Organic Chemistry Laboratory II – Spring 2014
Chemistry 443

Instructor: Colleen Scott  
Office: Neckers 325  
Phone: 453-6409  
Email: cscott@chem.siu.edu  
Office Hours: M 12:30-1:30 pm

Required Text: *Experimental Organic Chemistry* - Gilbert & Martin (5th Ed.)
Supplemental Text: *Organic Chemistry* – McMurry (8th Ed.)

Lectures are Mondays at 3 pm in Neckers 240 and Laboratories are in Neckers 203/205

Course website: [https://online.siu.edu/](https://online.siu.edu/)

Desire to Learn Website

Course content will be available through desire to learn website [https://online.siu.edu/](https://online.siu.edu/). Students will need to refer to this website frequently to receive important information. The website can only be accessed by students registered for the course. The website will contain the following information: Folders, Lecture Notes, Pre Lab & Report Questions, Class Information and a link to the website for electronic report submission and textbook, Calendar, Grades, and other information.

PreLabs consist of assigned questions that are found in the textbook and on the website [https://online.siu.edu/](https://online.siu.edu/). The prelab will be due at the beginning of the laboratory period and is worth (10 Pts).

Formal laboratory reports will consist of the following sections:

1. Introduction (15 Pts.):
   a) Goal
   b) Significance
   c) Reaction Scheme
   d) Reaction Mechanism
   e) Theory
      - New Techniques
      - Characterization Methods
   (Do not discuss techniques or characterization methods that were covered in previous reports)

2. Procedure (10 Pts.): The procedure should be of sufficient detail that someone skilled in the art of chemistry could successfully repeat the experiment.

3. Relevant Data (10 Pts.)

4. Results & Discussions (30 Pts.): Describe important results and observations and draw inferences from this data.

5. Conclusions (5 Pts.): Summarize and indicate the significance of the laboratory.

6. Questions (10 Pts.): Answer the assigned questions from the text.

(Sections 1-5 should be typed with double spacing. Hand drawings are acceptable)

Cheating will result in a zero for the assignment. Any instance of cheating will be reported to the Department Chair and the Dean. To prevent plagiarism you must submit an electronic copy of your introduction/reports to http://www.turnitin.com as an MS Word or pdf file prior to turning the paper copy in to your TA. This will have a deadline for each lab. Any report not turned in to turnitin, will be given a grade of zero, irrespective of when it was turned in to your TA. Scanned documents will not be accepted by Turnitin.com. Your written introductions or reports will be compared to an extensive database of reports from previous semesters, as well as the web and scientific journals. You
Product Evaluations will be based on the quantity and quality of the recovered product. It is more important to have a pure product than a high yield. Products should be placed in clearly labeled screwcap vials with the following information: 1) Date; 2) Your Name; 3) TA's Name; 4) Product Name; and 5) Yield in grams. Any omitted information will result in a zero.

Attendance and Quizzes will be given at the beginning of each lab before prelab lecture. Questions will be based on the prelab readings, weekly lectures, and practical knowledge gained from previous laboratory experience. Each quiz will contain questions from the previous, as well as the current laboratory. **Note: you are required to attend lecture each Monday. You will be prohibited to attend the lab section, if you fail to attend lecture without university required excuse.**

Absentee Policy: A maximum of two laboratories may be missed over the course of the semester. The first missed lab will receive an excuse, provided the absence is excused. The second missed lab will be given a zero and students that miss more than two labs will be given a failure for the course. You will not be allowed to makeup a laboratory after the last lab for the week has ended (**last lab Thursday 1-5 pm**). There are no make-up quizzes since the lowest two scores are dropped. **We will not accept partially completed reports.**

Excused Absence: Students must provide a *reasonable* excuse or they will receive a zero. In rare circumstances, a student may be allowed to make-up an excused absence in another laboratory session; make-up’s are generally not allowed when the laboratory section is doing a different lab due to safety and hazardous waste considerations. All make-up’s will be at the discretion of the instructor and in consultation with the TA. If at all possible, please inform your TA in advance when you will miss a laboratory, this will greatly enhance your chances of being excused. After you return from an absence, you must fill out an “excused absence request” form and have it signed by your TA and myself; you may get this form from the course website.

Laboratory Notebook: All students are required to have a laboratory notebook where they will record experimental data and procedures. This notebook should be bound, not spiral, so that the pages are not easily removed. Notebooks play an important role in science by archiving valuable data and procedures. **A good notebook includes: date, prelab notes, detailed procedures, observations and results** that would allow someone skilled in the art of organic chemistry to reproduce those results. TA’s will periodically check the notebook and give you a grade.

