

CHEM 230L Organic Chemistry Laboratory Syllabus Fall 2019

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Office Location: KECK 236

Office Hours: Tuesday 4–6pm; Wednesday 4–6pm

Prerequisite: 1 year of general chemistry and lab.

Required Textbook: Pavia, D., et al. *A microscale approach to organic laboratory techniques* (Sixth Edition ISBN-13: 978-1-305-96834-9 or Fifth ed. ISBN-13: 978-1-133-10652-4 (3 copies of Fifth ed. are available in the Chapman Library Reserve)

Course Electronic Access: Course materials including the syllabus are available on Blackboard. The Blackboard site will be the primary repository of all documents for this class including handouts or announcements that are relevant to the lab.

Description: CHEM 230L is the first semester of a two-semester laboratory sequence. It provides essential organic chemistry lab technique training and helps you learn materials from CHEM 230 lecture. This laboratory course is to develop skills of careful observation, interpretation and recording of organic chemistry reaction phenomena. Basic organic chemistry lab technique development, handling common chemicals and instruments are the major goals of this lab. This course is primarily to develop organic chemistry lab technique; secondarily supplement CHEM 230.

Success Strategies: Success in CHEM 230L requires significant investment of time and effort. Success in this course is measured by the knowledge and skills gained by the student about experimental lab techniques and how to apply them to real life situations. This will require hard work and dedication, but the benefits will last beyond your academic career at Chapman University.

CHEM 230L Intended Learning Outcomes: At the end of this course, each student will be able to:

- Apply the hypothesis driven scientific method to solve problems.
- Demonstrate competency and mastery of basic organic chemistry laboratory skills
- Understand and apply basic organic chemistry laboratory techniques to real life cases.
- Develop innovative and creative ideas using organic chemistry laboratory skills.

Program Learning Outcomes for the B.S. Chemistry.: In addition to the above learning outcomes, CHEM 230L allows for introduction or reinforcement of the following Program Learning Outcomes for the B.S. in Chemistry:

- Students will be able to use the scientific method to solve problems.
- Students will be able to demonstrate written, visual, and oral presentation skills to communicate scientific knowledge.
- Students will be able to apply critical thinking and analytical skills to design and execute a scientific experiment, thoroughly analyze the results, and arrive at well-reasoned scientific conclusions.
- Students will be able to demonstrate an understanding of core knowledge of chemistry.

Attendance: Attendance at your regularly scheduled lab section is **mandatory**. If you miss a lab experiment due to illness, emergency or required attendance at an official University event you must notify your instructor and provide appropriate document (e.g. doctor's note) within three days. **Missing two or more lab classes will result a failing grade for CHEM 230L.** There are no makeup labs except as required for attendance at an official University event such as representing Chapman for a sport event, etc. **If you are absent from lab, you are still responsible for completing a laboratory report using data from your laboratory partner.**

Evaluation: Your grade in this course is based on eight informal laboratory reports, two formal laboratory reports, a midterm examination, and a final examination.

Assessment	Experiment(s) or Week	Weighting
Informal Reports	Exp. # 1, 2, 4, 5, 6, 8, 9, 10	(6.25 % each × 8) = 50%
Formal Reports	Exp. 3 and 7	(15% each × 2) = 30%
Midterm Exam	Week 9 (Oct. 21–25)	10%
Final Exam	Week 15 (Dec. 2–6)	10%

Informal Laboratory Reports (100 points each): Each informal laboratory report will consist of a pre-laboratory assignment (30 points; due at the start of your lab period). At the beginning of the following lab period (one week after completing a given experiment), your informal report is due, which consists of a written Procedure and Data section (20 points) and answers to post-laboratory questions (50 points).

Formal Laboratory Reports (100 points each): Each formal laboratory report is in the format of a peer-reviewed manuscript and includes the following components: title page, abstract, introduction, procedure, results, discussion, conclusions, references, and supporting information. For the Experiment 3 report, you will give and receive constructive feedback from your peers (30 points), and will revise your report to address these comments in a final submission (70 points).

Late Work Policy: Late pre-labs will not be accepted. Late informal post-lab reports and formal lab reports will be accepted, but a 10% deduction will be applied for each day late. Any informal post-lab report or formal lab report turned in greater than 1 week late will not be accepted.

Grading Scale:

Grade	Score	Grade	Score
A	92.5-100 %	C	72.0-74.9 %
A-	90.0-92.4 %	C-	69.0-71.9 %
B+	86.0-89.9 %	D+	66.0-68.9 %
B	82.0-85.9 %	D	63.0-65.9 %
B-	78.0-81.9 %	D-	60.0-62.9 %
C+	75.0-77.9 %	F	Below 60.0 %

Safety Rules: You are responsible for thoroughly reviewing the university's safety regulations and reading and signing the Safety Rule sheet when check in the Organic Chemistry lab. You **will not** be allowed to participate in any experimental procedure until you have completed this procedure.

O-Chem Lab Safety Requirements: Students are required to follow all safety rules and standards set forth by Chapman University and laboratory course instructors. Students not following these standards may be asked to cease activities and/or leave the laboratory. Laboratory instructors have full discretion to assess penalties as they see fit should students violate any of these policies. Complete lab attire requirements will be provided by the lab instructor where lab work is performed. Students must wear long pants and shoes that completely cover their feet in the lab. In many cases, additional personal protection equipment (PPE) such as safety goggles, gloves, and lab coats, will also be required.

Cell Phone Policy: The use of cell phones at any time during the lab will not be permitted except for activities related to the lab. It is a distraction to your ability to complete the experimental procedure and may cause accidents. You will be asked to leave the lab if you repeatedly violate this policy and receive a 0 on the experiment.

