



## Master Course Syllabus

For additional course information, including prerequisites, corequisites, and course fees, please refer to the Catalog: <https://catalog.uvu.edu/>

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**Semester:** Spring

**Year:** 2025

**Course Prefix:** CHEM

**Course and Section #:** 2320 003

**Course Title:** Organic Chemistry II Lecture

**Credits:** 4

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### *Course Description*

Introduces spectroscopic techniques used in identification of organic compounds. Teaches carbon-carbon bond formation strategies. Introduces the concept of aromaticity. Teaches free radicals and their effects on environment and life. Surveys biologically important organic molecules such as carbohydrates, proteins, lipids, and nucleic acids.

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### *Course Attributes*

This course has the following attributes:

- General Education Requirements
- Global/Intercultural Graduation Requirements
- Writing Enriched Graduation Requirements
- Discipline Core Requirements in Program
- Elective Core Requirements in Program
- Open Elective

Other: *Click here to enter text.*

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### *Instructor Information*

**Instructor Name:** Lakshmi Viswanath

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### *Student Learning Outcomes*

1. Explain the relationship between molecular structure and function, using inter- and intramolecular forces and their influence on the physical properties of organic molecules.
2. Illustrate organic molecules and organic reactions in three dimensions.
3. Identify what qualities of an acid, base, nucleophile, or electrophile that make it strong or weak.
4. Propose plausible arrow-pushing mechanisms to illustrate electron flow during organic chemical reactions, such as addition, substitution, elimination, rearrangement, oxidation, reduction, condensation, and pericyclic reactions.
5. Explain what factors govern the stereo-, regio-, and chemoselectivity of organic reactions.
6. Evaluate the relative stability among competing intermediates and transition states in organic reactions using energy and reaction coordinate diagrams.
7. Apply the basic concepts of synthetic organic chemistry, including retrosynthetic analysis, to propose and evaluate the preparation of organic molecules in fewer than ten steps from simple starting materials

8. Use Infrared, Ultraviolet, and Nuclear Magnetic Resonance spectroscopy and Mass Spectrometry to identify functional groups in organic molecules, to differentiate similar molecules, and to predict the outcome of organic chemical reactions.
  9. Relate how organic chemistry topics are relevant in the real world.
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## ***Course Materials and Texts***

Required materials, fees and technology:

- Organic Chemistry 4<sup>th</sup> Edition by Klein ISBN-10. 1119659590 · ISBN-13. 978-1119659594 (Inclusive access - provided with the course)
  - Organic Chemistry – Solution Manual for 4<sup>th</sup> Edition by Klein (Inclusive access - provided with the course)
  - Prentice-Hall, ISBN-13: 978-0205081363; Darling Molecular Visions, ISBN-13: 978-0964883710.
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## ***Course Requirements***

### **Course Assignments, Assessments, and Grading Policy**

Quizzes – 15%

HW – 10%

Midterms – 45%

Knowledge Check Assignments - 10%

ACS study guide and misc. assignments – 5%

Final Exam – 15%

The Final grade percentage is: 93-100: A 90-92.9: A- 87-89.9: B+ 84-86.9: B 80-83.9: B- 77-79.9: C+ 73-76.9: C 70-73.9: C- 67-69.9: D+ 63-66.9: D < 63.9: D- <60 E

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### **Required or Recommended Reading Assignments**

Specific sections given in course modules of Lab Manual listed in course materials.

Klein book chapters 14 - 22

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### **General Description of the Subject Matter of Each Lecture or Discussion**

Week 1: Infrared Spectroscopy

Week 2: Mass Spectrometry

Week 3: NMR Spectroscopy

Week 4: NMR Spectroscopy

Week 5: Organometallic Compounds

Week 6: Reactions of Carboxylic acids and its derivatives

Week 7: Aldehydes and Ketones

Week 8: Reactions at alpha carbon of carbonyl compounds

Week 9: Dienes and pericyclic reactions

Week10: Benzene and Aromaticity

Week 11: Reactions of Benzene

Week 12: Amines

Final Exam – Comprehensive (OCHEM I and OCHEM II)

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## ***Required Course Syllabus Statements***

### **Generative AI**

This course requires you to complete assignments that assess your understanding, application, and problem-solving ability applied to chemistry. You are expected to do your own work. Problem solving and scientific thinking are tools that are necessary for students to learn in this course. The use of artificial intelligence (AI) tools, such as chatbots, text generators, paraphrasers, summarizers, or solvers, is strictly prohibited for any part of your assignments. Using these tools will be considered academic dishonesty and will be handled according to the university's academic honesty policy. If you have questions about acceptable use of AI tools, please consult the instructor before submitting your work.