Handing in Late Work: Each week your TA will assign a due date for the reports, typically the beginning of the next laboratory session. Reports that are handed in to the instructor or the TA by Monday at 5pm after the due date will receive a **20%** deduction from the total score. Reports that are one week late will receive a **25%** deduction. Any work handed in more than one week after the due date will be reduced from **30%** to **100%** at the discretion of the TA, and in consultation with the instructor. Each TA has a mailbox in Neckers 224; please note that this office typically closes at 4pm. **Written work will not be accepted after Friday, May 1**

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**Table:**

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Laboratory Safety: Organic chemistry is inherently dangerous since we work with flammable solvents and glassware. Explosions and spills do happen and people do get hurt, however, these incidents are very rare when proper precautions are taken. Therefore, it is extremely important that all students and TA's follow well-defined safety protocols. Such protocols are outlined in the textbook (p. 15 - 23). **Goggles or safety glasses must be worn at all times when experiments are in progress.** Furthermore, the instructors and TA's will remind students of important safety precautions before each laboratory. *However, there is no substitute for preparation and common sense!*

Hazardous Chemical Disposal: Most of the chemicals that we work with in the laboratory must be disposed of in properly labeled waste containers. We are legally required to make an accurate account of the contents of these waste containers, which are found in the laboratory hoods. Thus, it is very important that you place your waste in the appropriate container; always double-check the waste container before you add waste.

Health Problems: It is important that you notify the instructor and TA of any health related issues at the beginning of the semester, particularly if you are prone to serious allergies or Asthmatic attacks. *You should withdraw from this course if you are pregnant.*

Laboratory Cleanliness: Each laboratory period the TA will assign two people as "clean-up supervisors". It is the responsibility of these supervisors to ensure that the entire laboratory is cleaned and prepared for the next laboratory section. Thus, the supervisors must wait until the other students have completed their work and the TA inspects the laboratory before they may be excused. If the laboratory is closed and does not pass inspection by the instructor or the laboratory coordinator, the supervisors will have ten points deducted from their TA evaluation grade and the TA will be reprimanded. All students will be supervisors at least once per semester. The TA should provide a checklist with specific cleaning duties for each lab.

Late Entry: Requests for late entry or for changing your lab section must be processed in the Chemistry Department office, Neckers 224. Typically these are only approved when space is available in the requested section (20 students maximum).

Drop Dates: Sunday Apr 05 - last day to withdraw.

Grading

<table>
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<tr>
<th>Grade</th>
<th>Points</th>
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<tbody>
<tr>
<td>PreLabs</td>
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<td>Formal Lab Rep</td>
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<td>TA Evaluations</td>
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<td>Prod Evalu</td>
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<td>Quizzes</td>
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<td>Total</td>
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The following grades are guaranteed with these point totals: 900 - A; 800 - B; 700 - C; 600 - D.

**Chem341-TA**

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<tr>
<th>Lab</th>
<th>Section</th>
<th>Time</th>
<th>Instructor</th>
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<tbody>
<tr>
<td>1</td>
<td>R</td>
<td>205</td>
<td>8:00-11:50 Shaoyi Xu</td>
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<tr>
<td>2</td>
<td>R</td>
<td>205</td>
<td>1:00-4:50 Shaoyi Xu</td>
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<tr>
<td>3</td>
<td>T</td>
<td>205</td>
<td>1:00-4:50 Milind Bisen</td>
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<tr>
<td>4</td>
<td>R</td>
<td>205</td>
<td>1:00-4:50 Cancelled</td>
</tr>
<tr>
<td>5</td>
<td>W</td>
<td>205</td>
<td>5:30-9:20 pm Peter Rose</td>
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Laboratory Schedule: Spring 2015

Week 1 (Jan. 19 - 23) – No Labs

Week 2 (Jan. 26 - 30) – Check-in & Spectroscopy Review of Spectroscopy
Reading: Gilbert & Martin - p. 850 - 856; McMurry - p. 440 – 470 (no Quiz)

Week 3 (Feb 02 - 06) – The Grignard Reaction - Synthesis of Triphenylmethanol
Reading: Gilbert & Martin - p. 639 - 655; p. 643 - 650; McMurry - p. 345 - 346, p. 613 - 617; Quiz 1

Week 4 (Feb. 09 - 13) – The Grignard Reaction - (cont.) Quiz 2

Week 5 (Feb. 16 - 20) – The Wittig & Wadsworth-Emmons Rx - Synthesis of Stilbene
Reading: Gilbert & Martin - p. 601 - 616; McMurry - p. 720 - 723; Quiz 3

Week 6 (Feb. 23 - 27) – The Wittig & Wadsworth-Emmons Rx - (cont.) Quiz 4

Week 7 (Mar 02 - 06) – Electrophilic Aromatic Substitution - Nitration of Bromobenzene
Reading: Gilbert & Martin - p. 491 - 492, p. 502 - 513; McMurry - p. 547 - 571; Quiz 5

