Course Syllabus Chemistry 355, **Organic Chemistry I**

Credits: 3 **Prerequisite**: C or better in CHM 212 (those registering for a grade without the prerequisite will be assigned a grade of F)
Instructor: Dr. Lawrence Schmitz **Office**: Science 488 **Phone**: 696-2373 **email**: schmitz@marshall.edu
Office Hours: 9:00 – 11:00 MWF
Required Text: T.W Graham Solomons, Craig B. Fryhle and Scott A. Snyder **Organic Chemistry 11th Ed.**, Wiley 2014. Note: This book is available in hard cover, binder ready and e-book versions. Only one of the three versions is required, your choice.
Required: Access to the Sapling Learning online homework system
Highly Recommended: Molecular models
Course Policies: This course will be conducted adhering to university policies. Copies of these policies can be found at: http://www.marshall.edu/academic-affairs/policies/. Attendance at exams is required. Make up exams will only be given for university excused absences as defined in the policy.
Catalog Course Description: Organic Chemistry I. I, II, S. A systematic study of organic chemistry including modern structural theory, spectroscopy, and stereochemistry, application of these topics to the study of reactions and their mechanisms and application to synthesis. 3 lec. (PR: C or better in CHM 212)
Course/Learning Objectives:

a. To become familiar with the vocabulary of organic chemistry.
b. To demonstrate mastery of the fundamental concepts of organic chemistry including the structures, reactions, and identification of organic compounds using spectroscopic and chemical techniques.
c. To be able to use the fundamental concepts to solve problems of a routine nature, and also those problems requiring creativity, ingenuity and critical thinking.

Approximate Lecture and Exam Schedule

Date	Chapter	Topic
Aug. 26, 28, Sept. 2	1	The Basics: Bonding and Molecular Structure
Sept. 4, 9, 11	2	Families of Carbon Compounds: Functional Groups, Intermolecular Forces, and IR Spectroscopy
Sept. 16, 18	3	Acids and Bases: An Introduction to Organic Reactions and Their Mechanisms
Sept. 23	1-3	**EXAM 1**
Sept. 25, 30	4	Nomenclature and Conformations of Alkanes and Cycloalkanes
Oct. 2, 7	5	Stereochemistry
Oct. 14	1-5	**EXAM 2**
Oct. 9, 16	6	Ionic Reactions: Nucleophilic Substitution and Elimination Reactions of Alkyl Halides
Oct. 21, 23	7	Alkenes and Alkynes I: Properties and Synthesis. Elimination Reactions of Alkyl Halides
Oct. 28	1-7	**EXAM 3**
Oct. 30, Nov. 4	8	Alkenes and Alkynes II: Addition Reactions
Nov. 6, 11, 13	9	Nuclear Magnetic Resonance and Mass Spectrometry
Nov. 18	1-9	**EXAM 4**
Nov. 20, Dec. 2	10	Radical Reactions
Dec. 4	1-10	Review
Dec. 6	1-10	**FINAL EXAM (SATURDAY, 10:00 AM)**

Conduct of the Course:

There are four principal tools that you and I will be using to help you learn organic chemistry, your text, web-based homework assignments, in class lectures, and recitation sections for discussion and help. As we come to the beginning of each chapter, two things should be happening; first, you should be reading the chapter and working the imbedded problems, and second, I will try to explain the high points of the chapter by lecturing. Organic chemistry is a large and complex subject. I will not be able to cover everything you need to know in lecture. In the lecture portion of the course, I hope to give you an overview of the material to be learned so that you can fill in the rest by reading, working problems and discussion. You will also be required to do a series of homework assignments. It is my hope, that the reading, lecture and homework will allow us to have meaningful discussions of the material. These discussions may take the form of problem solving sessions or it may take the form of a question and answer period .

Problems - Homework - Sapling Learning:

Working problems is an essential portion of the process of studying organic chemistry. Work all of the problems that are imbedded in the text since these are designed to allow you to test yourself on your understanding of the section(s) just before these problems. Solutions to these problems are included in the text.

In addition, you will be required to complete a series of online homework problems. The answers to these problems will not be made available to you until after you have completed the homework. You will be required to complete these assignments in a timely fashion. When each assignment is posted on the web, a due date will be specified. You may have unlimited attempts to work each assigned problem. You may get help working the problems. However, you must get 75% of the problems correct by the due date of be penalized on the next exam. For each chapter homework not completed on time you will be penalized 40% of a letter grade on the next hour exam. These are serious penalties and failure to do your homework may well result in failing the course. Doing your homework, however, usually results in understanding, and understanding may well allow you to get a high grade in this course.

The online homework will be delivered using software called Sapling Learning. Paying for an access card available from the bookstore separately or bundled with a book or paying online is required to use the system. Here are the instructions from Sapling Learning on how to use the system.

Students:

1. Go to http://saplinglearning.com and click on your country ("US Higher Ed" or "Canada") at the top right.

2a. If you already have a Sapling Learning account, log in and skip to step 3.

2b. If you have Facebook account, you can use it to quickly create a SaplingLearning account. Click “Create an Account”, then “Create my account through Facebook”. You will be prompted to log into Facebook if you aren't already. Choose a username and password, then click “Link Account”. You can then skip to step 3.

2c. Otherwise, click "create account”. Supply the requested information and click "Create my new account". Check your email (and spam filter) for a message from Sapling Learning and click on the link provided in that email.

3. Find your course in the list (you may need to expand the subject and term categories) and click the link.

4. If your course requires a key code, you will be prompted to enter it. Select a payment option and follow the remaining instructions.

5. Work on the Sapling Learning training materials. The activities, videos, and information pages will familiarize you with the Sapling Learning user environment and serve as tutorials for efficiently drawing molecules, stereochemistry, etc. within the Sapling Learning answer modules. These training materials are already accessible in your Sapling Learning course.

Once you have registered and enrolled, you can log in at any time to complete or review your homework assignments. During sign up - and throughout the term - if you have any technical problems or grading issues, send an email to support@saplinglearning.com explaining the issue. The Sapling support team is almost always more able (and faster) to resolve issues than your instructor.

Grading Policies

Lawrence R. Schmitz

There will be four exams and a final in this course. You may earn points towards your grade on these exams. If you failed to successfully complete the assigned homework you can lose points. 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 + [2*(FinalExam)] - LowestExam} / 5.

The "LowestExam" can be one of the hour exams or the final. Note that the final exam will be 1/5 (20%) of your grade if you do poorly on it, but 2/5 (40%) 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 the catalog.** Any other missed an exam will be your "LowestExam".

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

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.