Safety Goggles/Lab Coats Policy: Safety goggles and lab coats **must be worn at all times in the laboratory**. You can only remove your goggles when you are out of the lab or with the permission of your instructor. You will need to stop your lab work, notify your instructor, and excuse yourself from the room before removing the goggles. Most lab-related eye injuries result from a spill that was generated **not** by the injured person, but by someone else in the nearby vicinity. **You will be asked to leave the lab and will receive a grade of zero for the experiment if you repeatedly violate this policy.**

Food and Drink Policy: **No food and drink (including water) is allowed in the lab.** There are serious repercussions to ingesting food that can be contaminated with chemicals present in the lab. Food and drinks can absorb volatile (vaporous) chemicals and be contaminated just by being in the lab. If you need to drink something or take a short break for a snack, always step outside the lab and leave the food and drink outside.

Emergency Evacuation Site: In case of an emergency, the evacuation site is the Football field.

Chapman University's Academic Integrity Policy: Chapman University is a community of scholars that emphasizes the mutual responsibility of all members to seek knowledge honestly and in good faith. Students are responsible for doing their own work and academic dishonesty of any kind will be subject to sanction by the instructor/ administrator and referral to the university Academic Integrity Committee, which may impose additional sanctions including expulsion. Please see the full description of Chapman University's policy on Academic Integrity at:

https://www.chapman.edu/academics/academic-integrity/_files/academic-integrity-policy.pdf

Chapman University's Students with Disabilities Policy: In compliance with ADA guidelines, students who have any condition, either permanent or temporary, that might affect their ability to perform in this class are encouraged to contact the Disability Services Office. If you will need to utilize your approved accommodations in this class, please follow the proper notification procedure for informing your professor(s). This notification process must occur more than a week before any accommodation can be utilized. Please contact Disability Services at (714) 516-4520 or visit the following link:

<https://www.chapman.edu/students/health-and-safety/disability-services/policy.aspx>

Once formal approval of your need for an accommodation has been granted, you are encouraged to talk with your professor(s) about your accommodation options. The granting of any accommodation will not be retroactive and cannot jeopardize the academic standards or integrity of the course.

Chapman University's Equity and Diversity Policy: Chapman University is committed to ensuring equality and valuing diversity. Students and professors are reminded to show respect at all times as outlined

in Chapman's Harassment and Discrimination Policy. Any violations of this policy should be discussed with the professor, the Dean of Students and/or otherwise reported in accordance with this policy.

Student Support at Chapman University: Over the course of the semester, you may experience a range of challenges that interfere with your learning, such as problems with friend, family, and or significant other relationships; substance use; concerns about personal adequacy; feeling overwhelmed; or feeling sad or anxious without knowing why. These mental health concerns or stressful events may diminish your academic performance and/or reduce your ability to participate in daily activities. You can learn more about the resources available through Chapman University's Student Psychological Counseling Services here: <https://www.chapman.edu/students/health-and-safety/psychological-counseling/>

Fostering a community of care that supports the success of students is essential to the values of Chapman University. Occasionally, you may come across a student whose personal behavior concerns or worries you, either for the student's well-being or yours. In these instances, you are encouraged to contact the Chapman University Student Concern Intervention Team who can respond to these concerns and offer assistance:

<https://www.chapman.edu/students/health-and-safety/student-concern/index.aspx>

While it is preferred that you include your contact information so this team can follow up with you, you can submit a report anonymously. 24-hour emergency help is also available through Public Safety at 714-997-6763.

Laptop Rental Program: An automated laptop rental kiosk is available in the Student Union, which is free to all Chapman students with a valid ID. You can swipe your ID card, take a laptop anywhere on campus, and return it within the 4-hour time limit. There are six Dell laptops and six Macbook Pro laptops available to rent.

All Gender Restrooms: To find Chapman University's all-gender restrooms, click on Restrooms on the drop-down menu of the interactive campus map at <https://www.chapman.edu/about/maps-directions/campus-map/index.aspx>. All-gender restrooms are labeled and identified across campus.

Food Pantry Assistance: If you or a student you know could benefit from access to the food pantry or would like more information on the food pantry program, contact the Dean of Students at (714) 997-6721.

Tentative CHEM 230L Schedule – Fall 2019

Week (Date)	Experiment # (Pavia Reading)	Experiment Title
1 (Aug. 26)		Check-In, Safety Training, Significant Figure, Lab Report, <u>ChemDraw & Molecular Model Kit Practice</u>
2 (Sep. 2)		<i>Labor Day (No Lab)</i>
3 (Sep. 9)	Exp 1 (#2)	Solubility – Polarity & pH Effects
4 (Sep. 16)	Exp 2	Purification Technique – Recrystallization
5 (Sep. 23)	Exp 3 (Handout)	*** Conformation Analysis of Saturated Organic Compounds***
6 (Sep. 30)	Exp 4 (Handout)	Isolation of Limonene from Orange Peels
7 (Oct. 7)	Exp 5 (#8)	Identification of Unknowns by Distillation
8 (Oct. 14)	Exp 6 (#13A)	Extraction and Purification of Caffeine
9 (Oct. 21)		Mid-Term
10 (Oct. 28)	Exp 7 (#21)	***Nucleophilic Substitution Reactions: S_N1 vs. S_N2***
11 (Nov. 4)	Exp 8 (#6A,B)	Separation of Organic Compounds by Chromatography
12 (Nov. 11)	Exp 9 (#6C,D)	Monitoring reactions by TLC & Column Chromatography
13 (Nov. 18)	Exp 10 (Handout)	Radical-Catalyzed Alkene Isomerization
14 (Nov. 25)		<i>Thanksgiving (No Lab)</i>
15 (Dec. 2)	Final	Final Exam and Check Out

Red text designates an experiment for which you complete a formal laboratory report

NOTE: Pavia readings refer to the 6th edition