

**CHEM 4346: Advanced Organic Chemistry**  
**Spring 2009 Syllabus**  
**The University of Texas at Tyler**  
**Department of Chemistry**  
**Dr. Neil Gray**

## Instructor Contact Information and Office Hours

### Instructor Contact Information

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 Research Lab: RBS 3034

### Course Website

Note: Additional information, including the tentative course schedule can be found at the course blackboard website located at:

[ccs.uttyler.edu/blackboard/](http://ccs.uttyler.edu/blackboard/)

### Regarding Prerequisites

**Prerequisites:** CHEM 3344/3145 and CHEM 3354/3155

I can't stress enough how vital your organic chemistry preparation will be to your study of advanced organic chemistry. Specifically those fundamental topics like stereochemistry, conformations, and mechanism fundamentals usually covered in Organic I.

### Office Hours

In general it has been my policy to be available for help anytime I am at the University. I suggest that if you require extended help outside my normal office hours that you schedule an appointment.

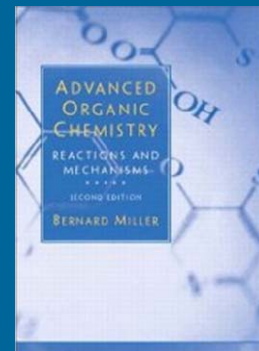
MWF 10:00-11:00

TR 11:00-12:00

### Course Description

The study of advanced organic structure, synthesis, and reaction mechanisms. Exploring the role of complementary models in the understanding and practice of organic chemistry will be emphasized.

I do not expect you to remember everything from organic chemistry on day 1. I do however expect you to study this course with an organic book nearby and have the ability to look up and understand any deficiencies you may have. For the most part, we will focus on only the new material presented in this course.



### Textbook

**Advanced Organic Chemistry, 2nd**  
 Bernard Miller  
 978-0130655882

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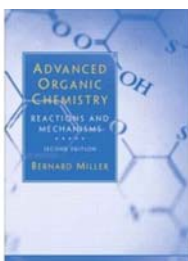
**“This course is organized to discourage the student from relying only memorization”**

## Course Overview

This course is intended to be a bridge for you to graduate school or a career in chemistry. You are about to cross an invisible boundary from being *student* to being *chemist*. People will expect you to be the expert. As in many things in life, true learning comes after you complete your degree. If you are a good chemist, you will teach yourself more chemistry in your lifetime than we ever did here at UT Tyler. As such, I have designed this course to be somewhere between the typical undergraduate course and a graduate level course. That means extensive use of the literature and a level of understanding going beyond memorization.

As this course endeavors to keep up with current progress in advanced organic chemistry, the literature is an important component. I will often assign reading from recent and pertinent past literature sources. Some of these papers I will provide for you, while others I will require you to obtain. Be aware that these reading assignments are every bit as important as those from your textbook. I will sometimes make literature assignments that will count as homework grades to encourage you to independently pursue one of the most important but often neglected duties of a “good” chemist, to read the current literature.

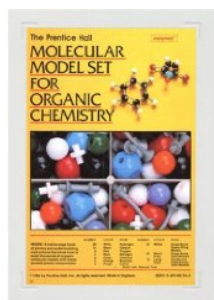
## Textbook and Other Materials



### Text Book (Required)      Highly Recommended

- Bernard Miller      *Prentice Hall Molecular Model Set*, by
- Advanced Organic      Prentice Hall © 1998,
- Chemistry (2nd      ISBN: 0205081363
- Edition)
- 978-0130655882

## Molecular Model Kit



A set of molecular models will be very useful in helping you to visualize structures, but are not required. These can be obtained from the University Bookstore. Molecular models will not be allowed during exams or quiz-

zes. Although molecular models are not required, they are **strongly** recommended. NOTE: Any Organic Molecular Model Set will do. See the following link for a suggested style.

## Student Learning Outcomes and Topics

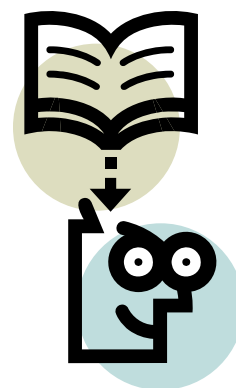
By the end of the course students should be able to:

1. Understand and describe the theoretical basis for the reaction mechanisms of pericyclic reactions, including electrocyclic, cycloaddition, cycloreversions, and sigmatropic processes.
2. Predict and correctly draw reaction mechanisms for pericyclic reactions.
3. Use Molecular Orbital Theory and Valence Bond Theory to predict the outcome of advanced organic reactions.
4. Predict and describe mechanisms involving migrations to electron deficient centers.
5. Predict and describe reactions of carbene, carbenoid, and nitrene reactive intermediates.

