Chemistry 227: Organic Chemistry I  
Section 501 / Fall 2016  
Tuesday and Thursday 8:00–9:15 AM  
Room 2102, Chemistry

Instructor  
Prof. Jonathan T. Sczepanski  
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E-mail: jon.szczeanski@chem.tamu.edu

Office Hours  
Tuesdays 9:30-10:30 am, Room 214, Chemistry  
Thursdays 1:00pm-2:00pm, Room 214, Chemistry  
Thursday office hours will NOT be held on exam days.

Review Sessions  
Review sessions will take place on Tuesdays prior to exam dates (Sept. 20; Oct. 18, and Nov. 15). This session will be held in Room 2104 (Chemistry) between 6-7:30 pm.

What is Organic Chemistry?  
Organic chemistry is the study of the structures, properties, and chemical reactions of carbon-based molecules. The questions of organic chemistry – What is the relationship between molecular structure and observed properties? How do molecules participate in reactions with each other and how do we predict the reaction outcome? – underpin much of modern biology, biochemistry, chemical engineering, petroleum engineering, physiology, pharmacology, health sciences, materials science, and polymer science. Organic Chemistry I and II (CHEM 227 and 228) comprise a two-semester sequence designed to provide an introduction to the concepts of organic chemistry. By the end of this course, you should be able to describe the bonding in organic molecules, classify organic molecules by functional groups, identify functional-group-based reactivity patterns, and design syntheses of new organic compounds.

Organic chemistry is a challenging course in large part because it requires you to master both a new set of terminology and unfamiliar graphical representations of organic molecules. In addition, the types of problems that we will encounter in this course require application of the principles covered in class using deductive reasoning and analogy. The only way to succeed in the course is to practice. We will work through problems during class and during review sessions; the in-class problems will provide an example of how to practice organic chemistry skills. In addition, you should practice both individually and in small study groups to reinforce the problem-solving strategies that we work through as a group.

Prerequisites  
CHEM 102 or CHEM 104. Concurrent registration in CHEM 237 is suggested.
Course Learning Objectives

By the end of this course, students should be able to:

1. Describe bonding in simple organic compounds in terms of carbon hybridization, geometry, and polarization.
2. Compare and contrast the structures, properties, and reactions of aliphatic hydrocarbons (alkanes, alkenes, alkynes), alkyl halides, alcohols, and ethers.
3. Draw the structure of simple organic molecules given the proper chemical name including descriptors for stereochemistry (cis/trans, E/Z, R and S).
4. Predict the three-dimensional structure of organic molecules by applying the basic principles of bonding, hybridization, and conformational analysis.
5. Use the principles of thermodynamics and kinetics to characterize organic chemical reaction energy changes, reaction rates, and mechanisms.
6. Depict reasonable reaction mechanisms using the curved arrow formalism for reactions involved in the synthesis and transformation of the above functional groups.
7. Predict the outcome from a set of organic molecules and reagents involved in synthesis and reaction of the above functional groups using the basic patterns of reactivity and reaction principles covered in the text.
8. Identify appropriate starting materials and reagents to synthesize simple organic molecules based on the studied functional groups.
9. Predict the type of reaction mechanism involved in nucleophilic substitution and elimination reactions of alcohols, ethers, and alkyl halides based upon substrate structures, reactant, and solvent characteristics.
10. Solve chemical problems involving the studied functional groups using the basic generalizations and principles covered in the course and reasoning by deduction and analogy.

Texts


Course specific link for OWLv2 registration (Online homework):

Molecular models, which help visualize three-dimensional structure, are recommended to help with homework problems and can be used during all exams. I suggest purchasing a cheap model set online.

Contacting Me

I hope you will have lots of questions as we proceed through the semester. There are a few reliable ways to get the help you need. In addition to regular office hours (see above), there is a course eCampus site (16 FALL CHEM 227 501: Organic Chemistry I). All science questions should be submitted to the eCampus page via the “227 Homework Questions” forum in the Discussion menu; I receive a lot of emails, and do not want to miss any of your questions. I try to post responses within 24 hours. As an added benefit, you
will be able to see questions posted by your classmates. If you need to send an email from within the OWL homework program, you must include Chem227 OWL in the subject line or I might not see it.

Please contact me via email with any other concerns not related to homework or science; I will do my best to respond within 24 hours.

Course Grades

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
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<tbody>
<tr>
<td>OWL homework</td>
<td>60</td>
</tr>
<tr>
<td>Three in-class examinations</td>
<td>300</td>
</tr>
<tr>
<td>Final examination</td>
<td>200</td>
</tr>
<tr>
<td>Total</td>
<td>560</td>
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OWLv2 homework questions are designed to help you to succeed in this course, as the most important key to learning organic chemistry is practice. OWL homework allows ten attempts to get the correct answer. However, you want to be prepared before starting the EOC questions because you will have only three chances to get the right answer for each question. The mastery questions mirror in-chapter questions from the text and EOC questions mirror the examples at the end of the text chapters; if you are struggling, the answer key of the text will have discussion about how to approach the types of questions that you will see in OWL. OWL questions may appear on the in-class and final exams. Students are strongly encouraged to work in groups on homework assignments, as this is a great way to increase your understanding of course material, but make sure not to rely on your study partners for the answers, as they will not be available during exams. Please check OWL often for up-to-date information on homework due dates. Do not wait until the last minute to start the online assignments; they are time consuming. Any changes to the homework due dates will be announced during class. A Texas A&M-specific technical support site for any OWL issues can be found at:


In an attempt to compensate for OWL-related problems, all students will receive an additional 6 pts (10%) towards their homework grade at the end of the semester. However, to be eligible for this bonus, you total homework average must be above 50%.

