CHM 235: Organic Chemistry I

Summer 2017

Instructor: Dr. Tony Hascall

Office: Bldg 36 (Science and Health), Room 329
Phone: 523-7088

email: antony.hascall@nau.edu
webpage: http://jan.ucc.nau.edu/~ah476

Ten-week session: Monday June 5th – Tuesday August 8th 2017

Lectures: Monday – Thursday, 10:00 – 11:25 a.m., SHB Room 105

Office Hours:

There will be no formally scheduled office hours this summer. You may either drop by my office, or contact me by email to set up an appointment to meet.

Supplemental Instruction (SI)

The SI leader for this class is Brian Hamilton (bh558@nau.edu). SI session times will be announced during the first week of class.

What is Supplemental Instruction (SI)?

Supplemental Instruction is assigned to historically difficult academic courses. SI leaders are model students who were previously successful in the course. They attend class and hold study sessions each week. Based on the text and class lectures, they develop study guides, worksheets, quizzes and practice tests to share with students. Discussion centers not only on explaining and understanding course content, but also on more effective study skills and strategies appropriate to the particular course. Students may attend as many SI sessions as they wish. Students who attend 3 or more SI sessions for a course earn one-half letter grade higher than students who do not attend, earning more A’s and B’s and receiving fewer D’s and F’s.

Course Description:

A rigorous study of carbon containing compounds with emphasis on reaction mechanisms, structural determination and synthesis.

Course prerequisites:

One year of General Chemistry (CHM 151 and 152 or equivalent) with grades of “C” or better.

Required Course Materials

The following materials should be purchased as a package:

- Registration code for SmartWork

Homework assignments on SmartWork will be a required part of this course. To enroll in our SmartWork class, go to http://smartwork.wwnorton.com. The enrollment key for this class is ORGCHEM11800

- Molecular Model Kit
**Communication:**

Check the class webpage often for updates. I will occasionally send announcements to the class by email, so be sure to check your NAU e-mail account regularly. Email is the best way to contact me. Please include in your messages a subject indicating that it relates to this class, an appropriate salutation, grammatically acceptable text, and a closing. Messages lacking these elements may be ignored!

**Time Expectations:** The typical student will need to spend at least two hours studying for every hour of class. This corresponds to at least **12 hours of studying per week** for this class. Preparation for exams will require more study time. Try to study in small blocks of time (approximately 1 hour) as soon after the lecture as possible by reviewing lecture material and completing assigned homework. Studying in groups is highly recommended. Waiting to “cram” shortly before an exam is not an efficient means of learning the material.

If you are struggling with the material in the class, please come and see me or the SI leader for assistance. I will try as much as I can to help you to succeed, but remember; ultimately **you are responsible for your own education**.

**Attendance:** It is highly recommended that you attend all lectures. There is a strong correlation between performance in the class and attendance.

**Reading:** The lectures will generally follow the same order as the textbook. The sections to be read each week will be announced in class and posted on the class webpage. It is very important that you read the sections that are assigned. The lectures alone will not suffice. We will cover most of Chapters 1-13, 15-16 and the “Nomenclature Chapters” 1-3 in the Karty book.

Some material from the textbook may not be covered by lectures in class, particularly the nomenclature chapters. You will be responsible for learning this material from the textbook.

**Student Learning Expectations/Outcomes for this Course:**

These are some of the essential skills that students should obtain from taking CHM 235:

- describe the structure and bonding of organic compounds, structures of a variety of organic functional groups, and relationships between similar organic compounds (isomerism)
- assess the distribution of electrons in organic compounds and the subsequent effects on reactivity
- use the curved arrow formalism to describe organic reaction mechanisms
- predict reagents for and outcomes of addition reactions of alkenes and alkynes, including reaction mechanisms
- predict reagents for and outcomes of substitution and elimination reactions, including reaction mechanisms
- recognize stereochemistry within organic structures, stereochemical relationships between molecules, and the stereochemical requirements and outcomes of substitution, elimination, and addition reactions
• use infrared and proton NMR spectroscopy as a tool to understand electron distribution and reactivity
• use infrared and proton NMR spectroscopy as a tool for qualitative chemical analysis
• develop successful study methods for advanced chemistry coursework

Assessment of Student Learning Outcomes:

1. Midterm Exams: There will be three in-class exams given on the dates specified on the class schedule. Exceptions to these dates will only be given for institutional excuses, or medical or family emergencies. These situations must be documented in advance, and then adjustments may be made on a case-by-case basis. The exams will consist of short-answer questions, including those in which you must draw chemical structures. The exams will be intended to be 50-minutes in length, but you may take the entire class period to complete them.

2. Quizzes: To encourage you to keep up with the material, there will also be short (~10 minute) in-class quizzes, generally at the start of class each Monday, except the Mondays following an exam. For determining your final grade, your lowest quiz score will be dropped. There will be no early or make-up quizzes; if you must miss a quiz for any reason, then that will be the dropped score. There may be one or more additional “surprise” quizzes given for extra credit (these cannot be made up).

3. Final Exam: The final will be a cumulative, comprehensive multiple-choice exam. It will be given during the last scheduled class meeting (Tuesday, August 8th).

4. Online Homework: Success in this class requires spending time studying the concepts covered in lecture and solving problems. To encourage students to work problems, there will be weekly graded online homework assignments using the SmartWork system. Assignments will generally be due on Sunday nights, except on weeks when there is an exam, in which case the homework will be due before the exam. An assignment may be submitted up to a week after the deadline, but there will be a penalty for each day that it is late. Each assignment will be scaled to be worth the same number of points. Your lowest homework score will be dropped. You may work with other students on SmartWork problems, but every student must submit the final homework individually. It is strongly suggested that you keep a separate notebook with the answers and work to your SmartWork homework.

