

Organic Chemistry 1 (CHEM 211-002)

Fall 2026

updated 9/1/26

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Educational Goals:

-develop fundamental critical thinking skills, including pattern recognition and analogous reasoning
-develop a knowledge base of organic chemistry structure and reactivity, and apply it to higher order thinking practices

Class Meetings:

Mon., Wed., Fri. 10:10-11:00 PM in Dalton 300; recitation: Fri. 1:10-2:00PM in Dalton 300

Office Hours: Wed. 3:00-4:00 PM, Thurs. 4:00-5:00 PM, and by appointment in Park 270. There will also be special review sessions prior to exams, typically on Wednesday night from 7-8:30 PM.

Lecture Textbook: Organic Chemistry, 4th Edition by David Klein, ISBN-13: 978-1-119-659594

Optional:

Organic Chemistry Student Study Guide and Solutions Manual, 4th edition, David R. Klein, ISBN-13: 978-1119659587

Organic Chemistry as a Second Language: First Semester Topics, 5th edition, David R. Klein, ISBN-13: 978-1119493488

Model Kit or Chem3D software (<https://askathena.brynmawr.edu/help/chemdraw-installation>)

Class Schedule:

Date (Lecture no.)	Lecture topic	Text Sections	Associated Questions
<i>Week 1</i>			
Aug. 31 (1)	Introduction Constitutional isomers	4.3	Ch. 1: 32,42,76; Ch. 2: 42,43,48,50, 54,55,67; Ch. 4:14,37,60,64
Sept. 2 (2)	Alkane Nomenclature and Functional groups Alkyl Halide Nomenclature	Nomenclature: 4.1-4.2 Functional groups: 2.3 Alkyl Halide Nomenclature: 7.2	<i>Nomenclature</i> , Ch. 4: 36a- i,40ab,65,70(only common name) <i>Functional groups</i> , Ch. 2: 7,37,82,86a <i>Alkyl Halide Nomenclature</i> , Ch. 7: 1abeh,47abcef
Sept. 4 (3)	Alkane and Alkyl Halide nomenclature. continued		
Sept. 4 (4)	<i>Recitation</i> Intermolecular Forces	1.12-1.14	Ch. 1: 28,29,30cd,31,49,62,65; Ch. 4: 78
<i>Week 2</i>			
Sept. 7	<i>Labor Day, no class</i>		

Sept. 9 (5)	Alkane Conformations	4.6-4.8	Ch. 4: 16,17,19,20,38,41,42,45,53,56,62,67,68,74,75,80
Sept. 11 (6)	Cycloalkane Conformations	4.9-4.14	Ch. 4: 21-30,32-34,35,43,46,47,48bd,50,51,52ab,54,58,59,61,66,71,73a,76ab,77,81
Sept. 11	Recitation- Quiz #1		
Week 3			
Sept. 14 (7)	Stereochemistry Introduction	5.1-5.3, 5.11	Ch. 5: 1-5,7-10,31,32,33*,34, 38*,39,47,48,57,63,76,77,78a, 79,84ab* Ch.7: 1cdfg (<i>alkyl halides</i>) <i>alkene stereochemistry</i> : 5.29,30,75
Sept. 16 (8)	Stereochemistry, continued		
Sept. 18 (9)	Stereoisomer Relationships and Multiple Asymmetric Centers	5.5-5.8	Ch. 5: 19-26,27ab,36,37,44,45,50-53,55,58-62,64,68-70,73,74,80 <i>Fischer projections</i> : 5.47,48
Sept. 18	Recitation-Quiz #2		
Week 4			
Sept. 21(10)	Physical Properties of Stereoisomers	5.4	Ch. 5: 66
Sept. 23 (11)	Resonance	2.7-2.13	Ch. 2: 12-20,22,25-27,28*,29,30,33,34,38,40,41,47,51-53,57,61,62,64,68-72,83*,88*
Sept. 25 (12)	Acids-Bases Introduction	3.1-3.3	Ch. 3: 1-11,22,37-39,44-48,55,77,81*82*
Sept. 25	Recitation-Quiz #3		
Week 5			
Sept. 28 (13)	Qualitative Acid-Base Analysis	3.4-3.6	Ch. 3: 13-21,23-30,31*,32,33,43,49-52,53*,54,56,57,59-64,66,67*,69,70*73-76,78,84*
Sept. 30 (14)	Lewis acid-bases	3.10	Ch. 3: 35,36*,40,58
Oct. 2	Exam 1		
Week 6			
Oct. 5 (15)	S _N 2 Reactions	7.1, 7.3-7.4	S _N 2, Ch. 7: 2-8,50,51,53,54,77,79,82,88,91,92,95,97,101,105*,106*,110*
Oct. 7 (16)	S _N 2 reactions, continued		
Oct. 9 (17)	E2 Reactions	7.5	E2, Ch. 7: 9
Oct. 10	Recitation-Quiz #4		
Oct. 10-18	Fall Break		
Week 7			
Oct. 19 (18)	Alkene Nomenclature and Stability	7.6, 8.3	<i>Nomenclature</i> , Ch. 7: 10,11,48,103*. Ch. 8: 1,2,4,47abdefg,88,89
Oct. 21 (19)	E2 Regiochemistry and Stereochemistry	7.7	Ch. 7: 12,13,14*,15-17,18*,19,20,57-66,68,73*,75a-dgh,78,114*
Oct. 23 (20)	S _N 1 and E1	7.8, 7.12	Ch. 7: 21-27,33b34bd,42,43,69,72,75j,87,94,96,102,111*

