

CHEM 12AL Course Syllabus

2 units

CHEM 12AL Organic Chemistry Laboratory I

6 hours Laboratory

Presents an introduction to microscale laboratory and instrumental techniques covering isolation, synthesis and identification of many classes of organic compounds.

Instructor Jason Camara, Ph.D.
Office: 605A Hours: M/W 12:30-1:30 pm; T/TH 1:00-2:00 pm
Phone: 477-5621
Email: jason.camara@cabrillo.edu
Course Web Page: <https://chemed.study/chem12A/>

Schedule M/W 8:00 - 11:05 am - **Room 607**

Final Examination:

Mon. May 16th, Room 607 7:00 am – 9:50 am

Materials Pavia, D.; *et. al.* *A Microscale Approach to Organic Laboratory Techniques, Fifth Edition*; Brooks Cole: Belmont, CA, **2013**. (ISBN 978-1-133-10652-4)
Hard-bound Laboratory Notebook

Requisites Prerequisite: CHEM 1B with a letter grade of “C” or better
Hybrid Requisite: Completion of or concurrent enrollment in CHEM 12A
Recommended Preparation: Eligibility for ENGL 100 and READ 100

Student Learner 1. Create and maintain a proper laboratory notebook that meets the specifications of a legal document with emphasis on simple single experiment content.

Outcomes 2. Utilize standard organic laboratory techniques to conduct simple synthesis and isolation experiments while demonstrating proper safety in all aspects of handling common organic and inorganic chemicals.
3. Perform, analyze, and generate reports on a variety of physical, chemical, and spectroscopic tests to confirm the structure of known chemical substances and determine the structure of unknown chemical substances.

Assessment Assessment is based on percentages as follows:

- 25% Technique
 - Each experiment is assessed for technique based on the Technique Rubric out of a possible 20 points. The scores for each experiment are summed and the total normalized to 25 points or 25% of the total grade.
- 25% Laboratory Notebook
 - Each experiment is assessed for the laboratory notebook based on the Lab Notebook rubric out of a possible 16 points. The scores for each experiment are summed and the total normalized to 25 points or 25% of the total grade.
- 25% Introductory Experiments
 - Experiments 1-6 in Pavia et. al. are considered introductory skill building experiments involving critical thinking and are assessed on an equal point basis of 24 points each. The write-up for these experiments consists of laboratory notes, discussion of questions posed at the end of each experiment in the “Report Section” of the text, and discussion of assigned questions at the end of each experiment in the text. The scores for each experiment are summed and the total normalized to 25 points or 25% of the total grade.
- 10% Short Reports
 - There are two experiments that will require short reports - Exp. 7 Infrared Spectroscopy and Boiling Point Determination, and Exp. 12 Isolation of Caffeine. The short report consists of an abstract and short discussion/conclusion section. These written components will be assessed using the Formal Report Rubric out of a possible 12 points. The scores for each experiment are summed and the total normalized to 10 points or 10% of the total grade.
- 15% Formal Reports
 - Each of the following reports is assessed by the Formal Report Rubric based on a 24 point scale. The scores are weighted according to the given percentages, summed and the total normalized to 15 points or 15% of the total grade.
 - 35% Synthesis Acetylsalicylic Acid
 - 65% Exp. 35 An Oxidation/Reduction Scheme

The grading scale for each type of assessment is detailed in the following rubrics:

- Technique Rubric
- Notebook Rubric
- Formal Report Rubric

Assessment Unless otherwise stated to the class, the due dates are outlined in the schedule and are expected to be followed. While due dates are important for your academic progress, I understand that life happens and I am willing to work with you. Communication is key. Please reach out to me if you find yourself falling behind or unable to make a due date.

Safety For safety reasons, no student will be allowed to work in the lab without proper attire. Proper attire for the chemistry lab means:

- Safety glasses at all times when anyone is working with chemicals anywhere in the room.
- Closed toe shoes - absolutely no flip-flops, sandals or high heels.
- No shorts - legs should be covered below the knee.

Failure to wear the proper attire will result in your being asked to leave the lab. Take responsibility and wear the proper attire. Don't bother to ask for an exception because you forgot on a particular day, **there will be no exceptions.**

There are to be no unauthorized experiments conducted in the lab.

Absence If you find that you need to make-up a lab, or require extra time to work on projects, you must first check with me before simply showing up in a lab section other than the one you are enrolled in.

Classroom Conduct Listed here are some of the common courtesies and conduct I expect in my classroom as well as the ramifications for not following them.

and Instructor Policies Cell phones - Cell phones are not as much a disruption in lab as they are in lecture. However, please make sure your ringer is off while lab lecture is going on. Once lab begins, should you need to make a phone call take it outside of the classroom.

Attendance - I don't take attendance other than on the first few days of class. My attendance policy is show up if you want to learn. That being said, missing lab is a really bad idea. It is extremely difficult to make up missed lab work. If you are going to miss lab because of illness or other unavoidable reasons, contact me as soon as possible to figure out a way to make up the missed work.

Chemical Stockroom - The chemical stockroom is off limits to students. Should you require materials such as chemicals or glassware you must ask one of the Laboratory Technicians (Larysa Owens or Eric Durkee) or one of the Student Employees for assistance. Students are not allowed to enter the stockroom.

Grade disputes - I encourage all of my students to regularly attend office hours. The proper place to ask about grading is during office hours. If you feel that you have been graded unfairly in any assignment, please take it up with me in office hours. I am more than happy to go over the grading of any work, however before class, during class and

immediately after class are too chaotic for me to give you the attention you deserve for a grading issue.

