

**ORGANIC CHEMISTRY I (2201)**  
**Spring 2016**  
**TTh, 11-12:20 BE162**  
**Instructor: Dr. Sarah Wengryniuk**  
**Office: 442BE**  
**Office Hrs: Mondays, 2-4pm**

The organic chemistry program has two parts that are separate courses: lecture, 2201 and laboratory, 2203. These courses are separate registrations. The two parts are designed to be completed at the same time, but credit for them is earned independently.

**Course Prerequisites:** Successful completion of General Chemistry II (1032 or 1952 or the equivalent) with grades C- or better is a prerequisite.

**Specific Goals and Objectives:**

The primary goal of this course is to introduce the student to the fundamental principles of organic chemistry and to develop critical thinking skills. The major specific objectives are:

- To learn about bonding, molecular structure, and hybridization of organic compounds.
- To write and explain the mechanisms of a variety of organic reactions.
- To apply molecular orbital analysis to reaction mechanisms.
- To recognize spectral data obtained from mass spectrometry, infrared spectroscopy, and nuclear magnetic resonance spectroscopy.
- To be able to use spectral data from the analytical tools to identify organic molecules.
- To know the nomenclature, preparation and reactions of: alkanes, alkenes, alkynes, alcohols, amines, and alkyl halides.
- To distinguish between the three-dimensional shapes of organic molecules and explain how those shapes affect reactivity.
- To plan organic synthesis and apply retro-synthetic analysis.

**Student Learning Outcomes:**

Students will be able to:

- Recognize simple alkanes, alkenes, alkynes, alcohols, amines, and alkyl halides and know the shape of each functional group.
- Be able to name in a systematic manner simple organic compounds such as alkanes, alkenes, alkynes, alcohols, amines, and alkyl halides.
- Recognize and distinguish constitutional, configurational and conformational differences in organic molecules.
- Construct three-dimensional models of organic compounds.
- Draw the mechanisms: electrophilic addition, radical halogenation, S<sub>N</sub>2, S<sub>N</sub>1, E1, and E2.
- Interpret simple spectral data.
- Use organic reactions in 3- or 4-step synthesis.
- Apply molecular orbital theory to chemical information.

**Textbook:** D. Klein, *Organic Chemistry*, 2<sup>nd</sup> Ed., Wiley, 2014 (ISBN 9781118978474 or 9781118978467 or 9781118967171) is required. It is sold in the bookstore as a package including the textbook (hard cover or looseleaf), ebook, "WileyPlus" organic online homework system, and lab text for Chem 2203. We also recommend the solutions manual for the Klein

text: [www.wiley.com/college/sc/student/chemistry](http://www.wiley.com/college/sc/student/chemistry) be purchased at the bookstore or online. A copy of the solutions manual is on reserve at the Paley Library and at the Science and Engineering Library (SEL). A molecular model kit, available in the bookstore for about \$20 or from the student club (TUCS, 228BE) for \$15, is also strongly recommended. The model set, regardless of where you purchased it, can be returned to the TU Chemical Society (student club) for refund at the end of the spring semester. The text "*Organic Chemistry*" 5<sup>th</sup> Ed., WWNorton by Jones and Fleming (ISBN 978-0-393-91303-3) provides more depth on organic chemistry and it can be purchased through the bookstore or online (<http://books.wwnorton.com/books/Organic-Chemistry/>). It is also available at the reserve desk in the Science and Engineering Library.

**Blackboard™:** A Blackboard site will be set up for this course. Please check that you are registered and can access this course on Blackboard™. Announcements and e-mails will be sent out via Blackboard™ so it is imperative that you check this web site and your Temple email account on a regular basis. Supplemental materials, messages and schedule adjustments will be posted there. Class rankings may be posted on this site so you can get a feel for how you are doing in the course.

**Attendance:** Your attendance at all lectures and recitations is expected and essential to your success in this course. In case of emergency, you may attend a lecture or recitation section other than your assigned one.

