

Syllabus - Chemistry 204 - Spring 2012, CRN 2496, Sec. 201, MWF 10:00 – 10:50

Credit: 3 hours

Prerequisite: Chemistry 203

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Office Hours: M, W, F: 11:00 – 12:00; T, Th: 10:00 – 12:00

Text: Introduction to General, Organic, and Biochemistry, 9th ed., Hein, Pattison, Arena, and Best. This book is available in hard cover, a binder ready version and as an e-book. Any of these versions will work. For a course smart electronic version see: <http://www.coursesmart.com/introduction-to-general-organic-and-biochemistry/hein-morris-mount-san-antonio-college-pattison/dp/9780470239650>

APPROXIMATE LECTURE AND EXAM SCHEDULE

<u>Date</u>	<u>Chapter</u>	<u>Topic</u>
Jan. 9	-	Course Policies and Introduction
Jan. 11, 13, 18	19	Organic Chemistry: Saturated Hydrocarbons
Jan. 20, 23, 25	20	Unsaturated Hydrocarbons
Jan. 30	19- 20	Exam 1
Jan. 27, Feb. 1	21	Polymers: Macromolecules
Feb. 3, 6, 8	22	Alcohols, Ethers, Phenols and Thiols
Feb. 10, 13, 15	23	Aldehydes and Ketones
Feb. 20	19 - 23	Exam 2
Feb. 17, 22, 24	24	Carboxylic Acids and Esters
Feb. 27, 29, March 2	25	Amides and Amines: Organic Nitrogen Compounds
March 5, 7, 9	26	Stereoisomerism
March 12	19 - 26	Exam 3
March 14, 16, 26	27	Carbohydrates
March 28, 30 April 2	28	Lipids
April 6	19 - 28	Exam 4
April 9, 11, 13	29	Amino Acids, Polypeptides, and Proteins
April 18	19- 29	Exam 5 (first half)
April 16, 18, 20, 23	31	Nucleic Acids, and Heredity
April 25	19-29, 31	Exam 5 (second half)
April 27	19-29, 31	Review
April 30 (10:15 – 12:15 a.m.)	10-21, 24	Final Exam (Monday)

Catalog Description: A continuation of chemistry 203 with emphasis on introductory organic and biochemistry.

Course Objectives:

- To become familiar with the vocabulary of organic chemistry and biochemistry.
- To learn the structures, reactions and functions of organic and bio- chemicals.
- To learn the fundamental principles of organic chemistry and biochemistry, and see how they operate in the context of society, medicine and the environment.
- To use the principles of chemistry to solve problems.

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/?page_id=802

Academic dishonesty will not be tolerated. Students engaging in academic dishonesty will be sanctioned as per the university policy.

Attendance at exams is required. Make up exams will only be given for university excused absences as defined in the policy.

Students with disabilities will be accommodated in accordance with university policy.

Problems:

Working problems is an essential part of the process of studying chemistry. You should try and work as many problems as possible. Work the "Practice Exercises" imbedded in the text of each chapter as you read the chapter. In addition, your book has "Paired Exercises" at the end of the chapters. Work at least the Paired Exercises assigned below. Some of the questions on the five hour exams will be selected from the assigned problems.

Practice Exercises To Do

- 19**—1,2,3,4,9,10,12,14,17,18,24,25,30
- 20**—2,4,5,6,9,10,13,14,15,16,19,20,22,24,30,36,40
- 21**—2,8,16
- 22**—1,2,7,8,10,15,16,19,20,21,22,26,28,36,40
- 23**—2,4,5,6,12,15,16,24,27,28,29,30
- 24**—1,2,4,9,10,12,14,16,22,23,24,28,31,32
- 25**—1,2,10,11,12,14,16,19,20,24,26,28
- 26**—5,6,7,8,14,16,18,23,24,26,31,32
- 27**—1,2,10,14,19,20,32,38,40
- 28**—2,10,14,16,18,30,31,32
- 29**—1,2,9,10,13,14,15,16,27,28
- 31**—1,2,5,6,9,10,11,12,21,22

Grading Policies

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:

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

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 by 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:

<u>Exam</u>	<u>%Correct</u>	<u>Grade</u>
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 minus deductions for not completing homework assignments:

<u>Average Scaled Score</u>	<u>Grade</u>
≥ 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 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:

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

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.