Chemistry 327, **Introductory Organic Chemistry**

Course Syllabus (section 101, CRN 1397, Fall 2017, 2:00 – 3:15 MW, S 405)

Credits: 3 **Prerequisite**: CHM 212 (those registering for a grade without the prerequisite will be assigned a grade of F) **Instructor**: Dr. Lawrence Schmitz **Office**: 488 Science **Phone**: 696-2373
email: schmitz@marshall.edu
Office Hours: MWF 1:00 – 1:50, 3:15 – 4:00
Required Text: Hart, Hadad, Craine and Hart, **Organic Chemistry: A Short Course, 13th ed.**, Brooks/Cole, Cengage Learning 2012 **Highly Recommended**: Molecular models
Available but to be used with caution: Solutions manual.
University Policies: This course will be conducted in accord with applicable University policies. They can be found at: http://www.marshall.edu/wpmu/academic-affairs/?page_id=802
Attendance/ Make-up Exams: see the grading section of this syllabus and the university policies above
Catalog Course Description: Introductory Organic Chemistry. 3 hrs. I.
A one semester introduction to organic chemistry emphasizing structure, nomenclature, and reactivity. (Cannot fulfill an upper division chemistry elective.) 3 lec. (PR: CHM 212).
Learning Outcomes: Students will be able to:

a. understand the structure of organic compounds,
b. name organic compounds,
c. learn the fundamental types of reactions done by organic compounds and how they occur,
d. solve problems involving the structure and reactions of organic compounds.

You will practice this by doing the assigned homework. Your success in accomplishing these goals will be assessed using five hour exams and a final exam.

Approximate Lecture and Exam Schedule

Date	**Chapter**	**Topic**
Aug. 21, 23	1	Bonding and Isomerism
Aug. 28, 30	2	Alkanes and Cycloalkanes; Conformational and Geometric Isomerism
Sept. 6	1-2	**Exam 1**
Sept. 11, 13	3	Alkenes and Alkynes
Sept.18, 20	4	Aromatic Compounds
Sept. 27	1-4	**Exam 2**
Sept. 25, Oct. 2	5	Stereoisomerism
Oct. 4, 9	6	Organic Halogen Compounds; Substitution and Elimination Reactions
Oct. 16	1-6	**Exam 3**
Oct. 11, 18	7	Alcohols, Phenols, and Thiols
Oct. 23, 25	8	Ethers and Epoxides
Nov. 1	1-8	**Exam 4**
Oct. 30, Nov. 6	9	Aldehydes and Ketones
Nov. 8, 13	10	Carboxylic Acids and Their Derivatives
Nov. 15	1-10	**Exam 5**
Nov. 27, 29	11	Amines and related Nitrogen Compounds
Dec. 4, 6	1-11	Review
Dec. 11, 12:45 – 2:45	1-11	**Final Exam**

Studying and Working Problems

In many classes studying consists of reading the textbook and reviewing the notes of the instructor's lectures. This technique will not work very well for most students in this course. It is not enough. To do well requires that you add working problems to the mix.

Imagine wanting to learn to play football. Is reading sports magazines (textbooks) and watching games (going to lectures) enough to become a good football player? No, you would also have to practice! In this course, working problems is like practicing. It is the most important part of studying. Until you can successfully work problems on your own, you are not ready for an exam.

To study, I suggest you:

1. Read the textbook prior to my lectures.
2. Attend the lectures and use them to help you understand the concepts and anything that was not clear from the reading.
3. Work problems to learn the concepts and see if you truly understand the concepts,
4. Do not give up and get the answer to problems from the answer book or a classmate too quickly. Understanding the answer to a problem when you see it is not the same as being able to get the answer on your own. If necessary, review the relevant sections of your textbook to help get ideas on how to solve problems.
5. If after a determined effort, you cannot solve a problem, get help.

You should work all the problems imbedded in the relevant chapters of the book. In addition, you should work as many of the problems at the end of the chapters as you need to master the material. At a minimum I suggest you work the following problems.

