CHEM 2143 ORGANIC CHEMISTRY I LAB - SPRING 2017
COURSE SYLLABUS

INSTRUCTOR: Monica Galaz-Montoya, Ph.D.  EMAIL ADDRESS: galazmm@stthom.edu
OFFICE: Robertson, Room 207B
OFFICE HOURS: Mon & Wed – 1:00 p.m. to 4:30 p.m. Office hours also available by appointment.
LAB HOURS AND LOCATION: Thursdays 1:10 p.m. – 5:00 p.m. Rob 204S

A. Course Description: In this course you will study the laboratory techniques used to handle organic chemicals while determining their physical, chemical, & spectroscopic properties. An effort is made to have the lab and lecture topics relate to each other. The labs will emphasize the proper use of common laboratory equipment, record observations, making measurements, correctly interpreting data, and writing a clear report on their conclusion. Safety in the laboratory will have the highest priority.

B. Course Objectives:
1. To stress the importance of practicing laboratory safety.
2. To instruct students in the proper use of laboratory equipment.
3. To develop students observation and interpretation skills.
4. To provide opportunities for students to develop their communication skills.

C. Required Materials:
1. A 100 page carbonless copy lab notebook ($15 from Chemistry Department).
2. UST Approved Safety Goggles and Lab Coat (available for $30 from Chemistry Department)
3. Dish detergent and a permanent ink marker pen.

D. Safety:
Safety is an essential component of each lab session. Safety training will be conducted during the first lab period and a quiz administered following the presentation. You will not be allowed to conduct experiments without completing the training and earning a perfect score on the quiz. Disregard for lab safety will result in your immediate dismissal from the lab and a zero on that week’s laboratory assignment.
1. You must wear appropriate clothing and shoes, safety goggles and a lab coat at all times in lab.
2. You must obey all laboratory safety rules (refer to the Lab Safety Procedures handout found on Blackboard).
3. You may not work alone in lab. An instructor must be present whenever students are working in lab.

E. Pre-Lab Lecture
There will NOT be a pre-lab lecture for this course; however, the students will be responsible for reading the power point presentations and watching the videos posted on blackboard before each lab session. There will be a quick overview of the day’s lab experiment during the first 10 minutes of each lab session, which will start promptly at 1:10.
F. Grading:

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<tbody>
<tr>
<td>Lab Citizenship and preparedness</td>
<td>20</td>
</tr>
<tr>
<td>Lab Notebook (pre and during lab entries)</td>
<td>40</td>
</tr>
<tr>
<td>Post-lab Reports/Assignments</td>
<td>40</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td>100</td>
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<table>
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<tr>
<th>Grade</th>
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<tr>
<td>A</td>
<td>93-100</td>
<td>A–</td>
<td>90-92</td>
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<tr>
<td>B+</td>
<td>86-89</td>
<td>B</td>
<td>80-82</td>
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<td>B</td>
<td>83-85</td>
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Missing 2 or more labs will result in a failing grade for Chem 2143.

**Lab Citizenship and preparedness:** This is a grade based on your performance in lab. All students are expected to arrive on-time and to be prepared to perform the experiment of the day. If it is obvious that a student did not read the handouts or failed to watch the required videos, points will be deducted from their lab citizenship grade.

This grade is also based on your actions and attitude in lab regarding adherence to lab safety, proper waste disposal, and keeping all lab areas in a clean and orderly fashion. If upon inspecting the lab at the end of the day it is unclear who is responsible for any mess left unattended, all students will be deducted points for their lab citizenship grade that day.

**G. Late arrival policy:** All students are expected to arrive ON-TIME since lab will start promptly at 1:10 p.m., students who arrive late will be penalized with 2 points on their lab citizenship grade for every 5 minutes they are late. Students arriving over 15 minutes after the start of lab may be denied the right to participate in the lab session and will receive 0 credit for said lab.

**H. Lab Lockers and Breakage Fees**
Each student will be issued a lab locker and drawer with a key. There will be a $5 charge for a lost key. Make sure you lock your locker and drawer before leaving the lab. Your equipment will be inventoried at the start and end of the semester. The lab glassware and equipment is not covered by the “lab fee” of the University. You will be charged for any missing or broken items.

**I. Schedule** (subject to change by instructor)

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
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<tbody>
<tr>
<td>Jan 19</td>
<td>Attend safety training; take safety quiz; locker check-in. Starts at 1:10 pm in Rob 213</td>
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<tr>
<td>Jan 26</td>
<td>Lab #1: Melting Point Determination</td>
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<td>Feb 2</td>
<td>Lab #2: Recrystallization</td>
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<td>Feb 9</td>
<td>Lab #3: Simple Distillation and Fractional Distillation</td>
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<tr>
<td>Feb 16</td>
<td>Lab #4: Separation by Extraction</td>
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Feb 23  | Lab #5: Steam Distillation
---|---
Mar 2  | Spectroscopy Lecture
Mar 9  | Spectroscopy Lecture
Mar 16 | No Lab - Spring break
Mar 23 | Lab #6: $S_n$2 Reaction: Synthesis of Phenacetin and Lab #7A: Polarimetry I
Mar 30 | Lab #7B: Polarimetry II and Lab #8: $S_n$1 Reaction: Kinetics
Apr 7  | Lab #9: Alcohol Dehydration
Apr 13 | No lab - Easter break
Apr 21 | Lab #10: Alkene Bromination
Apr 28 | Lab checkout – all lab assignments are due at check out – no lab work will be accepted for a grade past lab check-out.

