

~Course Syllabus~

**CHM 223: ORGANIC CHEMISTRY for Life Sciences I
Fall 2023**

Instructor: Dr. Gary Breton
McAllister Hall, room 305; ext. 2661 gbreton@berry.edu
Office Hours: T,W,H: 12-3 pm *or* by appointment

Section A: McAllister Hall, room 115; MWF 8—8:50 am

Course Description: Fundamental organic chemistry with emphasis on molecular structure and reaction mechanisms; Includes IR, MS, and NMR spectroscopy, conformations of hydrocarbons, stereochemistry, substitution, elimination, and alkene addition reactions. *Note: this course is **not** intended for chemistry or biochemistry majors.*

Semester credit hours: 3—2—4. Course prerequisite: CHM 108.

Textbook: There is no textbook requirement, but students are encouraged to use the freely available textbook *Organic Chemistry* by Dr. John McMurray available at OpenStax: <https://openstax.org/details/books/organic-chemistry>

Methods of Instruction: The course meets three times a week for 50 minutes each. The material is presented via dynamic lectures and supported by presentations and demonstrations. Specially crafted chapter outlines are made freely available to students in PDF format to be used as a note-taking guide during each class. Students are engaged during classroom time via discussions and lively question/answer exchanges. Lectures are recorded and uploaded to a readily available website. Access to the instructor outside of class is encouraged via office hours and email. The course relies heavily upon support materials posted to the website:

<http://garybreton.com/CHM223>

The course is further supported with hands-on laboratory exercises (one two-hour lab per week).

Purpose of the Course: Organic compounds (i.e., carbon-based molecules) are fundamental to sustaining life. All living creatures, whether animal or plant, require organic compounds to survive. In this course the student will learn the fundamentals of organic chemistry including simple organic compound nomenclature, general organic chemical and physical properties, and be introduced to some of the characteristic reactions in which they engage. The laboratory portion of the course will introduce the student to basic manipulations required to appreciate the reactivity of organic compounds, and introduce spectroscopic methods by which the structures of organic compounds are deduced.

Student Learning Outcomes: By the end of the course the students will demonstrate their knowledge of, and ability to apply, fundamental chemical principles accepted by the greater chemistry community. In particular, students (1) will be familiar with several common classes of organic molecules, (2) will understand the behavior of these classes of organic molecules under common reaction conditions, (3) will be able to apply appropriate technical terminology and nomenclature to organic phenomena and organic molecules, respectively, and (4) be prepared to apply this knowledge toward practical use in the associated laboratory course.

Assessment Measures: Upon course completion students will (1) demonstrate student learning outcome (SLO) one to three as measured by four examinations (including a cumulative final examination) at a level of at least 60% (a "D" average), (2) demonstrate SLO one to three as measured by problem sets at a level of at least 60% (a "D" average), and (3) demonstrate SLO four as measured by satisfactory laboratory reports (total laboratory report points of 60 out of the total possible 100 points [60%]).

Attendance Policy: Students are expected to attend ALL lecture classes and the associated lab sections. *Experience has demonstrated that students that attend class regularly do much better in the course than those that do not!* Attendance will be recorded but is not a component of the course grade. Excuses for missed class time should be directed to the instructor immediately upon return to the class. If a student misses several classes in succession the Associate Provost will be notified to check on the welfare of that student. The recorded lectures will serve as the means by which students can "catch up" on a missed lecture.

Students should make every effort to take the exams as scheduled. Proper documentation for a missed exam due to a legitimate reason (medical excuse or school-sanctioned activity) must be presented to the instructor before the exam (where possible) or as soon as is feasible. However, make-up exams will be given at the discretion of the instructor.

The lab portion of the course is an important hands-on part of learning, understanding, and appreciating organic chemistry. **Therefore, a student that fails to achieve an overall lab score >59.9% will receive an automatic "F" for the course (YIKES: don't do that!)**

Academic Integrity: Students are expected to uphold the policy on academic integrity as outlined in the Viking Code. **While collaboration on graded problem sets is allowed and encouraged, exams and any other assignments are SOLELY individual efforts unless otherwise expressly indicated.** On any exam for which cheating is confirmed to the satisfaction of the instructor, a grade of 0 will be posted as a grade. For any transgressions, additional disciplinary measures may follow at the discretion of the instructor or College. *Please consult with the professor if there are any questions about what constitutes proper activity on any assignment/exam.*

Accommodation Statement: The Academic Success Center provides accessibility resources, including academic accommodations, to students with diagnosed differences and/or disabilities. Recorded class sessions are not a viable accommodation. If you need accommodations for this or other classes, please visit berry.edu/asc for information and instructions. You may also contact the ASC offices in person: Evans Hall 106, or via phone: 706-233-4080. *Please note that accommodations cannot be provided if arrangements with the ASC are not properly made.*