In-class examinations cover the assigned material in the text, supplementary material, and any other assigned material. All in-class exams are comprehensive, but material covered since the previous test will be emphasized. Make-up tests will be given only for documented excused absences as designed in the official Texas A&M University Student Rules, Section 7.5. If the student is seeking an excused absence, he/she must notify the instructor as soon as possible after the absence, but no later than the end of the second working day after the last date of absence. Cheating will not be tolerated. The minimum penalty for cheating will be a zero score on the exam and an entry into your record in the Department of Student Life. Please read the appropriate section of the Texas A&M University Regulations on this subject.

Your grade will be based on your cumulative performance towards the total number of points possible in the course and will not be graded on a curve. The cutoffs will be no higher than, A ≥ 90%, B ≥ 80%, C ≥ 70%, D ≥ 60%. You can determine the lowest possible grade that you have at any given time by determining what percent you have of the total points possible at that time. The cutoffs may be lower if this is warranted.
based on the class average and other factors. I have adopted this grading scale in an effort to decrease competition between students. Theoretically, everyone can get an “A”.

**Americans with Disabilities Act (ADA) Policy Statement**

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit: [http://disability.tamu.edu](http://disability.tamu.edu)

**Aggie Honor Code Policy**

“An Aggie does not lie, cheat or steal, or tolerate those who do.”

Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the TAMU community from the requirements or the process of the Honor System. Additional information about the Aggie Honor Code can be found at: [http://www.tamu.edu/aggiehonor/](http://www.tamu.edu/aggiehonor/). The consequences for cheating and plagiarism on any assignment associated with CHEM227 will result in an unsatisfactory grade for the course.

**Make-Up Policies**

If an absence is excused, the instructor will either provide the student an opportunity to make up any quiz, exam or other work that contributes to the final grade or provide a satisfactory alternative by a date agreed upon by the student and instructor. If the instructor has a regularly scheduled make up exam, students are expected to attend unless they have a university approved excuse. The make-up work must be completed in a timeframe not to exceed 30 calendar days from the last day of the initial absence. The reasons absences are considered excused by the university are listed below. See Student Rule 7 for details ([http://student-rules.tamu.edu/rule07](http://student-rules.tamu.edu/rule07)). The fact that these are university-excused absences does not relieve the student of responsibility for prior notification and documentation. Failure to notify and/or document properly may result in an unexcused absence. Falsification of documentation is a violation of the Honor Code.

1) Participation in an activity that is required for a class and appears on the university authorized activity list at: [https://studentactivities.tamu.edu/app/sponsauth/index](https://studentactivities.tamu.edu/app/sponsauth/index)
2) Death or major illness in a student’s immediate family.
3) Illness of a dependent family member.
4) Participation in legal proceedings or administrative procedures that require a student’s presence.
5) Religious holy day. NOTE: Prior notification is NOT required.
6) Injury or illness that is too severe or contagious for the student to attend class.
a) Injury or illness of three or more class days:
Student will provide a medical confirmation note from his or her medical provider within one week of the last date of the absence (see Student Rules 7.1.6.1)
b) Injury or illness of less than three class days:
Student will provide one or both of these (at instructor’s discretion), within one week of the last date of the absence: (i.) Texas A&M University Explanatory Statement for Absence from Class form available at [http://attendance.tamu.edu](http://attendance.tamu.edu) or (ii.) Confirmation of visit to a health care professional affirming date and time of visit.
7) Required participation in military duties.
8) Mandatory admission interviews for professional or graduate school that cannot be rescheduled. Other absences may be excused at the discretion of the instructor with prior notification and proper documentation. In cases where prior notification is not feasible (e.g., accident or emergency) the student must provide notification by the end of the second working day after the absence, including an explanation of why notice could not be sent prior to the class.

**Schedule of Lectures and Tentative Exam Dates**

Listed below is a schedule of approximate lecture coverage and exam dates. Exams will cover through the end of the lecture prior to the exam. DO NOT FALL BEHIND!

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Approximate # of Lectures</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Structure and Bonding</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Polar Bonds; Acids and Bases</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Organic Compounds: Alkanes and Their Stereochemistry</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Organic Compounds: Cycloalkanes and Their Stereochemistry</td>
<td>2</td>
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</tbody>
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**Thursday September 22, EXAMINATION #1**

| 5       | Stereoechemistry at Tetrahedral Centers                            | 2                         |
| 6       | An Overview of Organic Reactions                                  | 2                         |
| 10      | Organohalides                                                     | 2                         |
| 11      | Reactions of Alkyl Halides: Nucleophilic Substitution and Elimination | 2                         |

**Thursday October 20, EXAMINATION #2**

| 7       | Alkenes: Structure and Reactivity                                 | 2                         |
| 8       | Alkenes: Reactions and Synthesis                                  | 2                         |
| 9       | Alkynes: An Introduction to Organic Synthesis                    | 2                         |

**Thursday November 17, EXAMINATION #3**

| 17      | Alcohols and Phenols                                              | 1                         |
| 18      | Ethers and Epoxides; Thiols and Sulfides                          | 2                         |

**Monday December 12, 1–3 PM, Final Exam**