

# Syllabus for Chemistry 328N

Organic Chemistry for Chemical Engineers  
Spring 2016 - 50335

T-Th 12:30 - 2:00 p.m. WEL 2.246

**Professor:** C. Grant Willson

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**Office Hours:** Tue 2:15 – 3:15 p.m. and Wed 10:00-11:00 a.m. in WEL 5.240

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## Teaching Assistants:

Mr. Michael Maher

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## Office Hours with TAs

Monday 11 AM -12 PM  
*Welch 5.330*

Monday 3:00-4:00 PM  
*Welch 5.330*

Thursday 10:00-11:00 AM  
*Welch 5.330*

Tuesdays 11 AM-12 PM  
*WEL 5.330*

Wednesdays 2-3 PM  
*Welch 5.330*

Friday 1:00-2:00 PM  
*NHB 5.510*

**Required Text:** **Organic Chemistry**, Brown, Iverson, Anslyn and Foote. Publisher: CENGAGE, ISBN: 13: 978-1-133-95284-8. Edition: 7<sup>TH</sup> Copyright Year: 2014. **Strongly Recommended:** “Study Guide and Solutions Manual Iverson and Iverson. Publisher: CENGAGE ISBN:13: 978-1-285-05261-8 Edition: 7<sup>TH</sup> Copyright Year: 2014.

**Course Prerequisites:** The prerequisite for this course is credit for or concurrent registration in Chemistry 118L or 128L; and the following coursework with a grade of at least C- in each: Chemistry 318M or 328M, and 118K or 128K. Questions regarding the laboratory should be directed to Mr. Jordan Johnson in The Lower Division Chemistry Office, WEL 2.212.

**Course Office:** All business involving registration, adds/drops etc. for both the lecture and the laboratory will be handled during the first two weeks of the semester by Mr. Jordan Johnson in the Lower Division Chemistry Office, WEL 2.212. A limited number of the course materials, including this syllabus and any handouts for this course will be available in WEL 2.212 or in my office WEL 5.240.

**Homework:** Homework will be assigned on Tuesday of each week and is due the following Monday by 5 p.m. Please deposit your homework in the appropriately marked slot in the box outside the Chemistry Undergraduate Office at WEL 2.212. Homework will be returned on Tuesdays, the week after it is due and may be picked up from the rack between WEL 2.246 and 2.250. This rack is not private, so I ask that you *never include your student ID number* on your papers and that you sign the attached authorization to return your homework in this manner. If you choose not to authorize this process, you are expected to provide us with self-addressed

stamped envelopes and we will return the homework to you by US mail. Your paper should be neat and clearly marked with your name and the due date of the assignment. Only three or four of the assigned problems will be graded from each assignment. The maximum score is 10 points. The homework score will constitute 20% of your grade. Many of the exam questions will closely resemble the homework problems and as an added incentive, at least one problem on each exam will be “lifted” directly from the homework assignments. These assignments are an important part of the teaching process. ***Do not get behind.*** Those who work the problems and understand them are those most likely to earn high grades in this course.

**Lectures:** This is a lecture course. The book serves as supplemental material and homework problems will be assigned from the book. We will not follow the book outline exactly. We will cover topics that are not covered in the book and there are things in the book that we will not have time to study. From time to time I will assign supplemental homework problems during lecture. This is done to emphasize points that come up in discussion and to encourage attendance. I expect you to attend every lecture.

**How to Master Organic Chemistry:** The purpose of this course is to provide a solid introduction to organic chemistry. Organic chemistry is a fascinating and important subject and the basis for many other disciplines including polymer science, biochemistry, etc. The success of the global chemical and pharmaceutical industry depends upon knowledge of organic chemistry. Most chemical engineers spend their entire careers working on some aspect of organic chemistry. Upon completion of this course, you will be able to design new materials and propose methods for synthesizing these materials from simple starting materials. Organic chemistry is a demanding course. It is necessary to devote sufficient time to the course to insure that you ***do not fall behind.*** Attend all of the classes, do all of the assignments and make certain that when you do not understand something, you get help from me or from the teaching assistants immediately.

Organic Chemistry is a pretty “tough” subject for many students, and many enter the course with the preconceived notion that it is “hard” and “requires memorization.” It is my job to show you that organic chemistry is very interesting and that is above all fun. However, there is an aspect of organic chemistry that does demand some memorization. There is, for example, no logical way to derive the name for benzene, sucrose or acetone from knowledge of the structure alone. You must simply memorize some aspects of nomenclature. This is true of all fields. Words like integrate, mitochondrion, inductance, arc tangent, zeolite and Young’s Modulus mean something only to those who have studied the fields in which these esoteric terms are used to facilitate communication. The same is true for organic chemistry, which has its own esoteric nomenclature and symbolism. You have developed efficient ways to store this kind of information in memory and access it or you would not have reached this stage in your education. You simply need to apply the same techniques that you have used successfully to learn (memorize) vocabulary in other fields to this new area. Repetition is the key to success in this endeavor. My most efficient technique involves self made flash cards, but yours may involve lists, mnemonic devices or....any number of other tricks. However, please recognize that the most important aspects of this course involve development of an understanding of some fundamental principles and the ability to use these principles to predict the properties of molecules and the results of reactions between molecules. It is dangerous to get caught in the trap of trying to simply memorize everything. The more you understand, the less you must memorize.

