CHEM 2125  Organic Chemistry II Laboratory

Instructor: Shizue Mito, Ph.D.
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Office hours: Tuesday 2:00 – 4:00 pm and Wednesday 10:00 am – 12:00 pm, or by appointment

Meeting times/Locations:  Thursday 4:30 pm –7:10 pm @SCNE 3.150 (2125-07) or 3.160 (2125-06)
Text: Organic Chemistry II Laboratory Manual
Available at UTRGV book store

Course Schedule

<table>
<thead>
<tr>
<th>Exp. #</th>
<th>Date</th>
<th>Experiment title</th>
<th>Pre-lab Quiz</th>
<th>Post-lab Report</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aug 31</td>
<td>No lab.</td>
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<tr>
<td></td>
<td>Sept 7</td>
<td>Check-In, Course Description, Safety Lecture</td>
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<tr>
<td>1</td>
<td>Sept 14</td>
<td>Friedel–Crafts Acylation</td>
<td>1</td>
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<tr>
<td>2</td>
<td>Sept 21</td>
<td>Nucleophilic Aromatic Substitution</td>
<td>2</td>
<td>1</td>
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<tr>
<td>3</td>
<td>Sept 28</td>
<td>Synthesis of Acetaminophen</td>
<td>3</td>
<td>2</td>
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<tr>
<td>4</td>
<td>Oct 5</td>
<td>Dyes and Dying</td>
<td>4</td>
<td>3</td>
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<tr>
<td>5</td>
<td>Oct 12</td>
<td>Mid-Term Review</td>
<td>5</td>
<td>4</td>
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<td></td>
<td>Oct 19</td>
<td><strong>Mid-Term Exam</strong></td>
<td></td>
<td>5</td>
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<tr>
<td>6</td>
<td>Oct 26</td>
<td>Fisher Esterification</td>
<td>6</td>
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<td>7</td>
<td>Nov 2</td>
<td>Diels Alder Reaction</td>
<td>7</td>
<td>6</td>
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<tr>
<td>8</td>
<td>Nov 9</td>
<td>Nucleophilic Addition to Carbonyl Group</td>
<td>8</td>
<td>7</td>
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<tr>
<td>9</td>
<td>Nov 16</td>
<td>Infrared and Nuclear Magnetic Resonance Spectroscopy</td>
<td>No pre-lab quiz</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Nov 23</td>
<td><strong>Thanksgiving No Lab</strong></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Nov 30</td>
<td><strong>Final Exam</strong></td>
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Course Description and Prerequisites

- An introduction to organic synthesis. Fundamental techniques such as crystallization, distillation, extraction, and chromatography are discussed. These techniques are applied to the preparation and purification of organic compounds.
- Prerequisite: CHEM 2323 (minimum grade of D) or can be taken concurrently.

Learning Objectives for Core Curriculum Requirements

This course is not part of the UTRGV core curriculum requirements.

Course objective: The Objectives of this course are that you:

- Become familiar with basic organic chemistry methods and techniques
- Learn how to comply with laboratory safety polices

Student Learning Outcomes for the Course

- To learn safety and handling of chemicals in the laboratory.
- To gain hands on experience in laboratory techniques.
- To gain experience in the characterization of organic compounds.
- To Maintain a proper laboratory notebook and write a scientific report.
- To learn the art of Organic Chemistry Synthesis.
- To demonstrate the use of Organic Chemistry in Medicine.
**Blackboard:** There is a Blackboard for this course. All materials will be accessible on it. The lab reports should be submitted through Blackboard. Occasionally, the instructor may provide additional information by announcements. These announcements will be communicated via e-mail. It is advised that students check their university issued email accounts daily (e-mail will only be sent to UTRGV accounts).

**Grading:**

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Pre-lab quiz</td>
<td>10 %</td>
</tr>
<tr>
<td>Post-lab reports</td>
<td>45 %</td>
</tr>
<tr>
<td>Mid-term exam</td>
<td>20 %</td>
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<tr>
<td>Final exam</td>
<td>20 %</td>
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<tr>
<td>Laboratory Safety and Practice</td>
<td>5 %</td>
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**Grade assigned**

A ≥ 90, 90 > B ≥ 80, 80 > C ≥ 70, 70 > D ≥ 60, F < 60

**Pre-Lab Quizzes:** (10%) – Multiple-choice pre-lab quiz will be administered in the beginning of each lab. All students are expected to have read the information about each lab in the textbook in advance, so that they are fully prepared for the quiz that will at most encompass the experimental procedures and background referent to that day’s experiment. Students should also know the structures of the chemicals they are working with. Pre-lab quizzes assess your preparation for the lab. You can drop one worst quiz.