**Academic Integrity:** All students are expected to adhere to the highest levels of academic integrity. Any students found cheating (i.e. copying answers to exam, quiz, or homework; submitting experimental data that they did not collect; presenting graphs and calculations; or otherwise taking credit for work that they did not perform) will receive a failing grade in the course. They will also be reported to the Dean's office in the College of Science and Technology. There are dire consequences. Please do not give cause to suspect cheating. Cheating can be detected during and after tests are handed in.

**Disability Resources and Services:** Any student who has a need for accommodation based on the impact of a disability should contact their instructor privately to discuss the specific situation as soon as possible. Contact Disability Resources and Services at 215-204-1280 in 100 Ritter Annex to coordinate reasonable accommodations for students with documented disabilities. (<http://www.temple.edu/disability/>)

**Non Course Content Problems:** You should first attempt to resolve any problems that you are having with your lecturer or recitation instructor. If after speaking with the instructor you have not resolved the issue, you should speak with the course coordinator (Steve Fleming, 344BE). The coordinator will attempt to mediate, consistent with department policy. Do not expect your instructor to make new policy. *However, if you are having problems with the professional conduct of your instructor you should contact the department chair.*

**Lecture Class:** Each chapter should be read before it is scheduled to be discussed in the lecture (see attached calendar). This is your preparation for the lecture class. If you don't understand the material after you have read it, the lecture may clarify the material. If you still don't understand the material, you can ask questions during lecture and recitation sessions. If you are late, take a seat that does not interrupt the lecture or disturb other students. Please turn your cell phones off.

**Recitation Class:** Your recitation section was selected when you register for the course. It is recommended that you attend recitation classes because the class sizes are smaller than lecture class. You can interact more with the teacher in that setting.

**Testing Policy:** All tests are given in a "Closed Books" environment. No books, notes, or reference material may be consulted during any test. You can use model sets during the exams. Giving or receiving information during examinations is a violation of the Temple Student Discipline Code and will result, at minimum, in a grade of F for this course. Electronic devices, including calculators, phones, and PDA's are not permitted in the exam room. You will be held responsible for all the material and assigned problems in the scheduled chapters, except for any sections that your instructor specifically tells you that you may exclude. Cell phones are to be turned off during exams.

1. No electronic devices may be used during an exam. Calculators are not needed in 2201.
2. During testing situations, you have completed the test when you leave the room. Visit the restroom facilities before sitting for your exams.

**Exams:** There will be a review exam, three midterm exams, and a final exam. Exam questions will be in similar format to assigned book problems. Unless otherwise stated, each midterm exam will be 200 points. The final exam will be 200 points and is cumulative, covering ALL materials taught in this course. The final will be similar to an American Chemical Society (ACS) standardized exam. Study guides for the ACS final can be found in the reserve library in SEL (201 Eng) or purchased online at the following link (<http://chemexams.chem.iastate.edu/organic-chemistry>). There is a review exam based on Chapter 1 and key concepts that you should know from general chemistry classes. The review exam will be worth 50 points. Students are advised to seriously consider not continuing in this course if they do poorly (<50%) on this review exam.

**Make-up Exams:** There are no make-up exams. If you miss an exam, then you have the option of taking an exam in another section after arranging with your instructor. Your instructor will work with you in the event of a serious problem.

**Quizzes (In-Class and Take-Home):** The quizzes are designed to prepare you for examinations and to make sure you understand key materials and concepts. Quiz dates will be announced by your instructor. Four in-class quizzes (15 pts each) will be multiple choice and cover recent material from class. A take-home quiz will be given the week preceding each Midterm and will be 30 pts each. These can be worked on in groups as long as *all group members are listed at the top of the quiz*. The total points for the quizzes will be 150. In-class quiz questions will be designed to help you prepare for the ACS Final and take home quizzes will be geared towards each upcoming exam.

The assigned problems in the book are listed in the Course Schedule given below. Answers to all assigned problems can be found in the Study Guide that accompanies the textbook. It is important that you work through each problem and understand the theory and methods used for its solution, and do this before the recitation in which it is discussed. Copying the answer from the Study Guide into your notebook is not likely to help much. In order to obtain a practical understanding of the material, you will need to work through the assigned problems. You should be ready to discuss them when your recitation class is scheduled to cover the chapter material (see attached schedule). The listed problems represent the minimum

necessary for you to develop a working foundation in chemistry. Experience has shown that students who do more than the assigned problems do well in this course. You are encouraged to work additional problems and seek help outside the classroom.