Week 8 (Mar. 09 - 13) - Spring Break

Week 9 (Mar. 16 -20) – Electrophilic Aromatic Subst (cont.) – Unknowns/Mass Spectrometry
Reading: Gilbert & Martin - p. 304 - 312; McMurry - p. 409 - 418; Quiz 6

Week 10 (Mar. 23 - 27) – Synthesis of Lidocaine
Reading: Gilbert & Martin - p. 703 – 704, p. 553 - 554; Quiz 7
http://en.wikipedia.org/wiki/Lidocaine

Week 11 (Mar. 30 – Apr. 03) – Synthesis of Lidocaine – Cont. Quiz 8

Week 12 (Apr. 06 – 10) – Synthesis and Characterization of Polymers
Reading: Gilbert & Martin - p. 765 - 786; McMurry - p. 1206 - 1220; Quiz 9

Week 13 (Apr. 13 - 17) – Polymers – Cont.
Reading: Gilbert & Martin – p. 765 - 786; Quiz 10

Week 14 (Apr. 20 - 24) – Enzymatic Reduction
Reading: Gilbert & Martin - p. 563 – 565, p. 575 - 584; McMurry - p. 289 – 311, p. 315 - 322; Quiz 11

Week 15 (Apr. 27 – May 01) – Enzymatic Reduction (cont.) Quiz 12

Week 16 (May 04 – May 08) – Check-Out & Final Exam

Emergency Procedures: Southern Illinois University Carbondale is committed to providing a safe and healthy environment for study and work. Because some health and safety circumstances are beyond our control, we ask that you become familiar with the SIUC Emergency Response Plan and building Emergency Response Team (BERT) program. Emergency response information is available on posters in buildings on campus, available BERT’s website at www.bert.siu.edu, Department of Safety’s website www.dps.siu.edu (disaster drop down) and in Emergency Response Guideline pamphlet. Know how to respond to each type of emergency.
Instructors will provide guidance and direction to students in the classroom in the event of an emergency affecting your location. It is important that you follow these instructions and stay with your instructor during an evacuation or sheltering emergency. The Building Emergency Response Team will provide assistance to your instructor in evacuating the building or sheltering within the facility.

Laboratory Directions for Chemistry Students

SAFETY:
1. Note the locations of the fire extinguishers, eyewash station, and emergency shower.
2. YOU MUST WEAR SAFETY GOGGLES OR SAFETY GLASSES AT ALL TIMES IN THE LAB. Regular prescription glasses are not sufficient protection. Do not wear contact lenses.
3. Wear proper clothing in the lab; do not wear shorts or loose clothing. Confine long hair. Footwear should completely cover the top of the foot—NO SANDALS.
4. Wear protective gloves as directed by the TA.
5. NO EATING OR DRINKING IN THE LAB AT ANY TIME. No smoking in the building.
6. Assume that all unfamiliar chemicals are dangerous, and handle them accordingly.
7. Report any accidents to the TA immediately. Chemicals spilled on your skin or in your eyes should be flushed with copious amounts of water. The TA will arrange for transportation and medical attention.
8. Experiments in which flammable, toxic or noxious chemicals are used should be performed in the fume hood as directed by the TA.
9. If a student is pregnant she should notify the TA. Some chemicals have dangerous effects during pregnancy.
10. Regularly check your glassware for chips or cracks; discard broken or chipped glassware in the special containers available in the lab, NOT in regular trash containers

GENERAL LABORATORY PROCEDURES AND RULES:
1. Only work which is assigned by the TA may be done in the lab. You MAY NOT work without supervision.
2. The TA will provide instructions at the beginning of each lab period concerning waste disposal. Don't dump anything down the drain or put anything in the trash unless specifically told to do so.
3. Discard excess reagents. Never return them into the reagent bottles. Don't put pipets into the reagent bottles.
4. Use distilled water when directed.
5. At the end of each lab period, clean up after yourself. Wipe up spills; re-cap reagents; DO NOT leave trash on the countertops, in the sink or on the floor.

INDIVIDUAL APPARATUS:
1. During the first lab period, check the contents of your locker against the list provided. Immediately replace any missing or broken apparatus. This replacement is FREE ON THE FIRST DAY ONLY. After that, you will have to pay to replace any apparatus that you break or lose during the semester by purchasing the items from the stockroom using a blue slip. You will be billed through the Bursar’s office.
2. Special equipment or apparatus needed for a single lab period may be checked out of the stockroom using a green slip. Return this equipment at the end of the lab period. If it is not returned, you will be charged for it.
3. All apparatus is the property of the Department of Chemistry and Biochemistry and may not be removed from the premises.

I understand that if I fail to check my equipment back in at the end of the semester on or before the last scheduled lab class, I will be billed $20.00 plus any applicable equipment replacement fees.
I have read the above rules and agree to abide by them. I understand that if I fail to do this I will not be allowed to participate in the laboratory.