**J. Academic dishonesty:** All lab entries in your notebook and your post-lab reports must be your own work. Any data or written work that is the same as another person’s work will result in no credit given for that lab experiment and will be submitted to the university’s academic committee as a case of academic dishonesty.

**K. Additional information**

- **Communication:** Students are responsible for checking their e-mail and Blackboard regularly for announcements and assignments.

- **Accommodations:** Any student with a disability requiring accommodations in this course is encouraged to contact Counseling and Disability Services located in the Crooker Center. This office can be reached at (713) 525-2169 or 6953.

- **ChemDraw:** The Chemistry & Physics department has purchased a site/user license for the ChemDraw software program which you can access through the following link: (http://sitelicense.cambridgesoft.com/sitelicense.cfm?sid=736)
Lab Notebook: You will be using a 100 page carbonless copy lab notebook. The outside front cover of the notebook must indicate the student’s name and course number and section letter. You will turn in a copy of the pre-lab entries and during lab entries at the end of each lab.

Purpose of the notebook: A lab notebook is a complete and accurate record of your lab work. It should serve as an official source of what the student did in the lab and what the student observed.

Pre-lab entries: Prior to the start of lab you should record in your notebook the following:
1. Title of Experiment
2. Purpose: The purpose should be one sentence describing the goal of the experiment. In addition to the one sentence the overall reaction scheme may be presented here (for example A + B → C) if the experiment is a synthesis reaction.
3. Reaction overview: For synthesis experiments, a chemical equation with structures of reactants and products and an indication of catalysts and conditions shown.
4. Materials list: This should list the names of the chemicals used and the following information about each chemical.
   a. Chemical formula
   b. Chemical structure
   c. Appropriate physical data: the melting or boiling point (depending upon its physical state at room temperature), the molecular weight and the density (if a liquid at room temperature). The reference source must be indicated. For the Polarimetry experiments, the optical rotation of each sugar is required.
   d. You must indicate the primary safety hazards for each chemical being used. For example the following are typical hazards: flammable, toxic, corrosive, irritant, oxidizer, and carcinogen. This information can be found on a number of websites (wikipedia.org, ChemSpider.com, and many others).
5. The procedure that you will follow. You may either:
   a. Write out the full procedure by hand in your notebook, or
   b. Use a copy of the procedure steps that are available on Blackboard, paste it into the notebook and draw out a flow chart of the procedure in your notebook.

You must have all pre-lab entries completed before you will be allowed to participate in lab. I or Ye Lin (our TA) will personally check ALL pre-lab entries at the start of lab. If pre-lab entries are not completed you will be asked to leave the lab and will get 0 credit for that day’s experiment.

During lab entries: Record data and observations. This is the most important part of the lab write-up. The student is to make entries directly into the notebook as the experiment is going. Examples of items to put in notebook:
1. Record exact amounts of materials used and calculate mmoles of each reagent.
2. Record observations (for example: changes in color, precipitation, dissolution) during the experiment. Comments on problems encountered and techniques used should also be included.
3. Record amount of purified product isolated (for % recovery or % yield calculations).
4. Record melting points and/or boiling points of product.
5. Record measurements taken (optical rotation, kinetic data, and distillation boiling point versus volume data).
6. Attach printouts from instruments (GC-MS data, FT-IR spectra).

A copy of the pages from the notebook must be turned in at the end of each lab.

**Post-Lab Report/Assignment:** Each lab will require a post-lab assignment or formal report. All assignments must contain the following:
1. Experiment title
2. Objective
3. Results section
4. Discussion/conclusions section

**Late Assignments:** Each write up is due one week after the completion of the lab experiment at 5:00PM. Reports submitted after this due date and time will receive a 50% point deduction and will no longer be accepted after 2 days that the assignment is due.

**Details for submitting lab reports/Assignments:** These are to be submitted as an electronic submission sent as an e-mail attachment to your lab instructor. Your attached file needs to have the following file name: last name, first initial, and experiment number. For example, Jane Doe’s submission for lab experiment 1 would have the file name: doej1. The document must be submitted as an MSWord (.doc or .docx) file. Your name must also be included on the first page of the document.
See Blackboard for an example of a lab notebook write-up and a post-lab report for an experiment.