**Online Homework:** WileyPlus is our web-based, online homework system. Online homework using the WileyPlus system is available to you as extra practice problems for this course. **These will not be graded! Use if you wish!** Your instructor will give you a code for your course. There will be assignments for each chapter found by going to the WileyPlus Login page for this lecture class ([www.wileyplus.com/class/487930](http://www.wileyplus.com/class/487930)) You will be able to get assistance for the online homework from James Huang (tuf13119@temple.edu), the TA dedicated to helping with the online homework. There is also an online help desk that can be accessed (<http://hesupport.wiley.com>). The "WileyPlus" program has a self-assessment tool called Orion that will allow you to see how you are doing throughout the semester.

<b>Grading:</b>	Review Exam	50 points
	Midterm Exam 1	200
	Midterm Exam 2	200
	Midterm Exam 3	200
	Final	200
	Quizzes (In-class & Take Home)	150
	Total	1000

Grades will be based on the natural breaks.

**Course Schedule:** This schedule is tentative and subject to change. Please be alert to announced changes.

Date	Chapter	Homework Problems	Exam
Jan. 12, 14	1 – Gen Chem Review	(1) 1-30, 32-36, 38-52, 55-56, 58-67	
Jan. 19			Review exam
Jan. 21, 26	2 – Representations	(2) 1-67	
Jan. 28	3 – Acids/Bases	(3) 1-63	
Feb. 2 - Feb. 4	4 – Alkanes/Cycloalkanes	(4) 1-69	
Feb. 9, 11	5 – Stereochemistry	(5) 1-65	
Feb. 16			Midterm 1
On your own	6.1-6.6 – Energy & Equilibria	(6) 1-31	
Feb. 18, 23, 25	6.7-6.11– Reactions & Mechanisms 7 – Substitution	(7) 1-72	
Feb. 29 - March 4	Spring Break		
March 8, 10	8 – Elimination 13 – Alcohols (Sec: 1-3, 9)	(8) 1-86 (13) 1-8, 19-21, 30-34, 35a-e,g,h,j-l	
March 15, 17, 22	15/16 – IR, MS, and NMR	(15) 1-80      (16) 1-80	
March 24			Midterm 2
March 29 - April 5	9 – Addition to Alkenes 14 – Ethers/Epoxydes	(9) 1-83 (14) 1-50	
April 7, 12	10 – Addition to Alkynes	(10) 1-62	

April 14, 19	11 – Radicals	(11) 1-46	
April 21			Midterm 3
April 26, 28	12 – Synthesis 17.1-17.7 – Dienes Prepare for Final	(12) 1-27  (17) 1-19, 32-48	
Mon May 2, 3:30pm			Final

**Drop/Add:** Drop/Add actions are possible during the first two weeks of classes. Academic Advising must be consulted to take any of these actions. Your instructors are not part of this process. The Temple University policy <http://www.temple.edu/registrar/students/courseinfo/add-drop.asp> should be reviewed if you contemplate such action. The University has set the last date to drop to be Friday, January 22<sup>nd</sup>.

**Withdrawals:** Withdrawals are possible after the drop deadline. The university has set the latest date to be Tuesday, March 15<sup>th</sup>. Note that a withdrawal (W) is an institutional procedure that does not involve your instructors in any way. This is not complete until the withdrawal form has been signed by academic advising and submitted to the Registrar's office. Temple University Policy (#02.10.14) on Withdrawal should be consulted. Please click (<http://www.temple.edu/registrar/students/excusedwithdrawal.asp>) to view the policy.