Classroom Conduct and Instructor Policies Cheating/Plagiarism - Written laboratory reports are to be your own work. Using the text from another source without a proper reference or citation is plagiarism. Documented cases of plagiarism will receive a zero grade for that assignment. In addition, falsely reporting yields and melting points or boiling points or any other physical data for the purposes of maintaining ones grade in the course is cheating. Documented cases of cheating will receive a zero grade for that assignment.

Unauthorized Experiments - Unauthorized experiments are expressly forbidden. Unauthorized experiments can lead to extremely dangerous situations and endanger yourself and your fellow classmates. Anyone caught performing unauthorized experiments will be removed from the class for that day, receive a zero for the entire assignment (write-up, technique, lab notebook), and will have a disruptive student report filed with the Dean of Student Services. A second offense will result in being dropped from the course and receiving a failing grade.

Laboratory Materials and Equipment - The laboratory materials (chemicals and resources) and equipment are the property of Cabrillo College and may not be removed from the classroom. This includes all chemicals you isolate or synthesize. Removal of any chemicals, resources or equipment from the classroom will result in a Disruptive Student Report to the Dean of Student Services and a lowering of your final grade for the course by one grade level. A second offense will result in being dropped from the course and receiving a failing grade. Deliberate misuse/mistreatment of the chemicals or laboratory equipment is not to be tolerated. As with unauthorized experiments, this type of behavior will result in the student being removed from the class for that day, receive a zero for the entire assignment (write-up, technique, lab notebook), and will have a disruptive student report filed with the Dean of Student Services. A second offense will result in being dropped from the course and receiving a failing grade.

Disruptions - A disruption is classified as an act that disrupts the normal function of the classroom, be it a distraction to me or to your fellow students, that a reasonable person would not engage in. Examples of such disruptions are engaging in disruptive conversations while lecture is proceeding, horse play while lab is in progress, unwillingness or inability to follow laboratory instructions, behavior in the laboratory that causes fear and concern among classmates or the instructor, etc.... The consequences for disruptive behavior are a three strikes policy. First disruptive behavior warrants a verbal warning, second time garners a Disruptive Student Report to the Dean of Student Services, third time you will be excused from the class and dropped from the role.

Waste Disposal - Waste disposal is extremely important. Everything has a place in terms of waste disposal. Proper waste disposal is covered at the beginning of the semester and specifics are given for individual experiments. If you don't know where something is to

be disposed of it is your responsibility to ask prior to making a mistake. Failure to follow proper waste disposal procedures will result in the three strikes policy. First offense warrants a verbal warning, second time garners a Disruptive Student Report to the Dean of Student Services, third time you will be excused from the class and dropped from the role.

Classroom Conduct and Instructor Policies Accidents/Injuries - From time to time accidents and occasional injuries happen in the lab. While accidents and injuries do not affect your grade in anyway, unless they result from disruptive behavior, unauthorized experiments, or deliberate misuse/mistreatment of chemicals and equipment, how you deal with the accidents and injuries is important. If the accident results in a small spill that is easily contained and cleaned up, do so immediately. If the accident results in a spill that you do not know how to deal with, calmly call for my attention and I will assist you. If I am not in the lab call for the attention of one of the stockroom technicians. If the accident results in you being exposed to the chemicals such as on your hands, arms, legs, face, clothing ... you should follow the safety procedures outlined at the beginning of the experiment immediately. Ask a classmate to get my attention or call out for help. Failure to notify me of any chemical exposure or injury occurring in the classroom can put your health in serious risk. You must notify me of all accidents and injuries. **In the event of chemical exposure or injury, you must clear it with me prior to leaving the classroom.**

End of Semester Check Out - At the end of the semester we have a lab clean-up day and locker check out process. It is your responsibility to contribute to the clean-up effort and to check out of your locker such that your locker and it's contents are left clean and free of chemical contamination. Failure to show up and contribute to the clean-up effort will reduce your final grade by one grade mark. Failure to check out of your locker, leaving it's contents chemically contaminated (i.e. reaction vessels not cleaned after use, reactions in various stages stored in containers, products stored in sample vials, spills not cleaned, condensers not cleaned after use,...) will result in your final grade for the course being lowered by one grade mark.

Nondiscrimination and Accessibility Notice The land on which we gather is the unceded territory of the Awaswas-speaking Uypi Tribe. Today there are no known survivors of the Awaswas Nation. The Amah Mutsun Tribal Band, comprised of the descendants of indigenous people taken to missions Santa Cruz and San Juan Bautista during Spanish colonization of the Central Coast, is today working hard to restore traditional stewardship practices on these lands to honor the Awaswas and heal from historical trauma.

The District is committed to equal opportunity in educational programs, employment, and all access to institutional programs and activities. The District, and each individual who represents the District, shall provide access to its services, classes, and programs without regard to national origin, religion, age, gender, gender identity, gender expression, race or ethnicity, color, medical condition, genetic information, ancestry, sexual orientation, marital status, physical or mental disability, pregnancy, or military and veteran status, or because he/she/they is perceived to have one or more of the

foregoing characteristics, or based on association with a person or group with one or more of these actual or perceived characteristics.

I encourage students with disabilities to explain their needs and appropriate accommodations, as evidenced by a counselor or specialist's recommendations, to me during office hours. As required by the Americans with Disabilities Act (ADA), accommodations are provided to insure equal opportunity for students with verified disabilities. To determine if you qualify, or if you need assistance with an accommodation, please contact the Accessibility Support Center (ASC, formerly DSPS), Room 1073 (upstairs in the Library), (831) 479-6379 or (831) 479-6370.