

# Chemistry 3023-01

The University of Tulsa  
Department of Chemistry & Biochemistry

Organic Chemistry II (Spring 2014)

---

## Conspectus

CHEM 3023 is the second part in a two-part sequence in organic chemistry—the chemistry of carbon-containing compounds. Lectures in this course will address the chemistry of unsaturated compounds, including the synthesis and reactivity of alkenes, alkynes, aromatics, and carbonyls. In these contexts, common red-ox transformations and free-radical chemistry will be discussed in detail. An introduction to organometallic chemistry will also be presented. Throughout the course, strategies and tactics in organic synthesis will play a central role. Finally, a unit in polymers and biopolymers will be examined. To highlight the reach of these topics in organic chemistry, lectures and problems will often feature organic compounds and reactions in the context of biology, pharmacy, medicine, material science, and chemical industry.

## Course and Instructor Information

- Prerequisites: CHEM 1011, CHEM 1013, CHEM 1021, CHEM 1023, CHEM 3011, CHEM 3013
- Lecture Times: MWF 10:00-10:50 AM in KEP M4
- Instructor: Dr. Justin M. Chalker
- Email: [justin-chalker@utulsa.edu](mailto:justin-chalker@utulsa.edu)
- Website: <http://chalker.ens.utulsa.edu>
- Follow on Twitter: @ChalkerChem
- Office: KEP M245
- Office Tel: 918-631-3024
- Office hours: Mondays 4-5 PM; Fridays 8-10 AM. For other times, please email for an appointment.

## Required Course Materials

- Textbook: *Organic Chemistry* by David Klein, ISBN: 978-0-471-75614-9
- Student Study Guide & Solutions Manual for Klein's Organic Chemistry ISBN: 978-0-471-75739-9
- Molecular Model Set: The Prentice Hall Molecular Model Set for Organic Chemistry is a recommended kit. Other sets are available from a variety of online vendors.

## Supplemental Reading (Optional)

- *Organic Chemistry* by Clayden, Greeves, Warren, and Wothers, ISBN:0-19-850346-6
- *Advanced Organic Chemistry Part A: Structure and Mechanisms* by Francis A. Carey and Richard J. Sundberg, ISBN: 0-306-46243-5
- *Advanced Organic Chemistry Part B: Reactions and Synthesis* by Francis A. Carey and Richard J. Sundberg, ISBN: 0-306-46245-1
- *Oxidation and Reduction in Organic Synthesis* by Timothy J. Donohoe ISBN: 0-19-855664-0
- *The Art of Writing Reasonable Organic Reaction Mechanisms* by Robert B. Grossman, ISBN: 0-387-95468-6

### Course Schedule

Date	Topic	Assigned Reading
Jan 13	Alkenes in Organic Synthesis	Ch. 9
Jan 15	Alkenes in Organic Synthesis	Ch. 9
Jan 17	Alkynes in Organic Synthesis	Ch. 10
Jan 20	No Class – Martin Luther King Jr. Day	
Jan 22	Alkynes in Organic Synthesis	Ch. 10
Jan 24	Free Radical Chemistry	Ch. 11
Jan 27	Free Radical Chemistry	Ch. 11
Jan 29	Free Radical Chemistry	Ch. 11
Jan 31	Oxidations in Organic Chemistry	Ch. 9, 10, 13, 14, 20
Feb 3	<b>Examination I: Chapters 9-11</b>	
Feb 5	Oxidations in Organic Chemistry	Ch. 9, 10, 13, 14, 20
Feb 7	Oxidations in Organic Chemistry	Ch. 9, 10, 13, 14, 20
Feb 12	Reductions in Organic Chemistry	Ch. 10, 13, 23
Feb 14	Reductions in Organic Chemistry	Ch. 10, 13, 23
Feb 17	Reductions in Organic Chemistry	Ch. 10, 13, 23
Feb 19	Organometallics I (Group I&II)	Ch. 13, 20, 21
Feb 21	Organometallics I (Group I&II)	Ch. 13, 20, 21
Feb 24	Pericyclic Reactions	Ch. 17
Feb 26	Pericyclic Reactions	Ch. 17
Feb 28	Pericyclic Reactions	Ch. 17
Mar 3	<b>Examination II: Chapters 9-14, 17, 20-21</b>	
Mar 5	Chemistry of Aromatic Compounds	Ch. 18-19
Mar 7	Chemistry of Aromatic Compounds	Ch. 18-19
Mar 10	Chemistry of Aromatic Compounds	Ch. 18-19
Mar 12	Chemistry of Aromatic Compounds	Ch. 18-19
Mar 14	Carbonyls and Carboxylic Acid Derivatives	Ch. 20-21
Mar 17	No Class – Spring Break	Ch. 20-21
Mar 19	No Class – Spring Break	Ch. 20-22
Mar 21	No Class – Spring Break	Ch. 20-22
Mar 24	Carbonyls and Carboxylic Acid Derivatives	Ch. 20-22
Mar 26	Carbonyls and Carboxylic Acid Derivatives	Ch. 20-22
Mar 28	Enols and Enolates	Ch. 22
Mar 31	Enols and Enolates	Ch. 22
Apr 2	Enols and Enolates	Ch. 22
Apr 4	Organometallics II (Transition metals)	Ch. 48 (Clayden <i>et al</i> )
Apr 7	Organometallics II (Transition metals)	Ch. 48 (Clayden <i>et al</i> )
Apr 9	Organometallics II (Transition metals)	Ch. 48 (Clayden <i>et al</i> )
Apr 11	Polymer Chemistry	Ch. 27
Apr 14	<b>Examination III: Chapters 9-14, 17-22, 48</b>	
Apr 16	Polymer Chemistry	Ch. 27
Apr 18	Biopolymers	Ch. 24-25
Apr 21	Biopolymers	Ch. 24-25
Apr 23	Biopolymers	Ch. 24-25
Apr 25	Lipids and Terpenes	Ch. 26
Apr 28	<b>Organic II Laboratory Final Exam</b>	
May 7	<b>Final Exam (Cumulative) – 9:00-11:25 AM</b>	

