Chemistry 120, Spring 2014

Meeting Time	**TTh 10:00-11:40 am**
Location	**Pierce 223**
Instructor	Dr. Annette Neuman
E-mail	annette.neuman@emory.edu
Office	Pierce 202
Office Hours	Mondays 2:30-5 pm, Wednesdays 9:30-11:30 am, Fridays 9:30-11:30 am (drop-in) Or by appointment (e-mail me to set up a time)

Description

All life depends on molecules containing carbon, known as organic compounds. Chemistry 120 is a one-semester survey of organic chemistry designed for non-chemistry majors planning to pursue a career in the health sciences, nursing in particular. In this class, we will examine the attributes of carbon that make it well suited as the backbone of organic molecules.

Oxford College is dedicated to a liberal arts education. The ultimate goal of a liberal arts education is not to provide a collection of knowledge, but rather to teach you how to think and how to learn. The study of science is an integral part of a liberal arts education. The mastery of organic chemistry requires a thorough understanding of fundamental principles and the ability to use those principles to analyze, classify, and predict. The mastery of nursing and other fields makes similar demands. Your success in Chemistry 120 will not only provide you with knowledge about the molecules of life, it will also hone the critical thinking skills that will be invaluable in your career.

Prerequisite

Successful completion of Chemistry 100, Chemistry 141, or AP Chemistry is a prerequisite for this course. A working knowledge of atomic and molecular structure and bonding is crucial to developing an understanding of organic chemistry.

Learning Outcome

The primary goal of this course is to train you to explain biological and health-related topics using the principles of organic chemistry.

Content Knowledge

To succeed in this class, you must master the following topics:

1. acid-base chemistry
2. structure and bonding of organic molecules
3. reactivity of organic molecules
4. classes and functions of biological molecules

Course Materials

Required textbook: *Chemistry: An Introduction to General, Organic, and Biological Chemistry*, 11th edition, by Karen C. Timberlake

Nonprogrammable scientific calculator: Calculators that can download and/or store information, can automatically solve equations, or can be programmed may not under any circumstances be used on an exam. **If you bring such a calculator on exam day, you will not be allowed to use it.**

Bring a notebook and pen or pencil to every class. Also bring your calculator when we are studying acid-base chemistry in the first two weeks of the semester. It is not necessary to bring your textbook.

Required for lab: Carbon-copy lab notebook (you must have this *before* your first lab meeting)
Safety glasses (these may be purchased during the first lab meeting)

Grading

Homework		150 pts
Laboratory		200 pts
In-class exams	3 @ 100 pts	300 pts
Final paper		150 pts
Final presentation		100 pts
Final exam		100 pts
Total		1000 pts

If your final exam score is higher than your lowest in-class exam score, your final exam score will be doubled and your lowest in-class exam score will be dropped. If you miss one of the in-class exams, your final exam score will automatically replace that score.

Your final letter grade will be determined by the usual scale. *There is no automatic rounding or curve to course grades*.

	93		90		87		83		80		77		73		70		67		60	
A		A-		B+		B		B-		C+		C		C-		D+		D		F

In fairness to all students, grades must be based solely on your performance in the course. If you believe I have misgraded an assignment, please bring this to my attention immediately. Otherwise, **under no circumstances will grades be open for negotiation.**

Partial credit will be awarded at my discretion and is not open for negotiation.

Problem Sets

Diligently working problems is one of the major keys to success in chemistry. To this end, you will be assigned to a small group during the first week of class. You must work with your group on each problem set and submit a single copy of your assignment. ***Your submission must reflect the collaboration of all group members***. Ten problem sets will be assigned throughout the semester.

Additional Problems

Suggested problems from the textbook will be posted to the class Blackboard page. You should work these problems on your own or with a study group.

Exams

We will have three in-class exams. These exams will be given during the regularly scheduled class period.

Exam 1	Thursday, February 6	Acid-base chemistry, introduction to organic chemistry
Exam 2	Thursday, March 6	Lipids and carbohydrates
Exam 3	Thursday, April 10	Proteins and nucleic acids

The exams will consist of a series of short-answer questions about chemical structure, reactivity, and biomolecule functions. Make sure that you have a pen or pencil with you for each exam. Also bring an **acceptable** calculator for the first exam. You will not be allowed to use a graphing calculator.

The final exam will be cumulative. It will be administered during the scheduled final exam period, which is Wednesday, April 30, 2 – 5 pm.

Research Projects

In the second half of the semester, each student will choose a topic to research. The topic should connect organic chemistry and the health sciences. Past students have chosen topics such as the neurotransmitter dopamine and the breast cancer drug tamoxifen. I will give more details about this project before spring break.

You should submit a 4-5 page paper on the topic of your choosing during the lab meeting on Wednesday, April 23.

Each student will give a 10-minute presentation to give to the class during the regularly scheduled lab meeting on Wednesday, April 23.

