Chm 123 - Introduction to Organic Chemistry
Fall 2013 – TTh 11:00am to 12:15pm – Salem 10

Chm 123L – Organic Chemistry Laboratory
Fall 2013 – M 2:00 to 6:00 pm – Salem 8

Recitation – Wednesday 6:30pm (tentative)

Instructor: Dr. Paul B. Jones

Office: 115-A Salem Hall (758-3708)

Office Hours: T 2-3pm, W 10-11am, or by appointment. Drop-ins welcome but I may be busy.

E-mail: jonespb@wfu.edu; ***please use for routine communication.***

Review Session: W 6:30 pm- (tentative)

Required Text: Joel Karty, Organic Chemistry Principles and Mechanisms, Volume 1. ISBN 978-0-393-93635-3

A chemistry model kit is not required but highly recommended. Also recommended is this short text on organic chemistry: "The Nuts and Bolts of Organic Chemistry, A Student's Guide to Success" by Joel Karty, ISBN 0-8053-3117-4.

You must be enrolled in both Chm 123 and Chm 123L concurrently.

Grading Scheme:

Online Quiz	TBA	150
Nomenclature worksheet	October 4	50
Mechanism worksheet	November 8	50
Spectroscopy worksheet	December 6	50
Exam 1	TBA	90
Exam 2	TBA	100
Exam 3	TBA	110
Final Exam (Cumulative)	as per University schedule	400
Total		**1000**

Graded Assignments

Online quizzes will be given routinely on new subject matter. The lowest two scores will be dropped. Many additional problems will be suggested but neither collected nor graded.

Three worksheets will be collected over the course of the semester. These are due in class on the indicated dates. No late work will be accepted.

There will be three exams. You may not make these exams up. If one is missed with an official excused absence (see below), that grade will be replaced with either your average on the two

other in class exams or your percentage score on the final exam, whichever is higher. The dates of these exams will be announced at least one calendar week ahead of time.

The final exam is cumulative, covering material over the whole of the semester. The final exam is worth 400 points (40% of your class grade). Because the final exam is cumulative, it is important to really learn the material along the way (rather than cramming) as you are unlikely to have enough time to cram the entire course in the days before the final. The final exam will be given at the date and time specified by the university.

Assignment of Final Grades

Letter grades will be assigned according to a scale generated at the end of the semester. The *minimum* score required for the grades shown:

A- 900 points
B- 800 points
C- 700 points
D- 600 points

Smaller breakdowns (e.g. A/A-) will be decided by the natural breaks in grade distribution and will not be announced prior to the assignment of the final grade, nor will these distinctions be made at mid-term. Grade cutoffs may be adjusted lower at the discretion of the professor. They will not be adjusted higher (that is, if you get 900 points, you'll get at least an A- no matter what else happens in the class).

Cell Phones

Cell phones and other electronic communications devices are not permitted in the lecture. Ringing cell phones may be confiscated for the duration of the semester. Any other type of electronic device capable of sending or receiving signals is prohibited during class. Penalties range from deduction of points from overall grade or dropping said device in a 2:1 mixture of nitric and sulfuric acids.

Excused Absences

If you have a valid excuse (illness with a doctor's note, death in the family, or university travel, for example) for missing an exam, the missing score will be replaced by either the average of the other two midterm exams or the percentage score on the final, whichever is higher. *If you will miss an exam due to scheduled university travel, you must contact me PRIOR to the absence.* If you miss an exam due to illness, you must provide documentation, in the form of a note from the doctor/PA/nurse that you were unable to attend.

Class attendance is strongly encouraged. However, the responsibility for attending and learning class material is yours. Therefore, no points for attendance alone will be awarded and rolls will not be called.

Honor Code

You are required to abide by the Wake Forest University Honor Code. All graded work should be your own. Violations of the Honor Code will be prosecuted as vigorously as possible.

Recitation Session
A weekly recitation session will (usually) be held. While you are not required to attend this session, it will provide additional opportunity for you to ask questions regarding concepts, problems, etc. Generally, the session will be organized with a quick chemical demonstration related to the topics of the moment, followed by a brief recitation followed by Q&A. Although not mandatory, Dr. Jones considers this session very important for your success in the class.

Comments Regarding Success in Organic Chemistry:
Many of you may have heard horror stories regarding this class. Along with physical chemistry (PChem), organic chemistry enjoys an undeserved reputation as an unusually difficult class. Along with this reputation goes conventional wisdom that the class requires superhuman feats of memorization. The two myths are not unrelated. If you approach this class as a test of memorization you will probably fail; you will certainly be miserable. The way to learn organic chemistry is to study the material frequently. Read the assignments, work the problems, THINK about what you're doing. Go slowly but steadily. Work some on the subject each day. Challenge yourself and your study partners about WHY the correct answers are the correct answers. It isn't because the book says so, it is because nature works that way and we can find evidence for the explanations provided in lecture and in the text. Furthermore, this course builds upon itself. If at any point you fall behind you will have a hard time catching up. I will give lectures, answer questions, and be available to you but the responsibility for working the problems is yours. Take advantage of the resources available (book, TAs, chem. clinic, me) but keep up. Do not attempt to cram before tests by memorizing facts. You may get away with it once or even twice but in the end you won't be able to succeed.

