11	Final Exam, 18:00 – 20:00		