

CHEM 2561 Syllabus (Spring 2024)

Laboratory for Organic Chemistry 2 (Prof. Myers' Sections)

Instructor: Dr. Brian Myers
Office: Meyer Hall 256
Phone: 419-772-2350
Email: b-myers@onu.edu
Web pages: <https://myersorganic.netlify.app/>

Office Hours: MWF from 10–noon or by appointment. Open door or by appointment (virtual is an option). See: <http://tinyurl.com/BJMofficehours>.

CHEM 2561.41 (CRN 30110) Thursday 8:00 A.M. MY 205/217
CHEM 2561.43 (CRN 30112) Thursday 12:00 P.M. MY 205/217
CHEM 2561.45 (CRN 31235) Thursday 3:00 P.M. MY 205/217

Catalog Info: Chemistry 2561 is a 1 credit hour course. Reactions with/on radicals, dienes, aromatics, alcohols, carbonyls, amines, the structure and chemistry of carbohydrates, and organic polymer chemistry. Taken concurrently with CHEM 2521. Credit may be received for CHEM 2561 or 2661, but not for both. Offered spring semester.

Course Fee: \$30.00

Goals: The lab experiments in this course are designed to illustrate the practical implementation of the theories and concepts discussed in the Chemistry 2521 lecture course. The laboratory experiments and exercises will enhance and deepen your understanding of the lecture materials. Student learning objectives/outcomes for each experiment can be located in the lab manual.

Required Texts:

- *Organic Chemistry Laboratory Experiments and Exercises* (the Lab Manual). 2023 Edition
- Carbonless copy notebook (Top Sheet perforated) (ISBN 9781930882461)
- Klein, David, *Organic Chemistry*. 4th ed. (TEXT), Wiley.

Required equipment: Safety goggles and appropriate laboratory attire as specified in the Lab Manual under “Lab Attire & Protective Clothing.” **Goggles must be brought to lab each week–Not left in your lab drawer.**

Requirements: Completion of CHEM 2511 or 2611 and CHEM 2551 or 2651 with a passing grade. CHEM 2561 is intended to be taken concurrently with CHEM 2521. If you withdraw from CHEM 2521 you must also withdraw from CHEM 2561. In the event that you must withdraw from CHEM 2561, you must arrange a time with your instructor to check-out of your drawer. If you do not check-out of your drawer, a hold will be placed on your university account.

Canvas: Laboratory prelab assignments and supplemental materials will be available online through Canvas. If you have problems accessing the course, please contact the IT helpdesk (x1111). **These must be completed prior to coming to lab.** The system timestamps the submission and late submissions will be marked as a zero.

Preparedness: The student must complete the notebook table, prelab exercise, and assigned reading prior to the lab period.

Lab notebook: Please refer to the Lab Manual pages 11–13.

Missing Lab/Makeups: In the unlikely event that you are unable to attend lab, you need to let your lab instructor know immediately by email and/or phone. For an excused absence you will need to complete the experiment during a different time. If this is not possible, your laboratory score will be prorated based on your performance during the semester. For an unexcused absence, you will receive zero points for all the graded activities associated with that laboratory period. Three unexcused absences will result in immediate failure of the course.

Cancellation of In-person Instruction: If ONU must cancel in-person class meetings for weather or any other reason, an announcement will be released in the official RAVE email and text. The campus will be told that ONU will be moving to virtual instruction. For this class, you will likely be expected to complete course material asynchronously; please check Email & Canvas. Contact your instructor with any questions or concerns. You may be required to make up any classes cancelled.

Safety: Please be aware that the lab experiments you will complete require the use of toxic substances. Thus, prudent attention to safety practices should be followed at all times. Please make your instructor aware of any medical conditions that might affect your ability to safely complete these experiments.

Grading: The overall grade in the course will be determined by the following point breakdown

Possible Points

Lab Exams (2 x 30 pts each)	60	Grading Scale	
Canvas prelab assignments (12 x 5 pts each)	60		
Worksheets/Packets (3 x 20 pts each)	60		
Notebook Pages (9 x 20 pts each)	180		
Lab Technique	10		
Laboratory Final (week 15)	60		
Total	430 points		
		A	88.0 – 100%
		B	75.0 – 87.9%
		C	65.0 – 74.9%
		D	55.0 – 64.9%
		Worse	0 – 54.9%

Common Course Policies

Ohio Northern University is dedicated to providing an equitable educational experience for all enrolled students. Universal course policies applicable to all courses can be found at the following link:

https://my.onu.edu/registrars_office/policies. Specifically, this website includes the policies for the following topics:

- Academic Dishonesty Policy
- Academic Accommodations Policy
- ONU Health and Safety Policy
- Title IX Policy
- Diversity, Equity, and Inclusion Language

Course learning objectives

Upon successful completion of this course, students will be able to:

1. Employ safe practices in the laboratory.
2. Maintain a proper laboratory notebook.
3. Synthesize and purify simple organic molecules using basic lab techniques (distillation, recrystallization, extraction).
4. Identify the basic chemical concepts utilized in the choice of reaction conditions, techniques, and isolation methods.
5. Utilize spectroscopic data (MS, IR, ^1H NMR, ^{13}C NMR) to identify organic compounds.
6. Predict the outcome of organic reactions using a basic understanding of mechanisms and functional group reactivity.

Lab Date	Lab Experiment Title	Required Reading (Lab Manual/Text)
January 23,25	Check-in, Safety Lecture Reaction Review	p. 1–10 TEXT: Chap. 7–11
January 30 February 1	In-class prelab quiz Free Radical Bromination A Canvas prelab is due Turn in notebook pages	p. 115 TEXT: 455–476
February 6,8	A Reaction with <i>N</i> -Bromosuccinimide A Canvas prelab is due Turn in notebook pages	p. 119 TEXT: 388–391
February 13,15	Synthesis of a Secondary Alcohol via Reduction of a Ketone A Canvas prelab is due Synthesis Problem Solving Session Turn in notebook pages	p. 127 TEXT: 539–545
February 20,22	A Fast Diels-Alder Reaction A Canvas prelab is due Turn in notebook pages	p. 135 TEXT: 753–759
February 27, 29	Esterification: Synthesis of Isoamyl Acetate A Canvas prelab is due Turn in notebook pages	p. 149 TEXT: 962–965
March 5,7	Iodination of Vanillin A Canvas prelab is due Turn in notebook pages EXAM	p. 143 TEXT: 829–832
March 12,14	Spring Break	–
March 19,21	Synthesis of Lidocaine: Part A Identification of an Unknown Compound A Canvas prelab is due Turn in individual Unknown worksheet	p. 171 and 153 TEXT: 971–975
March 26,28	Synthesis of Lidocaine (90 min reflux): Part B A Canvas prelab is due Turn in packet and notebook pages	p. 171 TEXT: 1066–1068
April 2,4	Reductive Amination in Three steps A Canvas prelab is due Turn in notebook pages	p. 183 TEXT: 1069–1071
April 9,11	Knoevenagel Condensation A Canvas prelab is due Turn in notebook pages EXAM	p. 179 TEXT: 996–1022
April 16,18	No Lab- Honor's Day	
April 23,25	Synthesis of Azo Dyes A Canvas prelab is due Turn in notebook pages	p. 187 TEXT: 1077–1083
April 30, May 2	Studying the Chemistry of Carbohydrates, Polarimetry A Canvas prelab is due Turn in individual worksheet	p. 199 TEXT: Chap. 24
May 7,9	Check-out Lab Final Exam	

TEXT = Klein, 4th Edition