**Lab reports:** (45%) – Your lab reports should be submitted through the Blackboard. Each lab report will be due the following week after the experiment is executed at the beginning of the lab and count only if you attended the lab. Outline for the report’s components is elaborated on below. Late work will be subject to automatic loss of points (your grade x 0.7). You can drop one worst lab report.

**Midterm and Final exams (20% each):** You will need a picture I.D.

**Laboratory Safety and Practice (5%)-examples:** proper waste disposal, cleanup, and personal protective equipment: Safety glasses/goggles and lab coats must be worn in the lab at all times. You must follow all the safety rules and procedures in the lab. For each act against the rules, you will lose 1% from the 5%.

**Important safety rules:**

- Always know the danger of the chemicals you are working with. You should research the safety and chemical reactivity of all reagents before coming to class and ask your instructor if you have any further questions.
- ALL chemical activities are done in the hood. The bench is for maintaining your notebook and supplies for your activity.
- Always wear safety glasses/goggles. This is a State law. You do not have the choice to not comply.
- Always wear lab coats
- Know where the eye wash, safety shower, and fire extinguisher are located
- Wear closed shoes (no rubber sippers or open sandals)
- Long hair must be tied back
- Wear long pants (no skirts or shorts)
- No hats
- No food/drink items are allowed in a chemistry laboratory
- Keep your work space clean!!!!!
- If there is a chemical spill, inform the instructor immediately.
- If you are injured (a cut, inhalation of toxic gases, acid burn on skin, etc.) inform your instructor immediately. We are required to file reports of all injuries, no matter how minor, and also to offer you the option to seek medical aid.

**Important waste information:**

- None of the waste can go down the drain.
- Organic solvent waste, aqueous waste, solid waste, and glass waste is collected separately and placed into designated waste containers.
Guideline for Lab Report
Your lab report should be open style and **not more than 5 pages**. No cover page required. Include only meaningful information. Even you work as a team, your lab report should be **individual** without copying your partner’s report. The copied reports will receive a zero for both.

**Lab Report:** An easy passing grade can be obtained for lab report can be obtained by following format

1. **Date (2pts):** When you did the experiment. It is not when you uploaded your report.
2. **Title (2pts)**
3. **Objectives (3 pts):** The objective/purpose of the experiment was to….. **one or two sentences.**
4. **Introduction (15 pts):** Background. Your introduction should be in paragraph form and **not more than 10 sentences**.
   a. It should state the name and structures (3 pts)
   b. There should be **only a brief description of what you are explained in the pre lab** in order to obtain your product from your starting materials (i.e. procedure). In this section explain the important parts of your experiment including the mechanism of your reaction (12 pts)
5. **Materials (5 pts)**
   a. List your materials. It should include the name and molecular formula of the reagents used.
   b. Any solutions that were used should be specified (e. g. their concentrations)
6. **Procedures (40 pts) In a paragraph, using past tense.** (if a sentence was written in a present tense, 2 points will be taken for each). Write the procedures that you exactly followed. If applicable, insert tables, charts, and pictures with the appropriate titles and descriptions to each one.
   a. The procedure should be in list form. Make sure each step is stated as a complete sentence. **Include observations (e.g. color change, precipitation, reaction is exothermic, gas evolution, etc.)** Observation is the main thing to know you actually did the experiment. Take 5 points off for missing one important observation.
   Example 1) 2.05 mL of compound A was placed into a 50 mL round bottom flask.
      2) 1.01 g of compound B was quickly added, and the color of the solution changed from yellow to red immediately.
      3) The mixture was stirred at room temperature for 30 min.
   b. The procedure should be a detailed description of what you did in lab including the amount of reagent/time required for each step, the temperature, etc… with the correct units for each value.
   c. All set-ups must be described. If a picture of a set-up (glassware) is included in the report, it is not necessary to describe in detail the setup in your procedure. When you include pictures, do not forget to add Figure captions. (e.g. Fig. 1 the Grignard reaction setup with a 50 mL three-necked flask, an addition funnel (on the right), a reflux condenser, and a gas adapter).
   d. **You should write exactly what you did.** Do not take your procedure from the book or from any other groups, this is considered plagiarism.
7. **Results (15 pts)**
   a. The results usually state any values that were obtained from the experiment (e.g. mass of product, melting points, etc…)
   b. The results should include any calculations made (e.g. molar ratio, theoretical yield, percent yield etc.) and any tables or graphs that were obtained from the experiment.
   c. You must show your **entire calculation** and all the steps taken. Do not mention just the final answer. Otherwise you will lose points.
8. **Discussion (10 pts):** Stating your results and interpret what your results and explaining why particular “good” or “bad” results where obtained. If bad, give recommendations on what can be done differently or should be avoided for experiment to give positive results. **No more than 5 sentences.**
9. **Conclusions (5 pts):** the conclusion section should be in paragraph form. **No more than 3 sentences.** The conclusion should restate the values in the results and should explain what these results mean. Summarize the success or failure of your experiment.
10. **References (3 pts):** List any references applicable to your report, which should be cited throughout your report where applicable.
**Missing Lab**

