

**CHM 230-01                  Winter 2004**  
**ORGANIC CHEMISTRY LABORATORY II**  
Chemistry Building Room C12  
Lab: 2 – 5 PM M-W

**COURSE INFORMATION**

- Instructor: Prof. Matthew J. Mio  
Office: Chemistry Building Room C215A  
Phone: 313.993.1188  
E-mail: [miomj@udmercy.edu](mailto:miomj@udmercy.edu)  
Office Hours: 12 – 1 PM M-T-W-R-F or anytime by appointment
- Primary Resource: *The ACS Style Guide*, 2<sup>nd</sup> ed.; Dodd, J. S., Ed.; American Chemical Society: Washington, DC, 1997. (recommended) Preparation handouts. (supplied by Prof. Mio)
- Lab Notebook: For recording experimental data. (required)
- Safety Equipment: Glasses or goggles are required by law. Contact lenses are never to be worn in the laboratory. Lab coats are highly recommended. Gloves will be provided.
- Course Description: Second in a two course series covering organic chemical lab techniques and reactions.
- Course Objectives: Through this course, students are expected -  
1. To master basic organic chemical lab techniques, including air- and water-sensitive reagent handling.  
2. To develop an internal database of organic reactions.  
3. To acquire knowledge concerning the principles behind observed phenomena.  
4. To become familiar with both the acquisition and significance of spectroscopic data.
- Course Outline: *Lab notebook prepwork must be completed prior to lab period.*

<u>Monday</u>	<u>Wednesday</u>
5 Jan. – Lecture: Introduction; Reaction: Synthesis of Aspirin (TLC, mp)	7 Jan. – Reaction: Synthesis of Aspirin (TLC, mp)
12 Jan. – Reaction: Grignard Reagents (TLC, mp)	14 Jan. – Reaction: Grignard Reagents (TLC, mp)
19 Jan. – MARTIN LUTHER KING JR. DAY	21 Jan. – Lecture: NMR and FT-IR
26 Jan. – Lecture: Syringes/Sparging; Reaction: Catalytic Hydrogenation (FT-IR, GC-MS)	28 Jan. – Lecture: GC-MS; Reaction: Catalytic Hydrogenation (FT-IR, GC-MS)
2 Feb. – Reaction: Aldol Condensation (TLC, NMR, GC-MS, FT-IR)	4 Feb. – Reaction: Aldol Condensation (TLC, NMR, GC-MS, FT-IR)
9 Feb. – Reaction: Wittig Olefination (TLC, NMR, GC-MS, FT-IR)	11 Feb. – Reaction: Wittig Olefination (TLC, NMR, GC-MS, FT-IR)
16 Feb. – Reaction: Electrophilic Aromatic Substitution (TLC, NMR, GC-MS, FT-IR)	18 Feb. – Reaction: Electrophilic Aromatic Substitution (TLC, NMR, GC-MS, FT-IR)
23 Feb. – Reaction: Diels-Alder (TLC, NMR, GC-MS, mp)	25 Feb. – Reaction: Diels-Alder (TLC, NMR, GC-MS, mp)
1 Mar. – SPRING BREAK	3 Mar. – SPRING BREAK

8 Mar. – Lecture: Inert Atmospheres; Reaction: Synthesis of Ferrocene (mp, TLC, NMR, FT-IR)	10 Mar. – Reaction: Synthesis of Ferrocene (mp, TLC, NMR, FT-IR)
15 Mar. – Reaction: Synthesis of Ferrocene (mp, TLC, NMR, FT-IR)	17 Mar. – Reaction: Synthesis of Ferrocene (mp, TLC, NMR, FT-IR)
22 Mar. – Lecture: Transition Metal Catalyzed Cross-Coupling Reactions	24 Mar. – Reaction: Cross-Coupling (TLC, NMR, GC-MS, mp)
29 Mar. – Reaction: Cross-Coupling (TLC, NMR, GC-MS, mp)	31 Mar. – Reaction: Cross-Coupling (TLC, NMR, GC-MS, mp)
5 Apr. – CATCH-UP	7 Apr. – CATCH-UP
12 Apr. – DEAD WEEK	14 Apr. – DEAD WEEK
19 Apr. – EXAMS	21 Apr. – EXAMS

Grading:

- I. Lab Notebook Pages – 5 pts × 10 = 50 pts total
  - A. Data must be recorded as experiments are performed
  - B. Thoughtful conclusions must be written for each experiment
  - C. Will be graded 0, 1, 3 or 5 points
  - D. Pages from the previous week must be turned in to begin a quiz
- II. Quizzes – 25 pts × 10 = 250 pts total
  - A. Will be given in first 20 min of lab **Mondays** starting **12 January**
  - B. Questions will number 4-5 per Quiz
  - C. Will be founded in lab and spectroscopic techniques/observations from the previous week, as well as scientific manuscript component details
- III. Scientific Manuscript Components – 50 pts × 8 = 400 pts total
  - A. Will be written concerning the previous week of work according to schedule handed out separately
  - B. Must be turned in at the same time as Lab Notebook Pages
  - C. Should be viewed as rehearsals for the Final Manuscript
- IV. Final Manuscript – 100 pts × 1 = 100 pts total
  - A. Individual manuscripts due **Monday 19 April at 4 PM EDT** to Prof. Mio
  - B. Last unit of material (Reaction: Cross-Coupling) will be written up as if it is a manuscript submitted for publication
  - C. The most rigorous standards will be used in grading
- V. Grading Scale (800 pts total) – A = 100-93%, A- = 92-90%, B+ = 89-88%, B = 87-83%, B- = 82-80%, C+ = 79-78%, C = 77-73%, C- = 72-70%, D+ = 69-68%, D = 67-60%, F = 60-0%

Study Requirements:

1. There will be no lecture or lab **19 January, 1 or 3 March**.
2. If class is cancelled for any reason, activities will resume at our next meeting.
3. Cell phone or pager activity during lecture or a quiz will result in the student being asked to leave class for that day or a zero.
4. With regard to attendance/turning in work: Early is on time. On time is late.
5. CHM 230 involves a heavy workload. You will be expected to follow the assignment schedule given in the course outline above. Read lab preparations prior to class and complete all work as assigned.
6. Careful, attentive, daily work is the route to success. Get help as often as you need it! At any given moment I am not lecturing, I am available between the hours of 6 AM - 4 PM, six days a week, in my office (Chemistry Building Room 215A).
7. Cheating or plagiarism will not be tolerated. Students are expected to adhere to the highest standards of academic integrity. For further information, see the UDM Undergraduate Catalog or the Engineering and Science Student Handbook.