I hope you will believe me when I tell you that you cannot “cram” for this course. I can assure you on the basis of many years of experience in taking and teaching these classes that the “cram before the test” study technique really does not work for this class, no matter how bright you might be. Success requires keeping up on a lecture by lecture basis. ***Do not get behind!*** My goal is for each of you to be very successful in this class. To help me achieve my goal, please consider adopting the following list of activities:

1. Keep two notebooks. Each evening after the lecture, recopy your lecture notes from the book in which you take notes in class into the book you keep at home. The fact that I provide copies of the power point presentations used in the lectures will tempt you not to take notes. Do not succumb to this temptation. The handouts are a supplement to your notes. Outline or highlight the important points and principles from the lecture and make a list of any new vocabulary words that need to be memorized.
2. Do the homework. Try to work the assignment first without consulting the study guide. Rework the problems that give you difficulty and get help immediately if you get stuck. It is best to work the homework problems alone and on your own, because only then can you be certain that you have all of the tools necessary to solve such problems. I do not consider it dishonest to work the problems together; I simply do not think that doing it in groups is in your best interest.
3. Make a friend in the class and do some extra studying together. Make up practice problems and practice tests for each other and grade them together. This is a surprisingly valuable study technique.
4. Ask questions. If you do not understand something, ask a question and we will all do our very best to provide an answer and to help you understand. We want to help you and we enjoy helping you. Please take advantage of my office hours and those of Mr. McCarty, Mr. Cassidy and Mr. Todd. There is no such thing as a stupid question. The only questions I will not try to answer are “Do we have to know this?” and “Will this be on the test?” The answer to these questions will always be “yes!”
5. Attend every lecture. ***Do not get behind!***

**Mid-term Exams:** Three mid-term exams will be given during the course of the semester. The exams will be given during the evening. I recognize that evening exams are an inconvenience for some. If you have an exam date conflict, let me know *immediately*, during the first week of the course. The mid-term exams are written for one hour duration but you will be given two hours to complete the exams. The goal here is to determine how much you know, not how fast you can write. The mid-term exams are scheduled from 7 p.m. to 9 p.m. on the following dates in the building and room indicated:

<b>Wednesday</b>	<b>February 17<sup>th</sup></b>	<b>WEL 3.502</b>
<b>Wednesday</b>	<b>March 30<sup>th</sup></b>	<b>WEL 3.502</b>
<b>Wednesday</b>	<b>May 4<sup>th</sup></b>	<b>WEL 1.316</b>

These exams represent 40% of your grade. One exam can be missed with no penalty at all. If you take all three exams, we will drop your lowest grade. There will be no “make-up” exams. If you miss a mid-term exam, the two exams that you do take will both be counted. You must bring your UT photo ID to the exams and you must be on time. No one will be admitted to the exam room after 7 PM. No calculators, books, or notes are allowed unless specifically stated. A periodic table will be provided. Requests for “regrading” the exams must be made within one week after the exam is returned. Please use the regrade forms available in WEL 2.212.

**Final Exam:** The final exam will be held on Friday, May 13, 9:00-12:00 noon in a room to be announced. The final exam represents 40% of your course grade. The exam will be comprehensive in coverage. There will be no regrades on the final. Make up exams can be scheduled only for medical reasons or for unavoidable university sponsored conflicts such as athletic participation. A written excuse must be delivered and arrangements made for a makeup exam PRIOR to the scheduled final exam date.

**Grades:** The grades from your two best mid-term exams, the homework grade, and the final exam will determine your final course grade. The mid-term exams represent 40% (20% each) of your grade. The homework represents 20% of the course grade and the final exam represents 40% of the grade. The raw scores that you earn on the exams will be converted to Standard T-scores. Using T-scores removes bias in favor of the tests with the highest standard deviation. It represents the fairest way I know of to “grade on a curve”. This statistical approach is used in grading nearly all national exams such as the MCAT, SAT, GRE, etc. Your exam will be returned with a raw score and a T-score so that you will know exactly where you stand after each exam. The average of your T-scores will be used to determine the course grade according to the following conversion table:

$$T = \left[ \frac{(x - \bar{x})}{s} \times 10 \right] + 77$$

$x$  = raw score

$s$  = standard deviation

$\bar{x}$  = average of test scores

$$T \geq 90 = A$$

$$89 \geq T \geq 80 = B$$

$$79 \geq T \geq 70 = C$$

$$69 \geq T \geq 60 = D$$

$$59 \geq T \geq 50 = F$$

*The University of Texas at Austin provides, upon request, appropriate academic adjustments for qualified students with disabilities. For more information, contact Services for Students with Disabilities Office at 512-471-6252 or Videophone 512-410-6644.*