		C+ rearrangements : 6.11	C+ rearrangements and stability: Ch. 6: 17,18,28,41,62
Oct. 23	Recitation-Quiz #5		
Week 8			
Oct. 26 (21)	Predicting Products: Substitution versus Elimination and more	7.9, 7.10	Ch. 7: 28,29,31,32,35,37,38,40,52,55,56, 75efi,76ac-g,80,81,83,85,86,89,90,93,98-100
Oct. 28 (22)	Alkene Addition Reactions	8.1, 8.4, 8.6	<i>Acid-catalyzed hydration</i> , Ch. 8: 12-15,51a,64b,83,108* <i>Rearrangement reactions</i> , Ch. 8: 11,51b,63,79,87
Oct. 30 (23)	Alkene Reactions: Halogenation, Hydrohalogenation, Hydroboration	Hydrohalogenation, 8.5 Halogenation, 8.10 Hydroboration, 8.8	<i>Hydrohalogenation</i> , Ch. 8: 5acde,6a,7,8*,9,10,51cd,68,71,78 <i>Halogenation (incl. halohydrin formation)</i> : Ch. 8: 24-27,66,72,85,97,98,102*,105*,109* <i>Hydroboration</i> : Ch. 8: 18-21,64c,65,82,103*,107*
Oct. 30	Recitation-Quiz #6		
Week 9			
Nov. 2 (24)	Alkene Oxidation, Epoxidation and Associated Reactions	8.11, 8.12, 13.8, 13.10	<i>Epoxidation/anti-dihydroxylation</i> , Ch. 8: 28,29,30*,56,62,64d; Ch. 13: 13 <i>Syn-dihydroxylation</i> , Ch. 8: 31a-cef, 36,37,86 <i>Epoxide reactions</i> , Ch. 13: 16bce, 17,18ac-f,19,22acd,37c,47,53,76a, 77*,80*
Nov. 4 (25)	Ozonolysis	8.13	Ch. 8: 32-34,67,81,94
Nov. 6	Exam 2		
Week 10			
Nov. 9 (26)	Hydrogenation	8.9	Ch. 8: 22,23,48,55,60,74
Nov. 11 (27)	Predicting Products and Synthetic Strategies, continued	8.14, 8.15	<i>Predicting Products</i> , Ch. 8: 35,39abd-hj-1,50,52,69,80,91,92,95* <i>Synthetic Strategies</i> , Ch. 8: 40-46,53,57,59,61,70,77,90,96
Nov. 13 (28)	Radicals Introduction	10.1-10.3	Ch. 10: 1-7,24-26,30,45,48
Nov. 13	Recitation-Quiz #7		
Week 11			
Nov. 16 (29)	Radicals and Selectivity	10.5-10.7, 10.13	Ch. 10: 8-14,16-18,23,28, 31,33,34adef,35-38,40,41*,42,44, 49,52c-e,60*,61*,63*,65ab
Nov. 18 (30)	Autooxidation and Antioxidants	10.9	Ch. 10: 27, 32
Nov. 20 (31)	Radical Polymerization	10.11	Ch. 16: 12 (monomer identification)
Nov. 20	Recitation-Quiz #8		
Week 12			

Nov. 23 (32)	Alcohols, including Nomenclature	12.1, 12.2	<i>Nomenclature</i> , Ch. 12: 1abd,29abd,30adf Acidity, Ch. 12: 4bd,5-7,32,33,34cgik
Nov. 25 (33)	Alcohol Reactions	12.3, 12.9	Ch. 12: 8,9,19,21,35,40,60 Ch. 7: 33a,34ac,70,71,84
Nov. 26-29 <i>Thanksgiving Break</i>			
<i>Week 13</i>			
Nov. 30 (34)	Conjugated Pi Systems	16.1-16.3	Ch. 16: 1,5*,30,31,60,64,77*
Dec. 2 (35)	UV-vis Spectroscopy	16.11-16.13	Ch. 16: 41,47
Dec. 4	Exam 3		
<i>Week 14</i>			
Dec. 7 (36)	Conjugated Diene Electrophilic Addition	16.4,16.5	Ch. 16: 6,7,9-11,34-38,65,67
Dec. 9 (37)	Aromatic Compounds Introduction	17.1-17.5	<i>Nomenclature</i> , Ch. 17: 1bcd,2,3b,5a,24,25a-e. <i>Aromaticity</i> , Ch. 17: 8,10-12,30ace, 35- 37,39,78* <i>MO diagrams</i> , Ch. 17: 9,38,54 <i>Heteroaromatics</i> , Ch. 17: 13- 15,30bd,32cd,33,40,48,53,66 <i>Med chem</i> , Ch. 17: 16
Dec. 13-18	<i>Scheduled Final Exam</i> Date TBD		Park XX

Notable omitted topics: leveling effect, sect. 3.7; oxymercuration-demercuration, sect. 8.7; alkynes, Ch. 9; radical addition of HBr to alkenes, sect. 10.10; preparation of alcohols by reduction and with Grignard reagents, sects. 12.4 and 12.6—discussed in OC2; protecting groups, sect. 12.7; IR spectroscopy, NMR spectroscopy and mass spectrometry, Ch. 14 and 15—discussed in lab).

