

# CHEM 302: Organic Chemistry II

(Section 001, 4 Credit Hrs)

Spring, 2014

“Great minds have purposes, others have wishes.” – Washington Irving

**Professor:** Dr. Jay Hanna

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**Course Website:** [chem.winthrop.edu](http://chem.winthrop.edu)

**Office Hours:** TR 10:00 – 11:00 am

To contact me outside of these hours, please feel free to e-mail or call to make an appointment. I check my email and phone messages periodically throughout the day.

**E-mail:** Occasionally, important course information will be communicated through e-mail, and you may also communicate with the instructor by e-mail. However, remember that e-mail communication is formal correspondence and should be written as such. The instructor reserves the right to ignore informal or poorly constructed e-mails.

**Lecture:** MWF 11:00 am – 11:50 am in Sims 105.

The tentative schedule is posted on the course web page ([chem.winthrop.edu](http://chem.winthrop.edu))

## Required Materials:

**Text:** *Organic Chemistry*, 7th Edition, Paula Yurkanis Bruice.

## Optional Materials:

**Model Set:** A good organic molecular model set is highly recommended, such as the MolyMod set (#62053) from indigo systems ([www.indigo.com](http://www.indigo.com)). You may use model sets on exams.

**Study Guide:** *Study Guide and Solutions Manual for Bruice's Organic Chemistry*, 7th Edition, Paula Yurkanis Bruice.

**Lecture Supplements:** From time to time, other materials (handouts, PowerPoint slides, etc.) will be used to supplement the lecture material. These are posted on the course webpage ([chem.winthrop.edu](http://chem.winthrop.edu)). You need a username and password (available from the instructor) to access these materials.

**Course Goals:** The goals of this course align with *University Level Competency #1* – “Winthrop graduates think critically and solve problems.”

- To study the structure, preparation, and chemical and physical properties of organic compounds.
- To develop the critical thinking and analytical reasoning skills needed to solve organic chemistry problems.

**Course Learning Outcomes:** After completion of the Introductory Organic Chemistry sequence (CHEM 301 – 302), the student will

- Understand the basic principles underlying organic chemistry
- Be conversant in organic chemistry nomenclature
- Understand isomerism and chirality in organic compounds
- Know the structures and reactions of the major classes of organic compounds
- Understand the influence of structure on the physical properties and reactions of the major classes of organic compounds
- Understand the principles of spectroscopy and be able to apply these principles to structure characterization
- Be able to describe organic reactions in terms of their mechanisms
- Be able to design synthetic approaches to organic molecules

**Class Attendance and Conduct:** It is to your benefit to attend all class meetings for the full scheduled time without any disruptions. Therefore, cell phones, computers, cameras, and other devices not required for the class discussion cannot be used during class time. Students are expected to adhere to the Winthrop Student Conduct Code as outlined in the Student Handbook: (<http://www2.winthrop.edu/studentaffairs/handbook/StudentHandbook.pdf>)

**Withdrawals:** Per Winthrop University policy, any student who wishes to withdraw from the course with a grade of “N” must do so before the Course Withdrawal Deadline (**Wednesday, March 12, 2014**).

**Exams:** There will be five (5) in-class (closed-book) exams. The tentative dates for these exams are outlined in the course schedule. You will need a pencil and you may need a calculator for each exam. Cell phones calculators are **not** allowed during exams. You may not share calculators or bring any other electronic devices (including ipods, laptops, cell phones, pagers, or personal digital assistants) to the exam. **No makeup exams will be given.**

**The Final Exam is cumulative, closed-book, and will count for 30% of the final grade. The final exam will be given at 8:00 am on Tuesday, May 6, 2013.**

**Re-Grades:** Requests for re-grades must be submitted within one week after the exam is returned. You must indicate the specific problem(s) to be re-graded and submit justification (in writing) as to why the grading was incorrect.

<b>Grading:</b> Exams (5)	70 %
Final Exam (Cumulative)	30 %
	<b>100 %</b>

**NOTE:** *Grade discussions will only be held in person. No grades will be communicated by e-mail.*

**Final Course Grade:** The final grade for the course will be a weighted percentage based on the scores earned on the exams. The formula for determining the final grade is as follows:

$$\text{Course grade (\%)} = [(\text{Avg Exam \%}) * 0.70] + [(\text{Final Exam \%}) * 0.30]$$

The +/- system will be used for “A,” “B,” and “C” grades, according to the following ranges:

A = 90 – 100%, A<sup>-</sup> = 85 – 89.99%  
B<sup>-</sup> = 75 – 76.99%, B = 77 – 81.99%, B<sup>+</sup> = 82 – 84.99%  
C<sup>-</sup> = 65 – 66.99%, C = 67 – 71.99, C<sup>+</sup> = 72 – 74.99%  
D = 55 – 64.99%  
F = < 55%.