Tutorial Availability: *ALL students can benefit from regular meetings with a peer tutor!* Working with a tutor allows you to discuss class concepts from a different vantage point from that of the instructor. Additional information about peer tutoring including days and times tutoring is available for this course may be found at the Academic Success Center website: <http://berry.edu/asc/>

Evaluation Components and Grading Scale:

Semester Exams (3)	55 pts
Final exam	20
Problem sets	10
Lab grade	<u>15</u>
	100 pts total

Letter Grade Equivalencies

Final grade tallies are rounded to the nearest whole number in the standard mathematically correct manner and the final course letter grade assigned as follows:

93-100%	A
90-92%	A-
87-89%	B+
83-86%	B
80-82%	B-
77-79%	C+
73-76%	C
70-72%	C-
67-69%	D+
60-66%	D
59%	F

Potentially Helpful Final Exam Grade Substitution Policy

Given that any student can have a poor exam performance during the semester that could have negative consequences on their overall grade, each student is allowed to substitute the grade earned on their Final Exam for ONE of the 3 Semester Exam grades. The Final Exam, which is cumulative and a good reflection of a student's overall comprehension of the course material, will continue to count for 20% of the grade.

Finally, please get help before it becomes a bigger problem! If at any time during the semester you feel that you don't understand the material, need help on problems, or if you feel lost in the course, please make sure you come and see me as soon as possible.

Organic Chemistry for Life Sciences I

CHM 223 Fall 2023

Section A, MWF 8-8:50 AM

~Schedule of Topics*~

Week	MONDAY	WEDNESDAY	FRIDAY	Lab Experiment
Aug 21 - Aug 25	Chapter 1 Fundamentals	Chapter 1 Fundamentals	Chapter 1 Fundamentals	<i>Lab Orientation, Safety and Syllabus</i>
Aug 28 - Sep 1	Chapter 1 Fundamentals	Chapter 1 Fundamentals	Chapter 2 Molecular Representations	Molecular Modeling I
Sep 4 - Sep 8	LABOR DAY no class	Chapter 4 Alkanes and Cycloalkanes	Chapter 4 Alkanes and Cycloalkanes	TLC Analysis
Sep 11 - Sep 15	Chapter 4 Alkanes and Cycloalkanes	Chapter 4 Alkanes and Cycloalkanes	Chapter 4 Alkanes and Cycloalkanes	Synthesis of Acetaminophen
Sep 18 - Sep 22	Chapter 4 Alkanes and Cycloalkanes	Chapter 5 Stereoisomerism	TEST 1 Chapters 1,2,4	Molecular Modeling II
Sep 25 - Sep 29	Chapter 5 Stereoisomerism	Chapter 5 Stereoisomerism	Chapter 5 Stereoisomerism	Introduction to IR Spectroscopy
Oct 2 - Oct 6	Chapter 3 Acids and Bases	Chapter 3 Acids and Bases	Chapter 15/16 Spectroscopy	Stereochemistry Molecular Modeling III Lab Exam 1
Oct 9 - Oct 13	FALL BREAK no class	Chapter 15/16 Spectroscopy	Chapter 15/16 Spectroscopy	NO LAB
Oct 16 - Oct 20	Chapter 15/16 Spectroscopy	Chapter 15/16 Spectroscopy	Chapter 6 Chemical Reactivity	Introduction to NMR
Oct 23 - Oct 27	TEST 2 Chapters 3,5,15,16	Chapter 6 Chemical Reactivity	Chapter 7 Substitution Reactions	Identification of an Unknown
Oct 30 - Nov 3	Chapter 7 Substitution Reactions	Chapter 7 Substitution Reactions	Chapter 7 Substitution Reactions	Acid-Base Reactions and Extraction
Nov 6 - Nov 10	Chapter 7 Substitution Reactions	Chapter 7 Substitution Reactions	Chapter 8 Alkenes: Structure and Preparation <i>Last day to W</i>	Synthesis of Banana Oil
Nov 13 - Nov 17	Chapter 8 Alkenes: Structure and Preparation	Chapter 8 Alkenes: Structure and Preparation	Chapter 8 Alkenes: Structure and Preparation	Synthesis of Isoamylene
Nov 20 - Nov 24	TEST 3 Chapters 6,7,8	THANKSGIVING BREAK no class	THANKSGIVING BREAK no class	NO LAB
Nov 27 - Dec 1	Chapter 9 Addition Reactions	Chapter 9 Addition Reactions	Chapter 9 Addition Reactions	Lab Exam II

* Changes to the schedule are possible due to unforeseen circumstances, but they will be announced in advance.
The **final exam** will be held on Friday Dec 8, 8 am – 10 am.