Organic Chemistry I Laboratory
CHEM 294L

Fall 2014

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1. **Student Outcomes:** The following outcomes are expected and will be assessed on laboratory reports and quizzes:

    a) apply theory in the characterization of organic compounds
    b) demonstrate the ability to set up a reaction and follow its progress
    c) perform common purification techniques
    d) Utilize computer modeling (Hyperchem) to investigate chemical processes

2. **Texts:** *Organic Chemistry Laboratory CHE 294 & CHE 304* with experiments from Lehman, J.W. *Microscale Operational Organic Chemistry: A Problem-Solving Approach to the Laboratory Course*; Pearson Learning Solutions, Inc.: Boston, 2010. You are required to purchase a copy of this text as it contains all of the information pertinent to the experiments that you will perform.

    Zubrick, J.W. *The Organic Chem Lab Survival Manual: A Student's Guide to Techniques, Any Ed.*; John Wiley and Sons, Inc.: New York. This text is optional.

3. **Safety:** Safety is a priority in the lab. You will be required to sign a safety agreement form before you can take part in the lab. If you fail to comply with any one of the rules set forth by the department contained in the safety agreement you may be excluded from the lab.

4. **Lab Reports:** Lab reports will be due one week after completion of an experiment. Reports handed in late will be penalized 10% per day up to 50%. The reports will consist of 4 major parts: pre-lab, observations, results, and conclusions.

    a) **Pre-lab:** The pre-lab write-up will be your guide to how the experiment will be performed in class and will be written or typed. It must be completed before coming to class, and you must have your instructor initial it before you are allowed to begin an experiment. If you fail to do the pre-lab write-up, you will not be allowed to participate in the lab and will get a zero for that experiment. The pre-lab will consist of the following information in the order given:
        i) **Title of Experiment** which is self explanatory
        ii) **Purpose** which should include information about why you are doing the experiment and what you will learn in the process.
        iii) **Chemical Information** will be required for every chemical that you will use in an experiment. You will be required to provide physical properties such as boiling point, melting point, density and molecular weight, which can be found from a variety of sources including http://www.sigmaaldrich.com. **Safety information** should also be included for every chemical used in an experiment including 1) *signs of exposure*, 2) *first-aid measures*, and 3) *potential hazards*. This

information can be found in the Material Safety Data Sheets (MSDS) contained in yellow binders at the back of the lab or on the internet (hazard.com or sigmaaldrich.com).

iv) **Procedure** will be a step-by-step list of tasks that you will perform in an experiment as laid out in the Lab text. Each step should be no longer than a sentence and should contain check boxes next to each item so that you can check them off as you go.

v) **Expected Results** which should include a theoretical yield and expected physical characteristics of product such as color, state, melting point, spectral data, etc.

b) **Observations:** This is the section in your lab notebook where you record all of your observations such as physical properties, characterization and amount of product.

c) **Results:** Beginning with this section, your report will be typed using 12pt Times New Roman or Arial fonts. This section should include a physical description of your product, overall reactions (which can be drawn), yield calculations including calculations for determining limiting reagents, characterization results, and a discussion of product purity. The relevant results are often best summed up in a table.

d) **Conclusions:** This section is where you compare the expected results with those obtained in your hands. You need to explain why we are to believe that you isolated the correct product. If necessary, you should also consider offering a reasonable explanation as to why your results do not match those which are expected.

5. **Quizzes**: There will be a quiz given at the beginning of each class on the day that a new experiment is to begin. The quiz will contain material from the previous lab as well as on the experiment to be performed on that day.

6. **Grades**: Grades will be calculated based on your best 9 experiments. Although there are 10 experiments, your lowest score will be dropped. Each laboratory report will be graded out of 50 points which is broken down as shown below. There are a total of 450 points possible. **If you do not earn at least 270 points in the lab you will not receive a passing grade in the course.** Your total score will be divided by 450 and then multiplied by 100 to get your lab percentage. This percentage will count as 25% of your overall course grade.

Prelab	5 pts
Observations	5 pts
Results	15 pts
Conclusions	15 pts
Quiz	10 pts

7. **Make-Up Labs:** Due to the busy room, faculty, and student schedules, no make-up labs will be given. We understand that unforeseeable events might arise which prevent you from coming to lab. For this reason you will be able to drop your lowest lab grade. If you miss a lab with an excused absence, then that lab will be the lab grade that is dropped. If you miss a lab and do not have an excused absence, you will receive a zero for that lab and that zero will not be dropped. Other missed labs will be counted as a zero unless prior arrangements are made.

8. **Student Code of Conduct:** You are expected to conduct yourself in an upright and ethical manner. If you are caught cheating in any form (plagiarism, copying, reporting data fraudulently, etc.) you will be given a failing grade for that course activity. In addition, you will be subject to further disciplinary action as set forth by university policy.

9. **Office Hours:** We will make every effort to be available in our office during the times we've indicated below for office hours. You are welcome to schedule an appointment or take your chances and drop by, especially if you find these hours inconvenient.

Office Hours

Perry	**Maloney**	**McCoy**
Monday: 10:30-12:00, Wednesday: 10:30-12:00 Thursday: 3-4 Friday: 10:45-12:15	Available by Appointment	Available by Appointment

10. **Laboratory Schedule:** Below is a schedule of the experiments to be performed.

Week of	Experiment
9-8	Check-In / Safety Information
9-15	Effect of pH on a Food Preservative
9-22	Separating the Components of Panacetin
9-29	Identifying a Constituent of Panacetin
10-6	Hyperchem I: Tutorial
10-13	Preparation of Synthetic Banana Oil
10-20	Preparation of Synthetic Banana Oil
10-27	Separation of Petroleum Hydrocarbons
11-3	Identification of a Petroleum Hydrocarbon
11-10	Isolation & Identification of Major Constituent of Clove Oil
11-17	Thin-Layer Chromatography Analysis of Drug Components
12-1	Structures and Properties of Stereoisomers
12-8	Hyperchem II/ butanols

11. **Academic Accommodations:** While all students are expected to meet the minimum academic standards for completion of this course as established by the instructor, students with disabilities may require academic accommodations. At Point Loma Nazarene University, students requesting academic accommodations must file documentation with the Disability Resource Center (DRC), located in the Bond Academic Center. Once the student files documentation, the Disability Resource Center will contact the student's instructors and provide written recommendations for reasonable and appropriate accommodations to meet the individual needs of the student. This policy assists the university in its commitment to full compliance with Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities (ADA) Act of 1990, and ADA Amendments Act of 2008, all of which prohibit discrimination against students with disabilities and guarantees all qualified students equal access to and benefits of PLNU programs and activities.