Additional practice problems can be found in your textbook, and solutions are available in the Study Guide and Solutions Manual.

Grading Policies

Your final grade in the class will depend on the percentage of the total possible points that you earn. The following grade scale is guaranteed: > 90% for an A, 80-89% for a B, 65-79% for a C, 50-64% for a D. These are the maximum cutoffs for each letter grade; you are guaranteed at least the appropriate grade for your total points. The cutoffs may be lowered (but not raised) when the final grades are calculated, if appropriate.

For the attendance / participation part of the grade, full credit will be given to students who do not miss any class without informing the instructor and participate by asking questions. Not attending class will result in a reduction in this part of the grade.
Your final grade in the class will be calculated as follows:

<table>
<thead>
<tr>
<th>Item</th>
<th>% of Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three midterm exams – 10 % each</td>
<td>30</td>
</tr>
<tr>
<td>Five best quizzes – 4 % each</td>
<td>20</td>
</tr>
<tr>
<td>Final Exam</td>
<td>25</td>
</tr>
<tr>
<td>Online Homework Assignments (lowest score dropped)</td>
<td>20</td>
</tr>
<tr>
<td>Attendance / Participation</td>
<td>5</td>
</tr>
</tbody>
</table>

Note: in the event of an extraordinary circumstance, including, but not limited to, an exam being cancelled due the campus being closed, the instructor reserves the right to modify the above grading scheme to one more appropriate for the new circumstances.

**Academic Integrity**

Students are expected to follow the university’s Academic Integrity policies (https://policy.nau.edu/policy/policy.aspx?num=100601). If you are caught cheating in any way on any assignment (quiz, exam, etc...), you will receive a zero grade for that assignment. Repeated violations will result in an “F” grade for the course.

Wearing headphones, or having a cellphone, smart watch or any other web enabled device on your person during a test will result in a score of zero for that test.

Please turn off your cellphone before coming to class. Please do not listen to iPods or other devices with headphones in class.

**Class Schedule**

Note the important dates given here. Please see the class webpage (http://jan.ucc.nau.edu/~ah476/CHM235Schedule.html) for a more detailed schedule including lecture topics and homework assignments. Any changes to the schedule will be posted online.

<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Tests</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6/5-8</td>
<td>Quiz 1 Monday</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>6/12-15</td>
<td>Quiz 2 Monday; Exam 1 Thursday</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>6/19-22</td>
<td>Quiz 3 Thursday</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>6/26-29</td>
<td></td>
<td>No class Tuesday</td>
</tr>
<tr>
<td>5</td>
<td>7/3-6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>7/10-13</td>
<td>Quiz 4 Monday; Exam 2 Thursday</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>7/17-20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>7/24-27</td>
<td>Quiz 5 Monday</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>7/31-8/3</td>
<td>Quiz 6 Monday; Exam 3 Thursday</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>Final Exam: Tuesday August 8th</td>
<td></td>
</tr>
</tbody>
</table>
How to succeed in this course:

Attend all class meetings  In general, success in this class is directly linked to attendance and participation in class activities. Class time will be spent building the skills you need to solve problems on your own. Lectures will also elucidate the most important topics that are likely to show up come exam time.

Do the homework  Your exam problems will cover similar concepts to what you practice with the SmartWork homework. If you’ve worked through (and understand) all of these problems, you will be well-prepared for the tests.

Work problems on paper  Many homework problems will require several attempts before an appropriate solution is found. By working on paper, you can keep a record of your thoughts and missteps to facilitate learning, and you’ll be better prepared for in-class paper exams. (You’ll also be ready for office hours if you have questions.)

Use your textbook and supplementary materials  Your textbook is the heart of the course, as it contains all of the necessary information to meet the course learning objectives. Class activities are planned to correlate with the text, and the content covered in class will compliment what you read in the text. In addition, SmartWork will provide you with guidance and instant feedback on practice problems, which is the best preparation for exams.

Organize the course information for yourself  The textbook presents the material one way, and the instructor another. The best way for you to master the material is find the organization and logic that works for you. Take notes on your text reading, reconcile your class notes with your textbook, draw connections between topics, and seek your own terms for understanding the material.

Be consistent and don’t fall behind  This course builds upon itself, and falling behind tends to lead to a detrimental snowball effect. Work consistently on course material during several short sessions each week rather than cramming at exam time, and make up for lost time as soon as possible.

Seek outside help  Part of why you chose Northern Arizona University is the availability of faculty and staff to provide you with a rich and personal educational experience. We want you to succeed! My office hours and SI study sessions are among the many ways we are here to help.

<table>
<thead>
<tr>
<th>DO…</th>
<th>DON’T…</th>
</tr>
</thead>
<tbody>
<tr>
<td>…write down what you hear in class</td>
<td>…expect you’ll remember what you hear in class</td>
</tr>
<tr>
<td>…ask questions when you have them</td>
<td>…convince yourself you understand because, “I looked at the answer and it made sense”</td>
</tr>
<tr>
<td>…use your textbook, SmartWork, and the internet to answer fundamental questions</td>
<td>…think that if it’s not in your class notes, the information can’t be found</td>
</tr>
<tr>
<td>…work with friends</td>
<td>…expect that because your friends know it, you know it</td>
</tr>
<tr>
<td>…know the basics</td>
<td>…give up on material you missed the first time through</td>
</tr>
<tr>
<td>…apply foundational knowledge to complex problems</td>
<td>…assume it’s a “trick question”</td>
</tr>
<tr>
<td>…work as many problems as possible</td>
<td>…rely on your study group to bolster your grade</td>
</tr>
<tr>
<td>…a little class work every day</td>
<td>…put off studying until the last minute</td>
</tr>
</tbody>
</table>