

BOSTON COLLEGE

S U M M E R S E S S I O N

*Please note that this syllabus should be regarded only as a general guide to the course and is subject to change at the instructor's discretion.

CHEM 2012, Organic Chemistry II (Summer), 3 credits

Boston College Summer Session 2018

Summer II, July 8-August 2

Monday, Tuesday, Thursday and Friday; 9:30am-12noon in Merkert 127

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Office: Merkert 322

Office Hours: Tuesday and Friday 8:30-9:15am, other times by appointment

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.

Textbooks & Readings (Required)

Organic Chemistry: Structure and Function. 8th ed.; K. Peter C. Vollhardt and Neil A. Schore; MacMillan.

ISBN-10: 1-4641-2027-7

ISBN-13: 978-1-4641-2027-5

Molecular model kit, any manufacturer, with at least 10 carbons

Textbooks & Readings (Recommended)

Student Solutions Manual to accompany Vollhardt, 8th edition

Canvas

Canvas is the Learning Management System (LMS) at Boston College, designed to help faculty and students share ideas, collaborate on assignments, discuss course readings and materials, submit assignments, and much more - all online. As a Boston College student, you should familiarize yourself with this important tool. For more information and training resources for using Canvas, click [here](#).

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 relate structure to reactivity for the following classes of organic molecules: aromatics, aldehydes, ketones, carboxylic acids and derivatives, amines.
3. 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.
4. The student will be able to illustrate reaction mechanisms using curved-arrow notation.
5. The student will be able to predict the major and minor products of representative reactions based on specified reaction conditions.
6. The student will be able to design synthetic strategies for simple molecules, using reactions studied in the course.
7. The student will be able to relate small-molecule reactions to reactions of biologically-important molecules.
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

Hour Exams (2), 20% each	40% total
Final Exam (cumulative)	40%
Concept Checks (best 3 of 4, 5% each)	15%
Journal Article Summary	5%

Grades will be calculated on weighted contributions, 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.

The undergraduate grading system for Summer Session is as follows:

A (4.00), A- (3.67)
B+ (3.33), B (3.00), B- (2.67)
C+ (2.33), C (2.00), C- (1.67)
D+ (1.33), D (1.00), D- (.67)
F (.00)

The graduate grading system for Summer Session is as follows:

A (4.00), A- (3.67)
B+ (3.33), B (3.00)
B- (2.67), passing but does not count toward degree
C (2.00), passing but not for degree credit
F (.00)

All students can access final grades through Agora after the grading deadline each semester. Transcripts are available through the [Office of Student Services](#).

Course Assignments and Policies

Even in a full semester, organic chemistry is a notoriously demanding and time-consuming course. Especially in the summer session, it is absolutely critical that you do not allow yourself to fall behind on the material, as it is cumulative. 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 time 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. We will spend the majority of our class time highlighting (and practicing) major themes and concepts, key points, and problem solving strategies so that you will be able to study as efficiently as possible.

Recommended practice problems from the text will be assigned with every chapter. Although these will not be graded, they will serve as excellent practice for mastering the course content. I recommend that you make note of any particularly challenging problems and concepts and discuss them with me.

In addition to the two midterms and the final, four intermediate “concept check” assignments will be given at the start of class on the dates specified in the calendar below. Your best three scores will count toward your grade.

Finally, the remaining 5% of your grade will be based on a brief, informal summary of a paper of your choice from the primary chemical literature. Details of the assignment and grading will be handed out separately.

Molecular model kits are strongly encouraged for nearly every assignment in this course, including in-class problem solving. You may use them at any time.

Use of electronic devices is prohibited during lecture. Laptops/tablets may be used, with permission, ONLY during in-class problem solving sessions. Phones may not be used at any point during class time, and must be kept silent for the duration of the class period. Recording of classes is permitted only with written documentation of academic accommodation.

Deadlines and Late Work

Any assignments to be handed in must be handed in at the beginning of the class period in which they are due. Because of the tight schedule, late assignments will not be accepted. Also, because of the tight schedule, make-ups are not available for any course component except in the case of documented emergencies or with prior arrangement with me.

Course Schedule

Jul 8	Delocalized pi systems, aromaticity and reactions of benzene (Ch 14 and 15)
Jul 9	Ch 15 continued; Reactivity of Substituted Benzene (Ch 16)
Jul 11	Ch 16 continued; Aldehydes and Ketones part 1 (Ch 17)
Jul 12	Concept Check 1, Ch 17 continued
Jul 15	Ch 17 continued if necessary; Enols/Enolates (Ch 18)
Jul 16	HOUR EXAM 1 (Ch 14-17); Ch 18 continued
Jul 18	Ch 18 continued; Carboxylic Acids (Ch 19)
Jul 19	Concept Check 2; Ch 19 continued; Carboxylic Acid Derivatives (Ch 20)
Jul 22	Ch 20 continued
Jul 23	Concept Check 3; Amines (Ch 21)
Jul 25	HOUR EXAM 2 (Ch 18-21); Reactivity of aromatic side chains (Ch 22)
Jul 26	Ch 22 continued; Ester Enolates (Ch 23)
Jul 29	Concept Check 4, Ch 23 continued
Jul 30	Heterocycles (Ch 25)
Aug 1	Carbohydrates (Ch 24), Amino Acids (Ch 26)
Aug 2	FINAL EXAM (Cumulative)

Written Work

Summer Session students are expected to prepare professional, polished written work. Written materials must be typed and submitted in the format required by your instructor. Strive for a thorough yet concise style. Cite literature appropriately, using APA, MLA or CLA style per your instructor's requirements. Develop your thoughts fully, clearly, logically and specifically. Proofread all materials to ensure the use of proper grammar, punctuation and spelling. For writing support, please contact the [Connors Family Learning Center](#).

Attendance

Attending class is an important component of learning. Students are expected to attend all class sessions. When circumstances prevent a student from attending class, the student is responsible for contacting the instructor before the class meets. Students who miss class are still expected to complete all assignments and meet all deadlines. Many instructors grade for participation; if you miss class, you cannot make up participation points associated with that class. Makeup work may be assigned at the discretion of the instructor. If circumstances necessitate excessive absence from class, the student should consider withdrawing from the class.

Consistent with BC's commitment to creating a learning environment that is respectful of 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 their academic status. Students are responsible for reviewing course syllabi as soon as possible, and for communicating with the instructor promptly regarding any possible conflicts with observed religious holidays. Students are responsible for completing all class requirements for days missed due to conflicts with religious holidays.

Accommodation and Accessibility

Boston College is committed to providing accommodations to students, faculty, staff and visitors with disabilities. Specific documentation from the appropriate office is required for students seeking accommodation in Summer Session courses. Advanced notice and formal registration with the appropriate office is required to facilitate this process. There are two separate offices at BC that coordinate services for students with disabilities:

- [The Connors Family Learning Center \(CFLC\)](#) coordinates services for students with LD and ADHD.
- [The Disabilities Services Office \(DSO\)](#) coordinates services for all other disabilities.

Find out more about BC's commitment to accessibility at www.bc.edu/sites/accessibility.

Scholarship and Academic Integrity

Students in Summer Session courses must produce original work and cite references appropriately. Failure to cite references is plagiarism. Academic dishonesty includes, but is not necessarily limited to, plagiarism, fabrication, facilitating academic dishonesty, cheating on exams or assignments, or submitting the same material or substantially similar material 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. Please see the [Boston College policy on academic integrity](#) for more information.