In short, keep your head up and have faith in yourself. This is primarily a course about problem solving. Treat it as such, work hard and you'll do fine.

What you should know already and the nature of this course:
You must either have AP chemistry credit for Chm 111 or have passed the placement exam given by the Department of Chemistry (or passed Chm 111). My interpretation of any of these possibilities is that you have a working understanding of the principles of general chemistry, especially regarding chemical bonding and structure and how this affects the physical properties of molecules. Chapter 1 is essentially a review of these topics with a focus on organic molecules. Chapter 1 will be covered very lightly in class. More to the point, it will be very difficult to learn the material in organic chemistry without a solid understanding of the concepts outlined in Chapter 1 and CHM 111. You should also review thermodynamics and kinetics – these topics will be referenced along the way.

You should spend time ahead of class reviewing Chapter 1 to be sure you understand the concepts presented there. I will be happy to meet with you to answer any questions you may have about this material. If you're reading this before lectures begin, have a read of Chapter 1 NOW. Reading ahead in the text is encouraged and will help you understand the depth of the lectures.

The final exam is cumulative. Moreover, each new section will build on the principles learned in general chemistry and preceding sections. Therefore, each assignment is, in a sense, cumulative. For example, you will learn in chapter 3 that cyclohexane prefers to exist in what is called the "chair" conformation. This will be covered on exam 1. Later, you will learn about elimination reactions. Certain cyclohexanes participate in elimination reactions and their conformation can have profound effects on the outcome of the reaction. It is necessary to understand the conformational equilibria of cyclohexanes to fully understand how these molecules react in elimination reactions. From a short-term, self-interest point of view, if you answer a question in exam 2 about an elimination question and miss the conformational element of the question you will receive a penalty. Not to beat a dead horse, but everything you learn in Chm 122 will be important in Chm 223 (and don't even get me started on biochemistry).

Again, the best approach to this course is not to try to memorize everything but rather to learn the principles, along with memorizing important terms, so that when you encounter a problem you haven't encountered before, you can reason your way through it.

Contacting and conversing with Prof. Jones: I will hold office hours, during which time I will always be available. These hours are listed above and are "hard" hours. Unless you hear different, I'll be there and will drop what I'm doing should you arrive. Or you can make an appointment by either emailing or talking to me before/after class. In addition, you can stop by the office (115A) anytime but I reserve the right to be busy (the most likely result of that is that you can make an appointment.) or to not be in the office (email is the best bet then). Do not call me at home, even if you find my number. Do not call my cell phone. You probably can't find me on any type of IM service. If I'm available, my email and work voicemail are being monitored. I encourage you to see me as much as you need.

Special Needs: If you have a disability that may require an accommodation for taking this course, then please contact the Learning Assistance Center (758-5929) within the first two weeks of the semester.

Some relevant, and not so relevant, quotes:

"Tyranny, like hell, is not easily conquered; yet we have this consolation with us, that the harder the conflict, the more glorious the triumph." *Thomas Paine.*

"It became clear to me that you couldn't possibly navigate through life properly without an understanding of chemistry because basically we are all practicing chemists. We brew coffee, we cook, we paint, we wash, we eat, we have sex. We are constantly chemically challenged. We have to make decisions about which toothpaste, which shampoo, which detergent, and which vitamin supplement to use. We are obliged, therefore, not to fear chemicals but to learn about them." *From Radar, Hula Hoops, and Playful Pigs, by Joe Schwarz.*

"There is no such thing as chemistry for medical students! Chemistry is chemistry!" *Alfred Werner.*

"…I can teach you how to bewitch the mind and ensnare the senses; I can tell you how to brew glory, bottle fame, and even put a stopper in death." – *Severus Snape.*

"You took four semesters of Chemistry and you can recite the periodic table of elements in alphabetical order, but what is valuable is that now you can look at the physical world around you and know what it's made of, and what you can do to help preserve its beauty." - *Cambra Overend, from 2004 WFU student address at Commencement awards ceremony*.

"It is disconcerting to reflect on the number of students we have flunked in chemistry for not knowing what we later found to be untrue." - *quoted in Robert L. Weber, Science With a Smile (1992)*

"Organic chemistry is the chemistry of carbon compounds. Biochemistry is the study of carbon compounds that crawl." - *Mike Adams.*

"None shall pass!" – *The Black Knight*

"That's why people that have an education, you know, that's why they spend time in art museums, or reading good literature or listening to good music. Because it affects the body's chemistry in such a way that it produces a very mellow high that you can never reproduce with any kind of drugs." - *Tommy Chong*

"It is not possible for me to purchase intellectual peace at the price of intellectual death." *John Tyndall.*

This class will, at times, appear to the beginning chemistry student random and esoteric but that student is best advised to remember that everything they are learning has very real significance in the world outside the classroom. Why else study the subject?

Lesson #1 of organic chemistry: The number of bonds made to carbon in a stable molecule shall be four and four shall be the number of bonds to carbon in a stable molecule. You shall not draw carbon with three bonds excepting that it be in a molecule that proceeds to react to give a molecule in which the carbon has four bonds. Five bonds is right out.