Students who miss a lab for an unexcused reason will lose 100% of the credit for that week. No makeup labs or makeup quizzes are provided for an unexcused absence, and you will not receive credit for a report submitted for a week that you miss. An excused absence would include, for instance, a sanctioned university activity that you must attend. For example, if you participate in UTRGV sports, or if you are presenting research results at a conference. Other excused absences are the discretion of the instructor. For an excused absence, your instructor will offer the makeup lab in another section of the course which you can attend.

**Calendar of Activities**

Important dates for Fall 2017 include:

- **August 28**: First day of classes
- **August 31**: Last day to add a course or register for fall 2017
- **September 4**: Labor Day – NO classes
- **September 13**: Census day (last day to drop without it appearing on the transcript)
- **November 15**: Last day to drop a course; will count toward the 6-drop rule
- **November 23 – 26**: Thanksgiving Holiday – NO classes
- **December 6**: Last day of classes
- **December 7**: Study Day – NO class
- **December 8 -14**: Fall 2017 Final Exams
- **December 15-16**: Commencement Ceremonies

**UTRGV Policy Statements**

**STUDENTS WITH DISABILITIES:**

If you have a documented disability (physical, psychological, learning, or other disability which affects your academic performance) and would like to receive academic accommodations, please inform your instructor and contact Student Accessibility Services to schedule an appointment to initiate services. It is recommended that you schedule an appointment with Student Accessibility Services before classes start. However, accommodations can be provided at any time. **Brownsville Campus:** Student Accessibility Services is located in Cortez Hall Room 129 and can be contacted by phone at (956) 882-7374 (Voice) or via email at accessibility@utrgv.edu. **Edinburg Campus:** Student Accessibility Services is located in 108 University Center and can be contacted by phone at (956) 665-7005 (Voice), (956) 665-3840 (Fax), or via email at accessibility@utrgv.edu.

**MANDATORY COURSE EVALUATION PERIOD:**

Students are required to complete an ONLINE evaluation of this course, accessed through your UTRGV account ([http://my.utrgv.edu](http://my.utrgv.edu)); you will be contacted through email with further instructions. Students who complete their evaluations will have priority access to their grades.

**ATTENDANCE:**

- Attendance is mandatory
- Absence from class is not considered an automatic drop
- Drop deadline: November 15

**SCHOLASTIC INTEGRITY:**

As members of a community dedicated to Honesty, Integrity and Respect, students are reminded that those who engage in scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and expulsion from the University. Scholastic dishonesty includes but is not limited to: cheating, plagiarism, and collusion; submission for credit of any work or materials that are attributable in whole or in part to another person; taking an examination for another person; any act designed to give unfair advantage to a student; or the attempt to commit such acts. Since scholastic dishonesty harms the individual, all students and the
integrity of the University, policies on scholastic dishonesty will be strictly enforced (Board of Regents Rules and Regulations and UTRGV Academic Integrity Guidelines). All scholastic dishonesty incidents will be reported to the Dean of Students.

**SEXUAL HARASSMENT, DISCRIMINATION, and VIOLENCE:**
In accordance with UT System regulations, your instructor is a “responsible employee” for reporting purposes under Title IX regulations and so must report any instance, occurring during a student’s time in college, of sexual assault, stalking, dating violence, domestic violence, or sexual harassment about which she/he becomes aware during this course through writing, discussion, or personal disclosure. More information can be found at [www.utrgv.edu/equity](http://www.utrgv.edu/equity), including confidential resources available on campus. The faculty and staff of UTRGV actively strive to provide a learning, working, and living environment that promotes personal integrity, civility, and mutual respect in an environment free from sexual misconduct and discrimination.

**COURSE DROPS:**
According to UTRGV policy, students may drop any class without penalty earning a grade of DR until the official drop date. Following that date, students must be assigned a letter grade and can no longer drop the class. Students considering dropping the class should be aware of the “3-peat rule” and the “6-drop” rule so they can recognize how dropped classes may affect their academic success. The 6-drop rule refers to Texas law that dictates that undergraduate students may not drop more than six courses during their undergraduate career. Courses dropped at other Texas public higher education institutions will count toward the six-course drop limit. The 3-peat rule refers to additional fees charged to students who take the same class for the third time.

- The syllabus can be subject at the discretion of the instructor. You are solely responsible for getting the most updated information regarding to the course.

Last update: 8/26/17.