Pittsburg State University

SYLLABUS

Chemistry 336 - Organic Laboratory I

A Writing to Learn Course

Instructor: Dr. Ram Gupta

Office: HW 105H

Office Hours: Monday and Wednesday 8:00 am to 10:30 am or by appointment.

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Telephone: 235-4763

Prerequisites

CHEM 325 Organic Chemistry I. CHEM326 Organic Chemistry I Lab

Corequisite: CHEM 335 Organic Lecture.

Required Materials

Bound notebook
Goggles

Course Description

Organic Chemistry Laboratory II will use the techniques learned by students in Organic Laboratory I for common reactions used in modern organic chemistry. This course is designed to enhance lecture by illustrating reactions discussed. In addition, this class will provide a hands-on experience with reactions and data analysis.

Experiments

<table>
<thead>
<tr>
<th>Period</th>
<th>Date</th>
<th>Experiment</th>
<th>Exp. Page</th>
<th>Reading</th>
<th>Report</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>21-Jan</td>
<td>Safety / Notebook / Check-in</td>
<td>1-7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>28-Jan</td>
<td>Diels-Alder Reaction [Part E]</td>
<td>8</td>
<td>1-4</td>
<td>Informal</td>
</tr>
<tr>
<td>3</td>
<td>4-Feb</td>
<td>Electrophilic Aromatic Substitution [Part C] - pt. 1</td>
<td>27</td>
<td>11-13, 24</td>
<td>Formal</td>
</tr>
<tr>
<td>4</td>
<td>11-Feb</td>
<td>Electrophilic Aromatic Substitution [Part C] - pt. 2</td>
<td></td>
<td></td>
<td>Informal</td>
</tr>
<tr>
<td>5</td>
<td>18-Feb</td>
<td>Spectroscopy</td>
<td>36-45</td>
<td>Informal</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>25-Feb</td>
<td>Alcohols [Part A]</td>
<td>66</td>
<td>64-65</td>
<td>Formal</td>
</tr>
<tr>
<td>7</td>
<td>4-Mar</td>
<td>Ethers [Part A]</td>
<td>78</td>
<td>76-77</td>
<td>Informal</td>
</tr>
<tr>
<td>8</td>
<td>11-Mar</td>
<td>Aldehydes &amp; Ketones [Part A]</td>
<td>88</td>
<td>85-87</td>
<td>Informal</td>
</tr>
<tr>
<td>9</td>
<td>1-Apr</td>
<td>Check-Out / Notebooks</td>
<td></td>
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</table>
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Absence Policy
Attendance in the laboratory is mandatory. Make every effort to arrive to class on time with all pre-lab assignments complete.

Grade Determination

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informal Reports</td>
<td>50</td>
</tr>
<tr>
<td>Reports [3]</td>
<td>120</td>
</tr>
<tr>
<td>Quizzes</td>
<td>100</td>
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<tr>
<td>Notebook</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>370</td>
</tr>
</tbody>
</table>

Final Grade = Total Points / 500 * 100%
A = 90 – 100%
B = 80-89%
C = 70-79%
D = 60-69%
F < 60%

Notebooks
Laboratory notebooks are an essential element in organic chemistry. In keeping a good notebook, you will better understand the experiment and be able to proceed quicker during laboratory. You must have it with you for each experiment.

Prior to coming to the lab the following sections of an experiment must be completed:
1) Table of contents on the first page of your notebook.
2) Number every page in your notebook.
3) Title and the date of the experiment
4) Purpose/aim of your experiment.
5) Balanced chemical reaction (using structures) if appropriate.
6) Procedure including quantities of chemicals necessary for your experiment.

During the lab
1) Record experimental observations and results
   a. Observations generally include such things as color changes, formation of a precipitate, slowness of reaction etc.
   b. Results generally include the following: mass of product (in grams), percent yield (show calculation), melting point, boiling point, color/condition of the product, spectral data (IR, NMR), chromatography data (Rf, retention times), miscellaneous graphs, results of qualitative tests.
2) Note any changes and modifications (include reasons) that you made during the experiment.
After the lab
Discussion --- a brief one paragraph summation of the experiment including relevant findings and a statement of the take-home message(s).

Safety

ORGANIC COMPOUNDS ARE POTENTIALLY HAZARDOUS. Therefore, safety is of utmost importance in the organic laboratory. Treat all organic liquids as flammable and toxic. Know how to read a material safety data sheet (MSDS). Avoid contact with organic chemicals. If accidental contact is made, wash the substance away with plenty of water. If you have any medical condition that potentially is sensitive to working with chemicals, please consult with your instructor immediately. All information will be treated as confidential. The important points and rules will be discussed during the first class meeting. In many cases work will have to be done in a fume hood rather than the lab bench. Safety goggles, close-toed shoes, and long pants must be worn at all times in the laboratory. Prescription eyeglasses may be worn under the goggles, but under no circumstances will contact lenses be permitted. Use of a lab coat is recommended, but not required. With the exception of the laboratory notebook and the experimental procedure, all other materials, including books, calculators and outerwear should be stored away from contact with chemicals. FOOD OR DRINK CAN NOT BE CONSUMED IN THE LABORATORY.

Formal Reports
This is a writing to learn class and, therefore, you must pass the writing component in order to pass the course. In this course, you will write and submit three formal lab reports with each report being a minimum of 5 pages. Each report is due one week after the lab. You will be provided with a document addressing the format of these reports, a sample report, and grading criteria during recitation prior to the first report. This format is designed to allow you to present your data and discuss your findings and assess their validity. This allows you not only to learn technical writing as it is presented in major peer reviewed journals but also allows you to develop critical scientific thinking.

The three formal lab reports will be evaluated initially by the Writing Center, and finally by your instructor. You must make all changes suggested by the Writing Center before submission for final evaluation. Your instructor will give feedback on your rough draft during office hours.

Informal Lab Reports
For the remainder of the experiments, informal lab reports will be required. These reports may be hand written but must be legible. If I cannot read your hand writing then you will be asked to type it and resubmit it. The sheet for an Informal Lab Report will be posted on
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CANVAS. For these reports, you will include observations, results and discussions, and attach spectra taken during class.

Academic Integrity
Academic integrity is taken very seriously in this class as in all courses at Pittsburg State University. In addition, plagiarism will not be tolerated on formal lab reports and reports that are plagiarized will earn a zero. Refer to the Syllabus Supplement if you have additional questions related to this issue.

WASTE DISPOSAL
With regard for safety, the environment, and the law requires that waste chemicals be disposed of properly. Chemicals must not be poured down drains. Waste collection bottles are located in the hoods. These bottles are labeled according to type of waste. If you are in doubt about proper waste disposal, consult your instructor. Always read the waste container label to insure correct disposal.

CANVAS
Class syllabus, lecture notes, assignments, and exams will be posted on CANVAS.

Laboratory Decorum
Respectful, professional conduct is expected and required of professional-level students. Cellular telephones, pagers, etc. are to be OFF. If you are expecting an emergency requiring your attention during the lecture or are not well, inform the professor before class.

Syllabus Supplement
http://www.pittstate.edu/dotAsset/9e421c72-1f34-441c-8c7f-2f68fd510e80.pdf