

# CHEMISTRY 201 - 01 Fall 2016

## ORGANIC CHEMISTRY I

Section 01 - M,W,F 11:45-12:35

August 29 - December 9, 2016

**Instructor:** William A. Price, Ph.D.

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**Class Website:** <http://www.lasalle.edu/~price/CHM201.HTM>

**Office Hours:** Monday, Wednesday and Friday from 9:30-11:30, other times by appointment or drop-ins.

**Texts:** L.G. Wade Organic Chemistry, 9th Edition, Pearson, Boston, MA, 2017.

**ISBN13:** 978-0-321-97137-1

J. R. Mohrig, C.N. Hammond, P.F. Schatz, and T.C. Morrill, from *Modern Projects and Experiments in Organic Chemistry*, Custom text, Freeman Custom Publishing, New York, 2010.

Bundled with J.R. Mohrig, D.G. Alberg, G.E. Hofmeister, P.F. Schatz and C.N. Hammond, *Laboratory Techniques in Organic Chemistry*, Fourth Edition, W.H. Freeman and Company, New York, 2014.

**Homework Assignments:** [www.SaplingLearning.com](http://www.SaplingLearning.com) - Sapling Learning Online Homework: \$40.00 for 1 semester (\$60.00 for 2 semesters) La Salle University - CHM 201 - FALL16 – PRICE

Student registration instructions:

1. Go to <http://saplinglearning.com> and click on your country ("US Higher Ed") at the top right.
2.
  - a. If you already have a Sapling Learning account, log in and skip to step 3.
  - b. If you have Facebook account, you can use it to quickly create a Sapling Learning account. Click "Create an Account," and then "Create my account through Facebook." You will be prompted to log into Facebook if you are not already logged in. Choose a username and password, then click "Link Account." You can then skip to step 3.
  - c. Otherwise, click "Create an Account." Supply the requested information and click "Create My Account." Check your email (and spam filter) for a message from Sapling Learning and click on the link provided in that email.
3. Find your course in the list (listed by subject, term, and instructor) and click the link.
4. Select a payment option and follow the remaining instructions.

Once you have registered and enrolled, you can log in at any time to complete or review your homework assignments.

**Recommended:** *Chem-Tutor* Student Modeling System for Organic Chemistry, Sigma-Aldrich Inc. (available from stock room).

**Course Description and Learning Objectives:**

The area of organic chemistry is concerned with the chemistry of carbon-containing compounds. This field of chemistry is central to the areas of pharmaceuticals, petroleum, plastics, flavors, fragrances, pesticides, and life processes. Organic compounds include such molecules as cholesterol, proteins, lipids, DNA, caffeine, chemotherapeutic agents, carbohydrates, Prozac<sup>®</sup>, Adderall<sup>®</sup>, ecstasy and aspirin. Although organic compounds potentially contain many elements of the periodic table, this course will limit its coverage to those compounds containing carbon, hydrogen, oxygen, and the halogens.

It has been suggested that the properties and reactivities of organic compounds are a direct reflection of their geometries, bond strengths, and electron distribution (polarities). The course begins by reviewing atomic and molecular structure using modern orbital theories. Then, beginning with methane, the simplest organic compound, we will begin to develop the foundation of organic chemistry.

The study of organic chemistry is organized by investigating different groups or categories of compounds (these are called functional groups). All compounds in a given functional group contain a common sub-molecular portion that typically dictates the physical, chemical, and often the biological properties of the molecule. Students of organic chemistry are often overwhelmed by the number of compounds, names, reactions, and mechanisms that confront them. Perhaps the most important skills that a student can develop in CHM 201 are the abilities to organize, categorize and apply. Learning organic chemistry is akin to learning a foreign language. Although there is some memorization, by learning an abstract concept and having the flexibility to apply it to a variety of similar situations, the amount of memorization is drastically reduced.

**By the end of the semester, the successful student will have facility with:**

- Atomic structures and Lewis structures, geometries and polarities
- Bronsted-Lowry and Lewis acid/base reactions
- Molecular Orbital Theory as it describes bonding in organic molecules
- Drawing organic structures
- Identification of functional groups
- Naming organic hydrocarbons
- Isomerism and conformational analysis of alicyclic and cyclic compounds
- Stereochemistry
- Kinetics and thermodynamics of organic chemical reactions
- Reaction profiles
- Free radical reactions
- Polar reactions; substitutions and eliminations
- Mechanisms and curved arrow formalism to illustrate electron flow
- Structure synthesis and reactions of unsaturated hydrocarbons and alcohols.

**Strategy:**

The amount of material to be covered is quite large (over 500 text book pages) thus it is imperative that you keep up with the course. Keeping up is most easily accomplished by reading the appropriate chapter prior to attending class. *This is not a course where one can effectively cram immediately prior to an exam – you must work day to day.* Read the assigned sections *before class*, take good notes then go home and recopy these notes while comparing the information to the textbook. Work through each example. Repetition is extremely important. It takes time to master some of the difficult concepts and going back over certain ideas will make them much easier to comprehend. In addition, new ideas that you learn later in a chapter will often make earlier concepts more understandable.

