Syllabus

Synthetic Organic Chemistry – CHEM 1310/2370 Fall 2016

Schedule: M W, 9:00-9:50am
Location: Chevron 135

Instructor: Alexander Deiters
Office Location: Chevron 903 or 1305
Office Hours: just come to my office or send me an email
Phone: 412-624-5515
EMail: deiters@pitt.edu

Course Description:
This advanced undergraduate/early graduate level course builds onto sophomore organic I and II courses by applying the learned principles to the synthesis of FDA-approved drug molecules. The emphasis of the course will be on analyzing the molecular structures of drugs in a retrosynthetic fashion, followed by developing suitable synthetic routes to these molecules. The reaction mechanisms of key steps of these syntheses will be discussed in detail. Further discussion will include fundamental functional group interconversions, chemoselectivity, and protecting group use, enantioselective synthesis, and organometallic chemistry. Students will learn about the complexities of modern drug molecules, how their structures can be analyzed, and how they are synthesized.

Texts:

In order refresh your knowledge of basic organic chemistry, you can consult Organic Chemistry, 7th Ed. (2014) by Vollhardt & Schore. Older editions and other undergraduate organic textbooks will be suitable as well. If you are not familiar with drawing reaction mechanisms, please take a look at Pushing Electrons, 4th Ed. (2013) by Weeks.

Homework:
Homework assignments will be given every few weeks and will involve the development of new synthetic routes to drug molecules. The homework will be graded, but it will not be returned since we will discuss solutions to the homework problems in detail in class.

Grading:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
<th>Due Date</th>
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</thead>
<tbody>
<tr>
<td>Exam 1</td>
<td>30%</td>
<td>Wed, Oct 12, 9:00-9:50 am</td>
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<tr>
<td>Exam 2</td>
<td>30%</td>
<td>Mon, Dec 12, 9:00-9:50 am</td>
</tr>
<tr>
<td>Homework</td>
<td>25%</td>
<td></td>
</tr>
<tr>
<td>Class Participation</td>
<td>15%</td>
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Grades for the semester will be assigned based on the following approximate percentage scale: >95%: A+, 95-86%: A to A−, 85-70%: B to B−, <70%: C, D, F.
**Missed Exams:**
Provision for missed exams will be provided only for students with documented excused absences. Excused absences include: 1. A serious illness or injury. 2. The death of a partner, parent, sibling, child, or grandparent (within one week of the missed exam). 3. A mandatory collegiate event for which you officially represent the university. Please submit official documentation, e.g., a doctor’s note, within one week of the missed exam. If the Pitt Adverse Weather Policy is in effect on an exam day, the exam will be postponed until the next class meeting, and a regular class will be held in its place, weather permitting.

**There will be no make-up exams.** Missed exams for documented legitimate excuses will be made-up for by replacing the missed exam with your score on the other exam. Missing both exams without a documented, legitimate excuse will result in an automatic failure of the course. Missing both exams with a documented, legitimate excuse may still result in failure of the course, or the issuance of a G (incomplete) grade, at the discretion of the instructor.

**Key to Success:**
Actively participate in class and ask questions often! Develop more than one synthetic route to a homework assignment. Look up and study the mechanism for each step that you are proposing as part of your syntheses. Review the material continuously and as often as possible, practice detailed reaction mechanisms (including charges, counter ions, electron-pushing arrows, etc.), don’t just read your notes or the book, design your own retrosynthetic analyses, questions, and problem-sets; study together with a friend, and – most importantly – make your own flash-cards, e.g.:

![Image of flashcards showing an E1 mechanism for the dehydrogenation of t-butyl alcohol with a simplified reaction mechanism on the back.](front) ![Image of flashcards showing an E1 mechanism for the dehydrogenation of t-butyl alcohol with a simplified reaction mechanism on the back.](back)

**Attendance and Classroom Civility:**
Attendance is mandatory. Tardiness to class is not acceptable and students who arrive late to class more than once should expect this to negatively impact their class participation grade. If you miss a non-exam class day, you are responsible for obtaining notes and other class information from one of your colleagues. Also note that anyone other than enrolled students is not allowed to attend without the permission of the instructor. Do not eat in the classroom and do not use laptops, tablets, cell phones, or other electronic devices during class. Open discussion is encouraged in class and please respect other students’ opinions, comments, and questions. Let’s all be nice, have a little fun, and learn about organic synthesis!
G Grades:
Students who wish to petition for a G Grade must submit to the instructor, in writing, a specific request for this grade change and you must document your reason(s). You will be required to make arrangements in person for the specific tasks you must complete to remove the G grade. You will be expected to sign documentation which will include the date by which work must be completed. Failure to complete work by the date specified could result in a zero recorded for the missed exam and your final grade will be calculated based on this score. Remember that G grades, according to University guidelines, are to be given only when students who have been attending a course and have been making regular progress are prevented by circumstances beyond their control from completing the course after it is too late to withdraw (UNIVERSITY OF PITTSBURGH POLICY \ 09-01-01).

Academic Integrity:
Students in this course will be expected to comply with the University of Pittsburgh’s Policy on Academic Integrity (http://www.provost.pitt.edu/info/acguidelinespdf.pdf). Any student suspected of violating this obligation for any reason during the semester will be required to participate in the procedural process, initiated at the instructor level, as outlined in the University Guidelines on Academic Integrity. This may include, but is not limited to, the confiscation of the examination of any individual suspected of violating University Policy. Furthermore, no student may bring any unauthorized materials to an examination, including dictionaries and programmable calculators.

Students with Disabilities:
If you have a disability that requires special testing accommodations or other classroom modifications, you need to notify both the instructor and the Office of Disabled Student Services no later than the 2nd week of the term. You may be asked to provide documentation of your disability to determine the appropriateness of accommodations. To notify DSS, call 648-7890 (Voice or TDD) to schedule an appointment. The Office is located in 216 William Pitt Union.

Statement On Classroom Recording:
To ensure the free and open discussion of ideas, students may not record classroom lectures, discussion and/or activities without the advance written permission of the instructor, and any such recording properly approved in advance can be used solely for the student’s own private use.