CHEM 2231 Organic Chemistry I  
Summer 2016  3 Credits

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Office: Merkert 322  
Office Hours: Tuesday and Friday, 8:30-9:15am; other times by appointment  
Telephone: (617) 55x-xxxx (TBD)  
Schedule (class times and day(s)): Monday, Tuesday, Thursday and Friday; 9:30am-12noon  
Room: Merkert 127

Boston College Mission Statement

Strengthened by more than a century and a half of dedication to academic excellence, Boston College commits itself to the highest standards of teaching and research in undergraduate, graduate and professional programs and to the pursuit of a just society through its own accomplishments, the work of its faculty and staff, and the achievements of its graduates. It seeks both to advance its place among the nation's finest universities and to bring to the company of its distinguished peers and to contemporary society the richness of the Catholic intellectual ideal of a mutually illuminating relationship between religious faith and free intellectual inquiry.

Boston College draws inspiration for its academic societal mission from its distinctive religious tradition. As a Catholic and Jesuit university, it is rooted in a world view that encounters God in all creation and through all human activity, especially in the search for truth in every discipline, in the desire to learn, and in the call to live justly together. In this spirit, the University regards the contribution of different religious traditions and value systems as essential to the fullness of its intellectual life and to the continuous development of its distinctive intellectual heritage.

Course Description

An introduction to the chemistry, properties, and uses of organic compounds. The correlation of structure with properties, reaction mechanisms, and the modern approach to structural and synthetic problems are stressed throughout. In the laboratory, the aim is acquisition of sound experimental techniques through the synthesis of selected compounds.

Course Objectives

1. The student will be able to identify, name, and draw and model structures of organic molecules in different classes of functional groups.  
2. The student will be able to identify and describe chiral centers in molecules.  
3. The student will be able to relate structure to reactivity for the following classes of organic molecules: alkanes, alkenes, alkynes, alkyl halides, alcohols, and ethers.  
4. The student will be able to describe the basic theory behind important spectroscopic techniques (NMR, IR, mass spec) and analyze spectral data to identify compounds.  
5. The student will be able to illustrate reaction mechanisms using curved-arrow notation.  
6. The student will be able to predict the major and minor products of representative reactions based on specified reaction conditions.  
7. The student will be able to design synthetic strategies for simple molecules, using reactions studied in the course.  
8. The student will demonstrate knowledge across cultural settings and will learn the impact of culture, gender, and age in organic chemistry as demonstrated by the historical context of research in the field.  
9. The student will demonstrate ethical competency pertaining to organic chemistry as demonstrated by historical context of research in the field as well as examples of good laboratory practice.
Grading

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Hour Exams (2), 20% each</td>
<td>40% total</td>
</tr>
<tr>
<td>Final Exam (cumulative)</td>
<td>30%</td>
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<tr>
<td>Concept Check Quizzes (10)</td>
<td>20%</td>
</tr>
<tr>
<td>Homework (Effort-Based)</td>
<td>10%</td>
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Grades will be calculated on weighted averages, as specified above. The final letter grades will be assigned according to the following percentages: A (94% or above), A- (90-93.9%), B+ (87-89.9%), B (83-86.9%), B- (80-82.9%), C+ (77-79.9%), C (73-76.9%), C- (70-72.9%), D+ (67-69.9%), D (63-66.9%), D- (60-62.9%), F (under 60%). Please be aware that there are not likely to be any opportunities for extra credit.

WCAS Grading System

The undergraduate grading system consists of twelve categories: A (4.00), A- (3.67), excellent; B+ (3.33), B (3.00), B- (2.67), good; C+ (2.33), C (2.00), C- (1.67), satisfactory; D+ (1.33), D (1.00), D- (.67), passing but unsatisfactory; F (.00), failure; I (.00), incomplete; F (.00), course dropped without notifying office; W (.00), official withdrawal from course. The graduate grading system is A (4.00), A- (3.67), Excellent; B+ (3.33), B (3.00), good; B- (2.67), C (2.00), passing but not for degree credit; F (.00), failure.

Grade Reports. All students are required to log into the web through Agora to access their semester grades. Students must utilize their BC username and password to log on. If your username or password is not known the HELP Desk located in the Campus Technology Resource Center (CTRC) in O’Neill Library will issue a new one. The CTRC requires a valid picture ID (a BC ID, driver’s license or passport) to obtain your password.

Text(s)/Readings (Required)


Molecular model kit

Text(s)/Readings (Recommended)

Student Solutions Manual to accompany Vollhardt, 7th edition

Important Policies

[http://www.bc.edu/content/bc/schools/advstudies/guide/academicinteg.html](http://www.bc.edu/content/bc/schools/advstudies/guide/academicinteg.html)

Written Work

Graduate and undergraduate students are expected to prepare professional, polished written work. Written materials must be typed in the format required by your instructor. Strive for a thorough, yet concise style. Cite literature appropriately, using APA, MLA, CLA format per instructors decision. Develop your thoughts fully, clearly, logically and specifically. Proofread all materials to ensure the use of proper grammar, punctuation, and spelling. You are encouraged to make use of campus resources for refining writing skills as needed [http://www.bc.edu/libraries/help/tutoring.html](http://www.bc.edu/libraries/help/tutoring.html).

Scholarship and Academic Integrity

It is expected that students will produce original work and cite references appropriately. Failure to reference properly is plagiarism. Scholastic dishonesty includes, but is not necessarily limited to,
plagiarism, fabrication, facilitating academic dishonesty, cheating on examinations or assignments, and submitting the same paper or substantially similar papers to meet the requirements of more than one course without seeking permission of all instructors concerned. Scholastic misconduct may also involve, but is not necessarily limited to, acts that violate the rights of other students, such as depriving another student of course materials or interfering with another student’s work.