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### **Using Remote Testing Software**

This course does not use remote testing software.

This course uses remote testing software. Remote test-takers may choose their remote testing locations. Please note, however, that the testing software used for this may conduct a brief scan of remote test-takers' immediate surroundings, may require use of a webcam while taking an exam, may require the microphone be on while taking an exam, or may require other practices to confirm academic honesty. Test-takers therefore shall have no expectation of privacy in their test-taking location during, or immediately preceding, remote testing. If a student strongly objects to using test-taking software, the student should contact the instructor at the beginning of the semester to determine whether alternative testing arrangements are feasible. Alternatives are not guaranteed.

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## ***Required University Syllabus Statements***

### **Accommodations/Students with Disabilities**

Students needing accommodations due to a permanent or temporary disability, pregnancy or pregnancy-related conditions may contact UVU [Accessibility Services](#) at [accessibilityservices@uvu.edu](mailto:accessibilityservices@uvu.edu) or 801-863-8747.

Accessibility Services is located on the Orem Campus in BA 110.

Deaf/Hard of Hearing students requesting ASL interpreters or transcribers can contact Accessibility Services to set up accommodations. Deaf/Hard of Hearing services can be contacted at [DHHservices@uvu.edu](mailto:DHHservices@uvu.edu)

DHH is located on the Orem Campus in BA 112.

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### **Academic Integrity**

At Utah Valley University, faculty and students operate in an atmosphere of mutual trust. Maintaining an atmosphere of academic integrity allows for free exchange of ideas and enables all members of the community to achieve their highest potential. Our goal is to foster an intellectual atmosphere that produces scholars of integrity and imaginative thought. In all academic work, the ideas and contributions of others must be appropriately acknowledged and UVU students are expected to produce their own original academic work.

Faculty and students share the responsibility of ensuring the honesty and fairness of the intellectual environment at UVU. Students have a responsibility to promote academic integrity at the university by not participating in or facilitating others' participation in any act of academic dishonesty. As members of

the academic community, students must become familiar with their [rights and responsibilities](#). In each course, they are responsible for knowing the requirements and restrictions regarding research and writing, assessments, collaborative work, the use of study aids, the appropriateness of assistance, and other issues. Likewise, instructors are responsible to clearly state expectations and model best practices.

Further information on what constitutes academic dishonesty is detailed in [UVU Policy 541: Student Code of Conduct](#).

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### **Equity and Title IX**

Utah Valley University does not discriminate on the basis of race, color, religion, national origin, sex, sexual orientation, gender identity, gender expression, age (40 and over), disability, veteran status, pregnancy, childbirth, or pregnancy-related conditions, citizenship, genetic information, or other basis protected by applicable law, including Title IX and 34 C.F.R. Part 106, in employment, treatment, admission, access to educational programs and activities, or other University benefits or services. Inquiries about nondiscrimination at UVU may be directed to the U.S. Department of Education's Office for Civil Rights or UVU's Title IX Coordinator at 801-863-7999 – [TitleIX@uvu.edu](mailto:TitleIX@uvu.edu) – 800 W University Pkwy, Orem, 84058, Suite BA 203.

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### **Religious Accommodation**

UVU values and acknowledges the array of worldviews, faiths, and religions represented in our student body, and as such provides supportive accommodations for students. Religious belief or conscience broadly includes religious, non-religious, theistic, or non-theistic moral or ethical beliefs as well as participation in religious holidays, observances, or activities. Accommodations may include scheduling or due-date modifications or make-up assignments for missed class work.

To seek a religious accommodation, a student must provide written notice to the instructor and the Director of Accessibility Services at [accessibilityservices@uvu.edu](mailto:accessibilityservices@uvu.edu). If the accommodation relates to a scheduling conflict, the notice should include the date, time, and brief description of the difficulty posed by the conflict. Such requests should be made as soon as the student is aware of the prospective scheduling conflict.

While religious expression is welcome throughout campus, UVU also has a [specially dedicated space](#) for meditation, prayer, reflection, or other forms of religious expression.