Support Activities to Help You Succeed

Associated Questions (Textbook Problems): Questions are listed for your practice; they will not be collected or graded, but they will be discussed in recitation, and some will appear on quizzes and exams. I list them with an emphasis on including *all potentially relevant* questions, but you probably won't have time to engage in that much fun. Also, as we progress through the course, there may be cases where I adjust treatment and some questions are deleted. By working through the questions, you will be involved in "active learning", a proven method for success in academic studies. The answers to many assigned questions from your textbook can be found in the "Organic Chemistry Student Study Guide and Solutions Manual" that accompanies the textbook. Several copies of this answer key are available at the Reference Desk in Collier Library.

Questions with an *=Hurricane strength questions

Recitation: The recitation time on Friday afternoon will be used to collaboratively work with more challenging organic chemistry problems. You are encouraged to bring your questions to get them answered. I will also post a recitation worksheet before Thursday evening, and we will spend time reviewing that. One goal of the recitation worksheets is to expose you to more challenging questions that

stretch your understanding and your ability to apply the course concepts. Remember, as with any activity, the more preparation you put into the recitation, the more you will get out of it.

Assessment of Your Learning

Quizzes: There will be eight joyfully challenging 10-point quizzes as noted on the calendar during the class recitation meetings. Only your six best quizzes will be counted towards your final grade. The quizzes will be held at the end of recitation after a worksheet and a brief question period. They will consist of multiple choice and brief chemical concept questions. The quizzes will last for approximately 10 minutes. They are intended to be a low-stakes opportunity to evaluate your understanding of the course material.

Exams: There will be three super fun-tastic 100-point exams on the dates shown on the lecture schedule. You will have two hours, both the lecture hour and the recitation hour, to complete the exam. All three exams will count towards your final grade. However, if you achieve a higher grade on your final exam than on one of your semester exams, the final exam percent score will be substituted for your lower semester exam.

Final Exam: There will be a wonderfully rewarding three-hour scheduled 150-point final exam during the exam period.

Note: Molecular modeling kits may be used during quizzes and exams to assist you in answering the questions. All other course materials and electronic devices, including smartphones, must be stored in your backpack. Use of any additional materials, including a smartphone or any other electronic device, during an exam or quiz will result in a zero for that assignment. In the event of an exam, this grade cannot be replaced by a final exam score. In the event of a quiz, it will be registered as a zero and will not be dropped.

Missed Assignments: If you have a medical or family emergency that prevents you from completing class assignments, then you need to alert me as soon as possible. I will work with you to arrange an alternative time for you to complete the assignment. If that is not possible and you provide sufficient documentation for the emergency, then you will be excused from the assignment. The points for that assignment will not be included in your grade calculation.

Laboratory

The organic chemistry laboratory is a separate course and does not need to be taken concurrently. Prof. Ariana Hall (Park 170) is the instructor for the laboratory portion of the course; questions about the lab should be brought to her. Generally, the lab topics and activities will complement the course topics but will not always be synchronized. Some topics, such as NMR and IR spectroscopy and mass spectrometry, will only be reviewed in lab.

Course Grading:

Quizzes	10 pts. each (x 6)	60 pts.
Semester Exams	100 pts. each (x 3)	300 pts.

Final Exam	150 pts.	150 pts.
	Total Points:	510 pts.

Approximate Grading Scheme:

93-100%	4.0 (A)	77-80%	2.7 (B-)	62-67%	1.3 (D+)
89-92%	3.7 (A-)	73-76%	2.3 (C+)	58-61%	1.0 (D)
85-88%	3.3 (B+)	70-73%	2.0 (C)	<57%	0.0 (F)
81-84%	3.0 (B)	66-69%	1.7 (C-)		

I reserve the right to adjust this grading scheme when I consider it necessary.

Students with Disabilities: Bryn Mawr College is committed to providing equal access to students with a documented disability. Students needing academic accommodations for a disability must first speak with Access Services. Students can email accessservices@brynmawr.edu to request an appointment to begin this confidential process. If eligible for accommodations as per Access Services, students should schedule an appointment with the professor as early in the semester as possible to share their verification form and make appropriate arrangements. Please note that accommodations are not retroactive and require advance notice to implement. More information can be obtained at the Access Services website. (<http://www.brynmawr.edu/access-services/>)

Any student who has a disability-related need to record this class must first be found eligible to do so by Access Services and must share this eligibility with me, the instructor. Class members need to be aware that this class may be recorded.