## Course Assignments

Reading assignments are indicated above in the Course Schedule. Problem sets will be announced in lecture and posted on Harvey. Due dates for problem sets will be announced at the time they are assigned. Completed written assignments will be collected in class on the due date. Problem sets will be marked with comments, graded, and returned within a week in class. Any assignments handed in late will not be accepted. For further information on course scores and grades, see Grading Policy.

## Examinations

There will be three in-class exams and a final examination. All exams should be considered cumulative since any question may require mastery of a concept or principle addressed earlier in the course or in the prerequisite CHEM-3013 (Organic Chemistry I). Examinations will contain questions based on concepts discussed in lectures, assigned reading, and/or problem sets. Revision classes and/or problem workshops will be scheduled near exam times and will be announced in class. Cellular phones, calculators and molecular model kits are *not* allowed in exams. Exams will be graded and returned within one week. After reviewing your graded exam, you may submit a request for a re-grade if you suspect an error was made during grading. This request must be submitted in writing and within a week of receiving the graded exam. Please note that in the event of a re-grade, the entire exam is subject to review.

## Grading Policy

The course will be scored out of 500 points. The lowest in-class exam score will be dropped, but all students must take the final exam. The final exam constitutes 40% of the final grade, the two highest in-class exams each constitute 20% of the final grade, and problem sets contribute to 20% of the final grade. The points and grading schemes are summarized below:

Graded Item	Possible Points
In-Class Exam (Lowest Score)	(Dropped)
In-Class Exam (Highest Score)	100
In-Class Exam (Second-Highest Score)	100
Problem Sets	100
Final Exam	200
<b>Total Course Points</b>	<b>500</b>

Course Points	Grade
425-500	A
300-424	B
225-299	C
150-224	D
0-149	F

## Make-up Examinations

No make-up exams will be given. If a student misses one examination, even for an excused absence that conforms to the University Rules, that exam score will be considered the "dropped" score discussed in the Grading Policy. Students that miss more than one exam must contact me immediately to discuss the situation.

### **Academic Support for Students with Disabilities**

Students with disabilities will be accommodated according to University policy: “Students with disabilities should contact the Center for Student Academic Support to self-identify their needs in order to facilitate their rights under the Americans with Disabilities Act. All students are encouraged to familiarize themselves with and take advantage of services provided by CSAS, including tutoring, academic counseling and developing study skills. CSAS also provides confidential consultation to any students with academic concerns.” For more information, please visit the CSAS website:

<http://www.utulsa.edu/student-life/Center-for-Student-Academic-Support>

### **Academic Misconduct Policy**

Be advised that there is zero-tolerance for academic misconduct. Any student guilty of cheating, plagiarism, and other forms of academic misconduct as defined by University Policy will receive a failing grade for the course. Under such circumstances, further disciplinary action will be taken up with the Associate Dean of Academic Affairs. In this event, the student may face suspension, dismissal, and revocation of academic honors or degrees. It is therefore imperative that the student read and honor the Academic Honesty Policy listed in the yearly University Student Handbook. For more information regarding University policies and procedures relating to academic misconduct—including a definition of what constitutes plagiarism, cheating, and other offenses—students should consult the following website:

<http://www.utulsa.edu/academics/colleges/Henry-Kendall-College-of-Arts-and-Sciences/Advising/AcademicMisconductPolicy>

The most common violation of academic integrity in this course is turning in homework that has been copied (in whole or in part) from a peer. I encourage discussion and debate with your fellow students on the problem sets; after all, science is a collaborative endeavor. However, you must submit solutions to the problem sets as *you* understand them. Your solutions to problem sets should be regarded as papers (in the same sense as a term-paper you would craft in a composition or Philosophy class) where you formulate your own argument and conclusions. Since I grade solutions to the problem sets myself, it is very straightforward to recognize when one’s work is not their own. Be advised that this form of cheating and plagiarism—presenting ideas and arguments that are not your own—will result in a failing grade and immediate dismissal from the course.

### **Further Advice**

Maintaining a regular and focused study schedule is essential for this course. Because of the pace and volume of material in this class, one cannot afford to fall behind. It is highly recommended to read each chapter in its entirety *before* the lecture. Take problem sets seriously—they are representative of the types of questions encountered in exams. Also consider carefully the written comments on graded homework and take advantage of office hours to address any points of confusion as they arise; I am here to help you learn organic chemistry. Finally, I hope to convince you that organic chemistry is a valuable and interesting academic discipline in and of itself, but also a highly practical science intimately related to a variety of scientific pursuits in biology, energy, materials, and medicine.

### **Disclaimer**

I reserve the right to modify the contents of this syllabus at any time. Any changes will be announced to the class in a timely fashion.