Makeups

Makeup exams are not given after missed exams. In extenuating circumstances, it may be possible for a student to take an exam ahead of time, if I am given at least seven days' notice. Under no circumstances will a makeup exam be given *after* the scheduled time and date of the exam.

Review Sessions

Review sessions will be held one or two days before each exam, at a mutually agreed upon time. These sessions are completely optional and will give you the opportunity to ask me any questions you may have about the current material.

Topics

Unit	Topic	Chapter
1	Acid-Base Chemistry	8
	Introduction to Organic Chemistry	10
2	Alkanes	10
	Alkenes and Alkynes	11
	Alcohols	12
	Carboxylic Acids, Esters, and Phosphate Esters	14
	Lipids	15
3	Aldehydes and Ketones	12
	Stereochemistry	12
	Carbohydrates	13
4	Thiols	12
	Amines and Amides	14
	Amino Acids and Proteins	16
5	Aromaticity	11
	Nucleotides and Nucleic Acids	17
6	Special Topics	Handouts

Expectations

You are expected to behave as a polite adult in our class and lab meetings. Polite adults do not send text messages or play on Facebook during meetings. Therefore, electronics including but not limited to cellular phones, tablets, laptop computers, and mp3 players **may not be used** during class or exam periods. Even if I do not call you out in class, be assured that I can see you texting. ***Using these devices during class or lab meetings may adversely affect your course grade.***

You should minimize your trips to the restroom or other reasons for leaving during class. You may excuse yourself from class if necessary, but this is very distracting and should be kept to a minimum.

You are expected to take responsibility for your own successes and failures. Lame excuses about why you slept through the exam will not get you far in life.

Honor Code

Academic integrity is crucial to the Oxford community. Therefore, as in all courses, you will be expected to adhere to the Oxford College Honor Code. Academic misconduct, as defined in the honor code, will not be tolerated and will be immediately referred to the Honor Council. **Collaboration is not permitted on exams or lab reports.**

Disability Accommodations If you are registered with Access, Disability Services, and Resources (ADSR), please submit documentation letter to me during the first week of the semester so that I can make appropriate accommodations.

Attendance All students are expected to attend all lecture and laboratory sessions. However, I recognize that emergencies can arise that may result in absence from class. You should notify me if an absence is due to illness or other emergency. You are responsible for all material covered in lecture if you are absent.

Besides missing class, these also count as an absence:

1. Being late to class two times. (This means coming in after I've finished checking the class roster.) If you come in late, it is your responsibility to see me immediately after class to ensure that you are marked as being tardy and not absent. No adjustments will be made at a later time.
2. Coming to class more than 15 minutes late.
3. Leaving class early.
4. Going in and out of class.
5. Being inattentive or working on other assignments in class.

You are allowed *two absences* from lecture. If you exceed the two absence limit for *any* reason (legitimate or not), by any combination of absences and tardies, you will:

1. Lose 1 point for the next absence (absence 3)
2. Lose 2 points for the next two absences (absences 4 and 5)
3. Lose 3 points for each additional absence

Note that each point deducted is a percentage point of your final grade. Therefore, excessive absences will have a significant negative impact on your course grade

Chronic absences due to severe illness or other extenuating circumstances are to be handled through the office of the Dean of Academics, at the student's initiative. Only that office can dictate a deviation from course policy.

Blackboard The Chemistry 120 page on Blackboard will be the primary means of communicating outside of class. It will also house supplementary course resources. **Please be sure to check the course page daily.**

Student Work Occasionally I will photocopy assignments that you turn in for inclusion in my teaching portfolio. Furthermore, student work submitted as part of this course may be reviewed by Oxford College and Emory College faculty and staff for the purposes of improving instruction and enhancing Emory education.

Tips for Success:

1. Develop a good attitude. Chemistry can be both fun and interesting if you allow it to be.
2. WORK PROBLEMS! The assigned problem sets are a good place to start, but you should also work lots of problems from the textbook.
3. Manage your time and your life. There are LOTS of extracurricular activities to get involved in at Oxford. None of them are an excuse for poor performance in the classroom. Remember why you are here.
4. Keep two things in mind: one—learn terminology and understand the relevance of that terminology to chemical systems. Second—this course is designed to make you think and not just to have you memorize facts. Memorizing facts is important to establish a basis for your knowledge but is not sufficient for success in Chemistry 120. You must be able to use your knowledge to think logically and analytically. Many of the test questions will require you to apply your knowledge. You should be confident of what you know and what it means.
5. Come to class every day, stay alert, and take good notes.
6. Read the assigned material before each class, read it again after each class, and read it a third time before the exam.
7. Form a study group with a few classmates and work problems together.
8. Use the resources available to you: office hours, review sessions, chemistry tutors, and your classmates are all excellent resources to help you achieve success in this class.
9. The pace of this course is rapid. Stay current with the material and don't get behind.