Chapter 1: 34, 35, 38, 40, 41, 42, 45, 47, 48, 49, 50, 51, 54, 56, 60, 61

Chapter 2: 26, 28, 31, 36, 38, 39, 41, 44, 45, 48, 50, 52

Chapter 3: 34, 35, 38, 41, 44, 49, 52, 53, 54, 56, 58, 61

Chapter 4: 20, 21, 26, 30, 33, 37, 38, 40, 23, 45, 49

Chapter 5: 28, 31, 34, 36, 37, 39, 43, 45, 48, 49, 50, 55, 58

Chapter 6: 11, 12, 13, 14, 18, 21, 23, 25, 26, 28, 30

Chapter 7: 26, 28, 31, 35, 38, 40, 42, 45, 48, 49, 50, 51, 55

Chapter 8: 17, 18, 21, 23, 26, 27, 29, 30, 31, 33, 37, 40, 41

Chapter 9: 30, 31, 32, 34, 35, 37, 38, 41, 45, 46, 48, 49, 50, 53, 56, 57,

Chapter 10: 37, 38, 41, 42, 44, 45, 48, 51, 53, 56, 57, 59, 61

Chapter 11: 23, 24, 25, 34, 35, 43, 44

Grading Policies

Lawrence R. Schmitz

There will be five exams and a final in this course. You may earn points towards your grade on these exams. The final exam will be counted as two hour exams and your lowest grade will be dropped in determining your average. Your average score for the course will be calculated as shown below:

Average Score = {Exam1 + Exam2 + Exam3 + Exam4 + Exam 5 + [2*(FinalExam)] - LowestExam} / 6.

(Note: Should a scheduling problem require we only have four hour exams, the final will still count twice and your lowest will still be dropped.) The "LowestExam" can be one of the hour exams or the final. Note that the final exam will be 1/6 (16.7%) of your grade if you do poorly on it, but 2/6 (33.3%) of your grade if you do well. **Attendance at exams is required. Make-up exams will only be given for university excused absences as defined in university policy.** A score of zero will be recorded for unexcused missed exams.

My exams tend to vary in degree of difficulty. This can cause problems in determining which exam is indeed your poorest. For example, suppose I give you an exam and that I determine that you need 90% correct to get an A on this exam. Assume that you get 85% correct, a B grade. Suppose that the next exam is much harder than the first. Because of this, I determine that 80% correct is an A. Further suppose that you get 82% correct on this exam, an A grade. The situation is then as shown below:

Exam	%Correct	Grade
1	85	B
2	82	A

Which exam should be dropped? Obviously, these exams need to be put on a common basis.

Therefore, I have developed a scaling technique to help overcome this problem. The mathematics of this technique is described later. After I apply this technique, you will receive a scaled score. Your average score (as described above) will be determined using the scaled scores from each exam. Your grade for the course will be the highest grade possible based on the criteria below:

Average Scaled Score	Grade
≥ 90	A
≥ 80	B
≥ 70	C
≥ 60	D
< 60	F

The Mathematics of Scaling

After you are given an exam, I will grade the exams and determine a raw score for each individual in the class. Based on my judgment of the difficulty of the exam and of what level of performance is necessary to receive a given grade, I will determine what is the minimum score necessary to receive an "A" and what score is the minimum "C". If everyone performs exceptionally well, I will be happy to the draw the A line in a position such that everyone will receive an A. At the other extreme, if the performance of all individuals is very poor I will draw the lines in a way that reflects this. Your grades are, therefore, actually determined by my judgment of your performance.

In order for the scaling technique to be in agreement with the 90, 80, 70, 60 grading criteria given above, I make two boundary conditions. The lowest A must scale to a 90 and the lowest C must scale to a 70. My scaling technique is linear and as such is based on the equation for a straight line ($y = mx + b$). In this case the equation is:

$$\text{ScaledScore} = (m * \text{RawScore}) + b$$

where m and b are constants not yet determined. To determine the two scaling constants, I apply the two boundary conditions to yield the following equations:

$$90 = (m * \text{LowestA}) + b$$
$$70 = (m * \text{LowestC}) + b$$

By subtracting the second boundary equation from the first and solving for m, you will see that:

$$m = 20 / (\text{LowestA} - \text{LowestC}).$$

You can then substitute the now known value of m into the first boundary equation to obtain:

$$b = 90 - (m * \text{LowestA}).$$

At this point, your raw score and both m and b are known. Therefore, you can determine your scaled score [ScaledScore = (m * RawScore) + b].

When you take an exam, I will do all this math for you. When I return the exam to you, there will be both a raw score and a scaled score on the exam. **It will be very easy to determine how you did on an exam. Just look at the scaled score and remember the 90, 80, 70, 60 grading criteria.** The raw score is there so you can check to see that I added up your score correctly. I will also announce the values of the Lowest A, Lowest C, m and b, so you can check my math if you like. You should also check the grading of each problem and let me know if you have any questions or grievances.