### Selected Topics

We will cover selected topics from those listed below. The nature of this course is such that the selection of topics varied from year to year and will depend on current trends in the literature and student interest.

1. Introduction.
2. Electrocyclic Reactions.
3. Cycloaddition and Cycloreversion Reactions.
4. Sigmatropic Reactions.  
Linear Free-Energy Relationships.
5. Migrations to Electron-Deficient Centers.
6. Neighboring Group Effects and "Nonclassical" Cations.
7. Rearrangements of Carbanions and Free Radicals.
8. Carbenes, Carbenoids, and Nitrenes.



## Blackboard Learning System

The course website will be hosted on UT Tyler's Blackboard (Release 6) server. This site will contain a significant amount of information that will help you in this course, in addition to being one method through which you can check your current grade. Access to blackboard is required for this course. This access is free and easy to initialize. To enroll in this course's website on blackboard you will

need a course access code. This code is NOT your login password, but a special code that will allow you access to a specific course on blackboard.

Our access code = **buckyball**

Do not share this code with anyone. Once you have logged into blackboard, you will use this code to enroll.



**Blackboard will be a critical part of the course, so register soon and visit the site often.**

## Blackboard Cont.

If you have used the UT Tyler Blackboard server in the past, you will still be able to “Login” to the Blackboard server using the same “USERNAME” AND “PASSWORD” you have used in the past.

If you are new to the UT Tyler Blackboard server you will use the following instructions to “Login” to the Blackboard server.

1. Go to [www.blackboard.uttyler.edu](http://www.blackboard.uttyler.edu)
2. Click the “Login” button
3. Enter your “USERNAME”
4. (Your “USERNAME” is a combination of your first name, your middle initial and your last name as you gave them during registration. You can not use apostrophes, accent marks, underscores, or any type of punctuation except a hyphen. You also can not use Jr., III or other similar endings. An example of a “USERNAME” might be johnpsmith.)
5. Enter your “PASSWORD”
6. (Your password will be the last four digits of your social security number.)
7. Click the “Login” button

This will take you to your personal Blackboard home page. You will see this page

every time you “Login” to the Blackboard server. This is NOT your course; this is just your Blackboard home page.

Your courses, once you have ENROLLED in them, will be listed in the area on your home page titled “My Courses” under the subheading titled “Courses in which you are participating:”.

On this page you will also find areas called “My Announcements”, “My Calendar” and “My Tasks”. These areas may or may not have content as you progress through the semester.

On the left side of your home page you will find a column of “Tools” with the last tool being “Personal Information. You should click on “Personal Information” and “Change Password” to change your password to a more secure password.

If you ever forget your password there is a password recovery link on the Blackboard “Login” screen just below where you would type in your password. Click on the link, “Forgot your password?” and follow the instructions.

## Disability Statement

If you have a disability, including a learning disability, for which you request disability support services/accommodation(s), please contact Ida MacDonald in the Disability Support Services office so that the appropriate arrangements may be made. In accordance with federal law, a student requesting disability support services/accommodation(s)

must provide appropriate documentation of his/her disability to the Disability Support Services counselor. For more information, call or visit the Student Services Center located in the University Center, Room 282. The telephone number is 566-7079 (TDD 565-5579). Additional information may also be obtained at the following UT Tyler Web address: <http://>

## Social Security Statement

It is the policy of The University of Texas at Tyler to protect the confidential nature of social se-

curity numbers. The university has changed its computer programming so that all students have a unique

## Grade Replacement Policy

If you are repeating this course for a grade replacement, you must file an intent to receive grade forgiveness with the registrar by the 12th day of class. Failure to file an intent to use grade forgiveness will result in both the original and repeated

grade being used to calculate your overall grade point average. A student will receive grade forgiveness (grade replacement) for only three (undergraduate student) or two (graduate student) course repeats during his/her career at UT Tyler. (2006-08 Catalog, p. 35)

## Course Grade

Your course grade will be determined as follows.

**Major Exams (3) 75%**  
**Final Exam 25%**

I will not drop or replace any of your grades, so make sure you study hard for each and every test. The final exam will be comprehensive.

**There is no safety net for this course work hard early and throughout the course.**



**No, not that kind!**

## Major Examinations

There will be 3 major exams. Each exam is worth 100 points and they contribute a total of 300 possible points toward your final grade. No exam scores will be dropped. All exams are comprehensive; however, the material covered since the pre-

vious exam will be *strongly* emphasized. Exams will cover material from the text, discussed in the lecture, and any other assigned material. You will be responsible for every part of every chapter covered, whether discussed in class, as as-

signed reading, or in problem sets. Even material that has not been discussed at length in lecture is subject to examination. Any exceptions will be announced in class.

