CHEM 120: Essentials of Organic Chemistry [and Biochemistry]

Lecturer:

Lecture Times:

Location:

Office Hours:

Office:

Email:

Course Description A 3-credit, one-semester course for students not needing a full year of organic chemistry. No attempt will be made to cover the field in depth; however, many of the fundamental aspects of organic chemistry and some introductory biochemistry will be covered. This includes basic concepts such as structure, functional groups, bonding and properties, stereochemistry, reactions, classes of biomolecules, examples of metabolic pathways, and examples of drugs and their relationship to the material being studied. (Pre-requisite: CHEM 100 or equivalent. Recommend reviewing covalent bonding, thermodynamics & kinetics, and acids & bases before the start of the course.)

Textbook Karen C. Timberlake, *General, Organic, and Biological Chemistry- Structures of Life*, 5th ed. (ISBN-13: 978-0-321-96746-6; ISBN-10: 0-321-96746-1). (You may use the 4th edition if you already own it.)

Molecular Models are very helpful with the 3D visualization of molecules. The world is in 3D, including living organisms and the molecules that make them up. Most students find models useful in seeing in 3D the inherently flat structures we draw on paper.

Course Student Learning Outcomes: As a result of this course experience a student should be able to: • Understand how the structure and bonding of compounds determines their chemical properties. • Apply quantitative principles to the solution of chemical problems, e.g. calculations involving dimensional analysis, concentration and dilution, and other kinds of measurement, particularly as applied to nursing situations (particularly reaction stoichiometry). • Predict the bonding and shapes of organic molecules. • Have a useful knowledge of the metric system. • Understand the application of pH and the acid-base system to biological systems. • Comprehend the effect of reaction rates on chemical systems. • Describe intermolecular forces and predict their effects on physical properties of solutions. Know the fundamentals of organic chemistry as applied to biochemistry. • Be aware of lab safety concerns. • Be familiar with basic chemistry lab techniques. ● Name and draw the major organic functional groups (alcohols, thiols, aldehydes, ketones, acids and acid derivatives, amines).

Grade Calculation The final grade for each student will be their percent of the **800 point possible**.

Exams and Final The four hourly exams are worth 100 points each (times 4 = **400 points**) and the 2-hour final exam is worth **200 points**. If it is higher, the final exam score (divided by 2, of course) replaces the lowest hourly exam grade. All exams are cumulative. This is partly the nature of the material, but some questions from previous exams *will be repeated* on all exams. All exams are returned ASAP to allow you to learn from your mistakes. Any challenges regarding posted exam grades must be done within one week. If a grading mistake is discovered after the exam has been returned to you, your grade may increase but will *not* decrease. Make-up exams are generally not allowed, and your final will substitute for the missing score. If you miss 2 exams, please make an appointment with me immediately to discuss your situation.

Any exam will have scores adjusted as needed using a power function: (points earned/total points possible)^X times 100 for a regular exam or 200 for the final, where $X < 1$. E.g., if 90 points are earned out of 125 points, and the adjustment used, X, is 0.7, the points for a regular exam would be $(90/125)^{0.7} \times 100 = (0.72)^{0.7} \times 100 = 79.5$ points.

An iClicker is Required, as their use constitutes **50 points** of the final grade. You will need to purchase one in the Hunter Bookstore, online, from another student, etc., unless you already have one from a previous class. You must register your iClicker at http//www.iClicker.com/dnn/Support/RegisterYouriClicker/ abid/174/Default.aspx. Please register with your Hunter official first and last name *and* your Hunter College Blackboard (Bb) number so I can sync your iClicker with the class roster.
TO FIND YOUR Bb NUMBER log in to the Bb home page (not the class page) and, under tools, on the left side, you will see your personal information. Click on that, then click edit personal information and on that page you will see your username and your 20 digit number; that's the number you need to copy and paste into your iClicker registration.
Whoever gets the highest iClicker total for the semester will earn 50 points toward their final grade, and the rest will be adjusted according to: Points = (50 points)(Your iClicker total)/(Highest iClicker total in class).

Sapling Homework (online) is worth 150 points! The maximum grade without the Sapling HW is 81% IF you can manage to get 100% on all exams, so take it seriously. However, you should not do it just to earn points, you should do it to learn as much as possible, so do it with an active mind. Ask yourself why the answer is as it is, how is this related to other things you know, etc. Sapling can save you in this class, both because of what you can learn and the points you can earn. (A 75% exam average can be raised to 80%, or a 61% to 70%, by a reasonably attainable 95% Sapling grade.)
You must purchase access through the website, www.saplinglearning.com (cost ~$40.00, I think). You will be asked to create a user profile, select the school and course, and then purchase the access code. This will automatically enroll you in the Sapling Learning homework site for the semester. Please use your official Hunter name to register.

