CHEM 2010 – Organic Chemistry

**Text:** John McMurry: *Organic Chemistry*, 7th Ed.

**Supplemental** John McMurray: *Study Guide and Solutions Manual*

**Items:** Get this only if you will use it.

**Brief Course**

**Description:**

The list of topics to be covered is given below (not necessarily in the order shown):

* Introduction to orbitals, molecular orbital description of bonding, hybridization, structure of methane.
* Atoms, molecules, bonding, polar and nonpolar molecules, intermolecular forces, solubilities, Lewis structures, preliminary ideas of resonance, arrow formalism, acids and bases.
* Alkanes-conformational analysis, structural isomerism and nomenclature, alkyl groups.
* Alkenes- structure and bonding, nomenclature, E-Z notation, hydrogenation, relative stabilities. Alkynes-structure and bonding, relative stabilities, double and triple bonds in rings.
* Dienes and the allyl system, conjugation, introduction to the concept of aromaticity.
* Stereochemistry-chirality, enantiomerism, R-S notation, diastereomerism, optical resolution.
* Ring systems- strain, stereochemistry of cyclohexane, conformational analysis of cyclohexane and its substituted derivatives, bicyclic and polycyclic compounds.
* Infrared (IR) spectroscopy.
* Mass Spectrometry
* Free radicals and typical reactions involving them

**Exams and Grading:**

Exams in this course will reflect problems given in the text and practice exams.

NOTE: Due to the brevity of the course, there will be NO MAKE-UP exams.

Each exam will be worth 100 points. Grades will be calculated based upon the sum of the highest point total for the four exams. A maximum of 500 points are available for this course. The final course average (percentage) will be calculated as follows:

Final course average = 500 points maximum x 100% = Final course average (%)

The scale below will be used to assign final letter grades.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **A =** | **91 – 100%** | **B- =** | **75 – 78%** | **D+ =** | | **59 – 62%** | |
| **A- =** | **87 – 90%** | **C+ =** | **71 – 74%** | **D =** | | **55 – 58%** | |
| **B+ =** | **83 – 86%** | **C =** | **67 – 70%** | **F =** | | **54% and less** | |
| **B =** | **79 – 82%** | **C- =** | **63 – 66%** | |  | |  | |

We reserve the right to lower this scale as appropriate, but will not raise it.

Other than bonus points on exams, there are no opportunities for extra credit. Please put your time and efforts into mastering the concepts in the first place. So please do not request extra credit projects.

**Class attendance and exams:**

There is a direct correlation between class attendance and how well a student does in the course. Some absences are unavoidable, but every effort should be made to attend class regularly because inevitably everything covered in lecture will show up on the exams in one form or another. See: [ETSU Class Attendance Policy](http://www.etsu.edu/students/spectrum/pbc.htm) .

**A Word to the Wise:**

Please keep up with the material. It accumulates relentlessly and is used to develop subsequent concepts. Thus you must develop a stable foundation and letting things slide is unwise. As the term progresses and other demands on your time increase, catch-up will become harder to accomplish. Furthermore, it is likely that many of the concepts in the course will become clear only after you have cogitated about them for a while. This digestion period is critical and hence the need for time. So please don’t wait until the last minute to “learn”. Regular study each day is preferred to an all-nighter.

Write, write, and write again. We cannot overemphasize the importance of writing. Simply listening to the lecture, or reading your text is not enough. It is easy to convince yourself that you understand the material, when in reality you do not. We have all done this, and you should be alert to such. If you choose to follow this advice, you will begin to note that expressing your knowledge of the subject indeed requires its understanding. To reach that level you must practice writing. Also, don’t skim over the problems. Work them out completely on paper, just as you will need to do for an examination. Quite often, with the problem before you on paper, other viewpoints presents themselves, and then learning begins. This is critical as the course progresses.

Network with your classmates, if at all possible. If you want to study alone, well that’s ok. Being able to explain something to others is a sign of insight and understanding. It might be advisable if each member of the group agrees to work a few problems and explains the solutions to the rest of the group. More problems can be worked and each person has ample opportunity to discuss and debate. The group as a whole will be able to work a larger number of problems. If you choose to form groups, it is crucial for all members of the group to do their fair share. One reason often responsible for group breakdown is that one or two people do all the work and the rest just piggy-back. Avoid this from happening.

Make the most of the resources available to you. We are here to help you learn. So, come talk to us. If the course does not seem to be going well, please get help right away. Our chances of rescuing you are better the more lead-time we have.

Stay involved and keep a positive attitude. Perseverance will be an important key to success. Yes, it is a hard course but, no, it is not impossible.

**Some Comments by former Organic Chemistry Students:**

* "Organic is not as terrible as the rumors say, but it's labor intensive."
* "Read the textbook. It was my best friend for the better part of the year."
* "You have to study a little at a time; you can't cram everything in just before a test."
* "Go to class. Go to group help sessions even if they are not mandatory."
* "Work extra problems. Build models. Recopy your lecture notes--you may realize there are things you don't completely understand."
* "Model sets are a great resource. They're essential to understanding stereochemistry. There's nothing better than being able to hold a model in your hand and twist it and turn it."
* "Working on syntheses ties together everything you've learned."
* "If you know the underlying reasons why stuff happens, you can figure out a reaction you've never seen before."