## Final Examination

A mandatory (no makeup allowed), comprehensive final exam will be given and will account for 25% of your final course grade. According

to the final exam schedule our final will be **Friday, May 8, 8:00-10:00 AM.**

## Makeup Examinations

Makeup exams will be given for university excused absences only. See the UT Tyler Undergraduate Academic Policies in the catalog for details on excused absences. I will be very strict on this policy and will not allow makeup exams for any reason that is unexcused or not properly requested according to university policy. All makeup exams must be scheduled and

taken *prior* to the exam date, except in the case of a documented medical emergency or severe illness.

Missing a second exam will require a special meeting between the student and professor to determine an appropriate action. Such an action may include but is not limited to withdrawal.

## Attendance

Class attendance is the responsibility of the student. Class participation is a significant measure of performance, and non-attendance may adversely affect a student's

grade. When a student's absences become excessive, the instructor may recommend that the student initiate a withdrawal.



## Homework

I will regularly assign work to be completed outside of the normal class time. All assignments will be posted on the course website, so check there regularly. Such assignments will include readings from the text and literature, class notes, and handouts, in addition to work-

ing problems using the concepts learned. It is very important that you complete such assignments in a timely manner. The worst thing you could possibly do is get behind. The homework will not be graded, but will serve as your best preparation for exams.

## Regrading Policy

Even though I will be very fair and careful in the grading of your exams, errors in grading are possible. Questions concerning the grading of an exam or quiz should be submitted to me in writing along with the suspect exam within 2 class days after the exam was re-

turned to you. Alternatively you can see me during my office hours (or any other time you find me available) with the suspect exam in hand. All exam scores will be considered final one week after the exam is returned to you.

## LAST DAY TO DROP ANY OR ALL CLASSES

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**March 25, 2009**

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Courses may be dropped online through Campus Connect until 4 p.m. on the last day of online (early) registration. After that time, all drops and/or withdrawals must be completed through the Registrar's Office, either in person, by fax or by mail. Faxed or mailed drop/withdrawal requests must include the students name, student ID number, course(s) to be dropped, date, student's signature, contact phone number and copy of

a photo ID (driver's license, student ID, etc.). Requests should be mailed to UT Tyler Registrar's Office, 3900 University Blvd, Tyler, TX 75799 or faxed to (903)565-5705. Students are advised to meet with their instructor(s) and/or academic advisor prior to dropping any classes. Dropping or withdrawing from classes may affect financial aid eligibility, veteran's benefits, athletic eligibility, or international student status. Students should consult with those departments prior to dropping or withdrawing.

*LAST DAY TO DROP  
ANY OR ALL CLASSES*

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**March 25, 2009**

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## Assignments

I will regularly assign work to be completed outside of the normal class time. All assignments will be posted on the course website, so check there regularly. Such assignments will include readings from the text, class notes, and handouts, in addition to working problems using the concepts learned. It is very important that you complete such assignments in

a timely manner. The worst thing you could possibly do is get behind. Work your homework in a notebook, so that you will have easy access to it when studying and/or seeing me for help. Homework will not be graded, but you should bring it to class with you. I have been known to casually ask a student to see an assignment.

## Regarding Problem Assignments

It is important that you read each assigned section or chapter as we discuss it, or better yet *before* we discuss it. The best way to develop a proper understanding of organic chemistry is to solve problems using concepts discussed in the text and/or in lecture. The text is organized such that examples and problems follow the discussion of a concept or series of similar concepts. I would suggest that you sit down to read with pencil and paper handy and work through each example and problem as you reach them. If you get stumped on a particular problem review the relevant text material and lecture notes and then try it again. Feel free to see me for help during my office hours, or during the help sessions. Work hard on the problem before surrendering to the temptation to look in the study guide.

Simply scanning the answers provided in the study guide will not be enough to earn a passing grade. The best thing you could possibly do to improve your grade is to diligently, and consistently work and rework problems. Although some memorization is necessary in learning organic

chemistry, it is much more important to *understand* the concepts involved and how to apply them. Portions of exams will involve problems that will be difficult to solve without an adequate understanding of the concepts involved. I would suggest that you keep a notebook to work your problems in. Bring this notebook when you come to ask for help. Such a notebook will help keep your work organized and easily accessible when preparing for exams and quizzes.

To encourage you to read with pencil in hand, every problem embedded in the text of each chapter is automatically included in the problem assignment for that chapter. Problems assigned from the end of each chapter, and any other problems will be distributed in lecture. **All assigned problems are fair game on quizzes and exams.**

**The worst thing you can do is get behind in this course! Keep up with all assignments.**



## **No Tolerance Cheating Policy**

Under **NO** circumstances will cheating be tolerated. The minimum penalty for cheating will be a zero on the exam or quiz in ques-

tion. **Maximum penalties, up to university expulsion will be pursued in extreme or repeat cases.**

JULY				
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AUGUST				
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NOVEMBER				
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DECEMBER				
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NOTES

2008

2009

ACADEMIC YEAR