**Incompletes:** Please note that an "Incomplete" or "I" is only to be given in accord with institutional procedures. An "I" cannot be assigned until the specific requirements have been met, and an Incomplete Contract has signed and submitted. See Temple University Policy <http://www.temple.edu/vpus/documents/UniversityIncompleteForm.5.25.06.doc> on Incompletes. To obtain an "incomplete" designation, at least 50% of the work of the course must be completed and there is a valid reason acceptable to academic advising for missing the remainder of the course. The student's accumulated total to that point must be more than 75% of the possible points.

For those students who are assigned a grade of "I", all previous scores will stand and be used in the calculation of the final score when the course is completed. Students wishing to pursue an incomplete must obtain an Instructor Approval for an Incomplete Form (available from the web page) that the student and instructor must complete, before presentation to academic advising for final approval. No "I" designation may be requested after the final exam of the student's section of this course has been administered.

**Some Friendly Advice;** Organic Chemistry is a difficult course. For many of you it will be the most difficult and time-consuming course you take in your college career. You can make it easier on yourself by doing the following:

1. Do as many problems as you have time for beyond those assigned. Even if they are from another book, the practice will help.
2. *Study regularly.* If you fall behind, it's hard to catch up.
3. You should understand theory and method. You may *try* to memorize definitions and summaries at the end of each chapter, but there is too much material to memorize it all.
4. Form Study groups. These are very helpful. Be an active contributor in your group.
5. Some students will need to work on organic chemistry 10-15 hours per week outside of class. Some will be able to understand the material with 2-3 hours per week. It has been my experience that: a) paying attention to detail and b) wanting to learn why things happen, are the most common characteristics of students who do well in o-chem.

- If you have a problem with the material, seek help **immediately**. Make use of instructor office hours and additional time that I can give you. If I am in my office and the door is open, you are more than welcome to come in and ask questions. **Don't wait until the last minute!** A lot of the material taught in this course is cumulative and you need to understand material throughout the course to understand later material.
- Organic Chemistry is like learning a new language. There is fundamental terminology that must be incorporated in your vocabulary. Then there are concepts you will learn and you will be asked to apply the concepts in scientific analysis. These types of questions are not handled well by memorization. Unlike many other courses, the concepts introduced each week of the class will remain important during the remainder of the course, right through second semester. In fact, the final exam for Chem 2202 (Org. Chem II) will be a standardized exam covering both semesters of organic chemistry.

**HELP!!!** Make certain you take full advantage of all the academic support services available at Temple - on the Main Campus and at Ambler. These include instructor office hours, the Math and Science Resource Center (MSRC) **1810 Liacouras Walk, 2<sup>nd</sup> floor**, Main Campus in addition to Supplemental Instruction sessions. The services provided at the MSRC include one-on-one tutoring, computer lab, weekly group tutorials/supplementary instruction, final exam review sessions, and a resource library. The center is open 6 days a week AND IS FREE. For additional information check <http://www.temple.edu/msrc/>

The reserve desk in the Science and Engineering Library (SEL, 201 Eng) has several organic chemistry texts, including the Jones/Fleming text, and study guides that are available for limited time checkout. There are several copies of the American Chemical Society Official Guide "Preparing for Your ACS Examination in Organic Chemistry" in the reserve collection. This book will help you prepare for the ACS final. The Paley Library reserve desk has the Jones/Fleming text and study guide.

### On-Line Help:

- Practice Quizzes: <http://www.chemhelper.com/practicetests.html>
- Organic reactions Quizzes and Summaries: <http://pages.towson.edu/ladon/orgrxs/reactsum.htm>
- Organic Chemistry Toolkit: <http://www.stolaf.edu/depts/chemistry/courses/toolkits/247/>
- Organic Chemistry Practice Problems at Michigan State University: <http://www2.chemistry.msu.edu/faculty/reusch/VirtTxtJml/Questions/problems.htm>
- Electronic Flashcard: <http://legacyweb.chemistry.ohio-state.edu/flashcards/>

2201 Instructors for Spring 2016 (in alphabetical order)

Instructor's name	BE Office #	Email address	Lecture
Dave Hill	426	hill@temple.edu	noon MWF
Serge Jasmin	444	sjasmin@temple.edu	10:00am MWF
Sarah Wengryniuk	442	sarahw@temple.edu	11:00am TTh