Request for Accommodations
If you have a disability and will be requesting accommodations for this course, please register with either Dr. Kathy Duggan (dugganka@bc.edu), Associate Director, Connors Family Learning Center (learning disabilities or AHD) or Dean Paulette Durrett, (paulette.durrett@bc.edu), Assistant Dean for students with disabilities, (all other disabilities). Advance notice and appropriate documentation are required for accommodations. For further information, you can locate the disability resources on the web at http://www.bc.edu/content/bc/literals/help/tutoring/specialservices.html.

Attendance
Class attendance is an important component of learning. Students are expected to attend all classes and to arrive by the beginning of and remain for the entire class period. When an occasion occurs that prevents a student from attending class, it is the student’s obligation to inform the instructor of the conflict before the class meets. The student is still expected to meet all assignment deadlines. If a student knows that he or she will be absent on a particular day, the student is responsible for seeing the instructor beforehand to obtain the assignments for that day. If a student misses a class, he or she is responsible for making up the work by obtaining a classmate's notes and handouts and turning in any assignments due. Furthermore, many instructors give points for participation in class. If you miss class, you cannot make up participation points associated with that class. Types of absences that are not typically excused include weddings, showers, vacations, birthday parties, graduations, etc. Additional assignments, penalties and correctives are at the discretion of the instructor. If circumstances necessitate excessive absence from class, the student should consider withdrawing from the class. In all cases, students are expected to accept the decision of the instructor regarding attendance policies specific to the class.

Consistent with our commitment of creating an academic community that is respectful of and welcoming to persons of differing backgrounds, we believe that every reasonable effort should be made to allow members of the university community to observe their religious holidays without jeopardizing the fulfillment of their academic obligations. It is the responsibility of students to review course syllabi as soon as they are distributed and to consult the faculty member promptly regarding any possible conflicts with observed religious holidays. If asked, the student should provide accurate information about the obligations entailed in the observance of that particular holiday. However, it is the responsibility of the student to complete any and all class requirements for days that are missed due to conflicts due to religious holidays.

There may be circumstances that necessitate a departure from this policy. Feel free to contact the WCAS at 617-552-3900 for consultation.

Deadlines
Assignments are due at the beginning of the class period on the specified dates. Because of the tight schedule, late assignments will not be accepted.

Course Assignments

Between lecture and laboratory time, you will be spending a substantial amount of each day already in class. Beyond this, however, you should plan to spend roughly 2-3 hours working on your own for every hour worth of lecture time per week. This will likely be devoted to a combination of homework and laboratory assignments, but also should include as much additional practice as you can manage. Even
over a short session, organic chemistry is mastered with practice. Some topics and assignments may
require less than the 2-3h recommended, but some may require significantly more.

Recommended practice problems from the text will be assigned with every chapter and collected on
Mondays and Thursdays. Although these will be evaluated based on effort, I also recommend that you
make note of any particularly challenging problems and concepts and discuss them with me.

Course Calendar

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<thead>
<tr>
<th>Date</th>
<th>Topic</th>
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<tbody>
<tr>
<td>Jun 20</td>
<td>Introduction to organic chemistry and review of general chemistry (Ch 1, 2)</td>
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<tr>
<td>Jun 21</td>
<td>Reactions of alkanes (Ch 3)</td>
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<td>Jun 23</td>
<td>Nuclear Magnetic Resonance Spectroscopy (Ch 10)</td>
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<td>Jun 24</td>
<td>Cycloalkanes (Ch 4)</td>
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<td>Jun 27</td>
<td>Stereoisomerism (Ch 5), HOUR EXAM 1 (Ch 1-4; 10)</td>
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<td>Jun 28</td>
<td>Haloalkanes part 1 (Ch 6)</td>
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<tr>
<td>Jun 30</td>
<td>Haloalkanes part 2 (Ch 7)</td>
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<td>Jul 1</td>
<td>Reactions of alcohols (Ch 8)</td>
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<td>Jul 4</td>
<td>HOLIDAY—Class will not meet</td>
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<td>Jul 5</td>
<td>Alcohols and ethers (Ch 9), HOUR EXAM 2 (Ch 5-8)</td>
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<td>Jul 7</td>
<td>Alkenes; Infrared Spectroscopy and Mass Spectrometry (Ch 11)</td>
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<td>Jul 8</td>
<td>Reactions of alkenes (Ch 12)</td>
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<tr>
<td>Jul 11</td>
<td>Reactions of alkynes (Ch 13)</td>
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<tr>
<td>Jul 12</td>
<td>FINAL EXAM (Cumulative)</td>
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</tbody>
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In-Class Concept Quizzes and Out-of-Class Homework Assignments

On every lecture day (except for dates of hour exams), I will begin class with a short quiz (10min)
covering basic concepts from the course material covered in the previous day.

Each homework assignment will be worth 0, 1 or 2 points total, based on effort (0 = not turned in; 1 = less
than half of the assignment completed; 2 = more than half of the assignment completed). Please make
sure you show your work on homework assignments! Each assignment will have two sets of textbook
exercises: one group required for everyone, and a second group of either 1) additional standard textbook
exercises or 2) exercises modeled after those on professional entrance exams (e.g. MCAT). Please note
that each assignment will be a total of approximately 10 exercises, but I highly recommend that you take
advantage of additional exercises whenever you have a chance to attempt them. And, of course, I
encourage you to speak with me if you are having trouble with a particular concept.