Work as many of the problems from the book as possible in addition to the Sapling homework - and ask for help when necessary. You may also find that rewriting your lecture notes in a less hurried (and more legible) fashion will help in your retaining and comprehending the material. You will find the study guide useful only if you attempt the problems on your own first.

**Chapter Sequence:**

We will cover chapters 1-10 in CHM 201. ***Chapter coverage will be selective.*** It is the student's responsibility to know what portions of chapters are not covered in lectures and thus not covered on exams.

The text contains an excellent set of problems. It is recommended that you solve the problems in the running text as you read the material (you should use a composition notebook for problems). The recommended problems at the end of the chapters can be used to fine tune your grasp of the material. You will also find many tutorials, practice problems and old exams on the class website. All of the powerpoint slides are available on the website as well.

**Grades:**

The course consists of both lecture (75%) and laboratory (25%). In order to pass the course, you must have a passing grade in both parts. The breakdown is roughly as follows. These numbers are subject to change very slightly:

4 hour exams	400 pts (40%)
Final Exam	200 pts (20%)
Quizzes	100 pts (10%)
Homework	50 pts (5%)
Laboratory	<u>250 pts (25%)</u>

**1000 pts**

grade of **A** is between 90 - 100%

grade of **B** is between 80 - 89.9%

grade of **C** is between 70 - 79.9%

grade of **D** is between 60 - 69.9%

A grade of **F** is below 60%

**For final grades, The +/- system is used (B+, A-, etc.) and breaks between half letter grades will be within the above grade ranges and made at the discretion of the instructor.**

**The last day to withdraw with a "W" is November 6.**

**Examinations:**

Examination questions will be drawn from lecture material, assigned readings, and homework problems. Each of the exams will build off of concepts covered earlier in the course. Therefore, while exams will not be explicitly designed to comprehensively retest all earlier sections of the text, it will be important to remain knowledgeable and competent with previous concepts covered in the course.

Absence from an examination, without prior approval, will result in a zero score for the exam. If an emergency occurs the day of the exam, the *instructor must be informed within 24 hours (by phone or email)*. Any questions about whether an absence is excused or not will be determined by the judgment of the instructor.

**Homework:**

**Homework** will be posted on the Sapling Learning site in a timely fashion. Due dates will be posted as well. After the due date, the assignment will be visible, but not be accessible for credit unless you have a reasonable excuse.

**Quizzes** will be take-home and handed out after five lectures of new material between exams. Although the quizzes are open book and open powerpoint slide, ***you are to work on the quizzes individually – no collaboration***. Quizzes are due at the beginning of class according to the schedule below.

**Attendance and Lateness:**

You are expected to attend every class and arrive on time. Since the door is in the front of the classroom, your late arrival is disruptive and disrespectful. For every three unexcused absences, your final homework grade will be reduced by 5%.

**Academic Integrity:**

It is your responsibility to maintain a high degree of integrity in your work. Cheating of any kind will not be tolerated and will result in a failure in the course! The following are considered cheating: (a) Sharing of results and answers on lab reports, graded assignments, quizzes and exams; (b) Use of unauthorized materials during an exam (cell phones included); (c) Plagiarism, including copying a fellow student's lab report, homework or take-home quiz. When in doubt, both parties involved in plagiarism (both the copier and the copyee) will be held responsible for the integrity violation. Please refer to the school's official Academic Integrity Policy for further information as well as the Student Guide to Rights and Responsibilities.

**Students with Disabilities:**

Students with disabilities should refer to the student handbook for resources that are available to them as well as compliance with the American Disabilities Act.

**Syllabus Change Policy:**

This syllabus is a guide and every attempt is made to provide an accurate overview of the course. However, circumstances and events may make it necessary for the instructor to modify the syllabus during the semester and may depend, in part, on the progress, needs, and experiences of the students. The instructor will give notice when changes to the syllabus are made.

**CHM 201-01**  
**Fall, 2016**  
**Schedule for CHM 201 – Organic Chemistry I**  
**L.G. Wade Jr., *Organic Chemistry*, 9<sup>th</sup> Edition**

Monday	Wednesday	Friday
<b>Aug. 29</b> CH 1	31 CH 1	<b>Sept. 2</b> CH 1
5 Labor Day holiday	7 CH 1, CH 2	9 CH 2
12 Quiz I due CH 2	14 CH 2	16 CH 3
19 CH 3	21 – Exam I (CH 1-3.6)	23 CH 3
26 CH 3	28 CH 4	30 CH 4
<b>Oct. 3</b> CH 4	5 Quiz 2 due CH 5	7 CH 5
10 CH 5	12 CH 5	14 – Exam II (CH 3.7-5)
17 Mid-semester break	19 CH 6	21 CH 6
24 CH 6	26 CH 6	28 CH 7
31 Quiz 3 due CH 7	<b>Nov. 2</b> CH 7	4* CH 7
7 – Exam III (CH 6-7)	9 CH 8	11 CH 8
14 CH 8	16 CH 8	18 CH 9
21 CH 9	23 Thanksgiving break	25 Thanksgiving break
28 Quiz 4 due CH 9	30 CH 10	<b>Dec. 2</b> – Exam IV (CH 8-9)
5 CH 10	7 CH 10	9 CH 10

\*Last day to withdraw

**Final Exam will be held in our classroom on the date and time designated for MWF, 11:45 classes.**