**Students with Disabilities:** Winthrop University is dedicated to providing access to education. If you have a disability and require specific accommodations to complete this course, contact the Office of Disability Services (ODS) at 803-323-3290. Once you have your official notice of accommodations from the Office of Disability Services, please inform me as early as possible in the semester.

**Changes to Syllabus:** Any changes to the syllabus or course schedule will be announced in class.

**Course Organization:** The course is divided into 6 units; the encompassing chapter sections (from Bruice, 7<sup>th</sup> ed, in the approximate order of coverage) and suggested end-of-chapter non-graded practice problems are listed below. Also associated with each unit is a “unit problem set” additional problems you should work when studying for an exam – these “unit problem sets” are available on the course webpage.

**Unit 1: Organometallic Compounds and Radicals**

Text Sections: 12.1-12.3, 13.1-13.5, 13.7-13.9

Suggested problems:

Ch. 12: 1, 3, 10, 23(c), 24, 26 (except d), 27, 28(a,b), 32, 33, 34

Ch. 13: 10, 13, 17, 20, 22, 25, 29, 32, 36, 37(a), 38, 39, 42, 46

**NOTE:** Also review the mechanisms and synthesis handouts associated with Unit 1 in the “Lecture Supplements” section of the course webpage.

**Unit 2: Aromatic Compounds**

Text Sections: 8.7-8.12, 19.1-19.25

Suggested problems:

Ch. 8: 12, 16, 18, 23, 65, 68

Ch. 19: 8, 47 (except i), 52, 57, 59, 60, 68, 73, 74, 76, 83, 86, 91, 93, 94

**Unit 3: Reactions at the Carbonyl Group**

Text Sections: 17.1-17.7, 17.16, 17.10-17.14, 16.1-16.17, 16.19-16.22

Suggested problems:

Ch. 16: 56-58, 62, 66, 71, 77, 87, 89

Ch. 17: 53-55, 58, 59, 62, 65, 66, 68, 70, 71, 74, 75, 76, 81, 90

**Unit 4: Reactions at the Carbonyl  $\alpha$ -Carbon**

Text Sections: 18.1-18.20

Suggested problems:

Ch. 18: 48, 50, 51, 54, 55, 58, 60, 65-67, 73

**Unit 5: Oxidations and Reductions, Synthesis**

Text Sections: “Synthesis and Retrosynthetic Analysis” Tutorial following Chapter 19.

Suggested problems: Problems in the tutorial above.

**Unit 6: Amines, Heterocyclic Compounds, Polymers**

Text Sections: 20.1-20.7, 27.1-27.8

Suggested problems:

Ch. 20: 1, 6, 23, 29, 30, 33

Ch. 27: 1, 4, 5, 8, 10, 13, 16-20

**Success in Organic Chemistry:** *“Success is dependent on effort.” - Sophocles*

This is a challenging course, and I would like to see you do your very best. Here are some tips to help you succeed in this course (i.e., master the course material, learn to think logically about structure and properties of molecules, and receive a reasonable grade):

**THE TWO MAJOR RULES FOR SUCCESS:**

1. Work Problems
2. Do Not Fall Behind

**THE EXPANDED RULES:**

3. **PLAN** to spend **at least 12 hrs per week** outside of class studying for this course.
  - Work in an area where there are NO DISTRACTIONS (turn off your cell phone, take out your ear buds, turn off the TV, radio, etc.). Remember it is you against the course, and you want to conquer it! *Your friends and your i-pod do not care whether you win or not.*
4. **ATTEND LECTURE; LISTEN; THINK; TAKE NOTES**
  - Note that **“listening” and “thinking” come before “take notes.”** Blindly writing things down without thinking does you no good.
5. **REVIEW; THINK**
  - **After the lecture**, rewrite the lecture notes in the fewest words possible, as if you were making a “cheat sheet” for an exam.\* Identify the appropriate text sections and work the in-chapter practice problems. Ask questions about what you don’t understand. \*NOTE: *“Cheat sheets” are not allowed on exams. Only closed-book exams will be given.*
6. **WORK PROBLEMS; THINK**
  - **Do the recommended problems** (included in the course schedule posted on the course web page found at [chem.winthrop.edu](http://chem.winthrop.edu)), and the unit problem sets for practice. Do the problems again while studying for your exam.
7. **DO NOT FALL BEHIND – falling behind is death.**
  - Everything in this course builds on what was previously covered. If you do not understand what was previously covered, it makes learning the later material much harder.
  - **Organic Chemistry cannot be learned the night before an exam.** Don’t even try.
8. **IF YOU DON’T UNDERSTAND – GET HELP!!**
  - Talk to me after class, stop by my office during office hours, or make arrangements with me to meet outside of office hours. You can stop by any time, but if you have an appointment that guarantees that I will be there. Tutors and classmates can also help you when you need it.