Extra Credit (**25 points**) The only extra credit that will be accepted is a homework portfolio for the entire semester containing the optional homework I'll be assigning once a week. It will consist of questions from the book, as well as additional questions that I add. An answer key will be posted the following week. You must put a header on every page that includes the assignment number and answer each question as well as you can. The work must be well organized, well labeled, and easily legible. When the answer key is issued, you must self-correct the homework with a different color ink/pencil so that I can see you mistakes and corrections. **You must do this assignment regularly as we go – doing it all at once at the end of the semester is a really bad idea, and, if I suspect you did so, you will get little if any credit.** *Copying the answer key and submitting the answer as your own is plagiarism, and I reserve the right to treat it as such!*
I will grade the portfolio based on completeness and the accuracy of your self-graded version. Mistakes made in your initial answers will not count against you. If I get the impression you wrote out an assignment only after the answer key appeared, you will not be given credit for that portion of the assignment or even the whole portfolio, depending on how flagrant the violation.
I will not be grading the entire portfolio for the obvious practical considerations (400 students x 10 minutes each to grade would be 67 hours of grading!). In no case should you make this a fancy presentation; a simple cover page with the class name, your name, and "Homework Portfolio" will do. ABSOLUTELY NO binders or folders should be used - just staple everything together, or use a binder clip (no traditional paper clips, please). (A small 2 oz. binder times 400 students is an extra 50 lbs. for me to take home with me!) The 25 points may not seem like much, but it could easily make the difference between a C+ and a B-. This optional assignment is due on the last regular day of class.

Academic Dishonesty If any form of academic dishonesty is found, involved student(s) will be automatically given an F with a note stating "Failed, due to academic dishonesty" on their transcripts. Also, involved student(s) will be subjected to disciplinary actions according to the Hunter College guidelines. Note that allowing a fellow student to copy your work is as much academic dishonesty as it is to do the copying.

An Incomplete Grade (IN) is given if a student has a reasonable chance of passing the course but cannot complete it because of a valid reason. In order to be considered for the IN grade, students need to present verifiable proof.

Policy on CR/NC grade The CR/NC request will not be accepted once the final exam starts. It must be submitted to the instructor on the day of the final exam.

SUGGESTIONS FOR STUDYING ORGANIC CHEMISTRY

1. Read the material in the book before the lecture. Knowing what to expect in class based on the practice problems in each chapter you worked out ahead of time means you can take fewer notes and spend more time listening and thinking during the lecture. WHEN I WRITE AN EXAM I ASSUME THAT ALL STUDENTS CAN DO PROBLEMS SIMILAR TO THOSE WITHIN THE CHAPTERS COVERED.

2. Look through the PowerPoint slides before lecture. These will be made available via Bb prior to each lecture, and printing them will allow you to take fewer notes and spend more of the lecture time thinking about the material.

3. After the lecture, review the slides and your notes and reread the chapter in earnest. Do the homework for the material covered ASAP.

4. If you are confused about something, get help ASAP (visit your instructor during office hours, consult a tutor, ask a fellow student, etc.) and certainly before you fall behind. Catching up is a huge challenge, especially in a cumulative class like this is! Bring your attempted solutions to problems with you to show your instructor where you are having trouble.

5. Studying for the first exam, as well as the final for the semester, starts the first day of class. To review for the exam, use the PowerPoint slides, the textbook, your notes, *and* the corresponding problems you worked out for each section. Each section in the chapters conveys a concept; make sure that every section is clear to you.

6. TAKE CARE OF YOURSELF - Live a balanced, disciplined life. Eat healthy, get regular exercise, and get plenty of regular sleep. Also, taking a little time each day just for yourself, whenever possible, will help you deal with the stresses in your life.

COURSE SCHEDULE (Subject to change)

1		Lesson 1	Chapter 12	What is Orgo, bonding, hydrocarbons + functional groups
2		Lesson 2		
3		Lesson 3		
4		Lesson 4	Chapter 13	Alcohols, Phenols, Thiols, Ethers
5		Lesson 5		
6		**Exam 1**	**Chapters 12 - 13 + functional groups**	
7		Lesson 6	Chapter 14	Aldehydes, Ketones, Chirality
8		Lesson 7		
9		Lesson 8	Chapter 15	Carbohydrates
10		Lesson 9		
11		Lesson 10	Review Chap 11	Acids and Bases
12		Lesson 11	Chapter 16	Carboxylic Acids and Esters (+ anhydrides)
13		Lesson 12		
14		**Exam 2**	**Chapter 11-16, but emphasis on Chapters 11, 14 - 16**	
15		Lesson 13	Chapter 17	Lipids
16		Lesson 14		
17		Lesson 15	Chapter 18	Amines and Amides
18		Lesson 16		
19		Lesson 17	Chapter 19	Amino Acids and Proteins
20		Lesson 18		
21		**Exam 3**	**Chapters 11-19, but emphasis on Chapters 17 - 19**	
22		Lesson 19	Review Chap 10	Kinetics and Thermodynamics
23		Lesson 20	Chapter 20 (in part)	Enzymes (not Vitamins)

24		Lesson 21	Chapter 21 (added)	DNA (basics) and DNA Anticancer Drugs
25		Lesson 22	Chapter 22 (in part)	Glycolysis
26		Lesson 23	Chapter 24 (in part)	Fatty Acid Metabolism
27		**Exam 4**	**Chapters 10-24, but emphasis on Chapters 10, 20-22, 24**	
28		**Semester Review**		*Optional homework portfolio due*
29		**Final @ 11:30-1:30**	**Chapters 10-24; emphasis on major themes**	