

# Course Syllabus: Organic Chemistry Lab II

## McCoy College of Science, Engineering, and Mathematics

# CHEM 2011

# Spring

## **Contact Information**

Instructor: Dr. Elizabeth Machunis-Masuoka

Office: Bolin 307D

Office hours:MWF 9:00-11:00am; MW 12:00-2:00pm

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## **Course Description**

This class provides laboratory experiments to accompany CHEM 2013. You will learn methods of organic synthesis, spectroscopic techniques, and qualitative analysis methods in organic chemistry.

## **Textbook & Instructional Materials**

Laboratory Experiments Manual

CATALYST- Organic Chemistry I and II

Laboratory Research Notebook, 1994, Jones and Bartlett Publishers, Inc., MA, ISBN 0-86720-877-5.

Approved Safety Goggles for wearing in lab

Laboratory Marker (Sharpie)

## **Student Handbook**

Refer to: [Student Handbook 2017-18](https://mwsu.edu/Assets/documents/student-life/student-handbook-2017-18.pdf)

Academic Misconduct Policy & Procedures

Academic Dishonesty: Cheating, collusion, and plagiarism (the act of using source material of other persons, either published or unpublished, without following the accepted techniques of crediting, or the submission for credit of work not the individual’s to whom credit is given). Additional guidelines on procedures in these matters may be found in the Office of Student Conduct.

[Student Handbook 2017-18](https://mwsu.edu/Assets/documents/student-life/student-handbook-2017-18.pdf)

## **Grading**

Course Grade – Below is a breakdown of point distribution

| Assignments | Percentages |
| --- | --- |
| Lab Reports | 55% |
| Lab Quizzes | 15% |
| Final Exam | 30% |

## **Quizzes**

Quizzes will be given at the end of the prelab lecture covering the most recent lab completed.

## **Lab Reports**

Lab reports need to be stapled before coming to class. Please do not ask the chemistry office for a stapler. Prelab and postlabs are due before prelab lecture starts. Organization of the lab reports will be discussed in the format section of this syllabus. Laboratory notebooks contain a top original copy which you will retain and a bottom carbon copy which is turned in for grading. All entries in your notebook should be in ink and legible. Your notebook should be detailed enough for another person to follow. Always include name, date, lab number, etc. on the top of every page. Each new experiment should begin with a new page. In the lab notebook you should record actual measurements.

Include calculations, yields, and physical observations for your end products.

## **Exams**

The final exam will be given during your designated lab time. It will be comprehensive covering all the experiments performed during the semester. The exam will be mostly short answer and fill in the blanks with a small number of multiple choice. No scantrons will be needed.

## **Late Work**

Prelabs and postlabs will be due on the desk prior to starting the prelab lecture. Anything turned in after pre-lab lecture begins will be considered late and points will be deducted.

## **Make Up Work**

You will not be able to switch lab sections to do a lab. You will not be allowed to make-up quizzes if you come in late. Contact me for individual issues.

## **Important Dates**

Spring Semester

Classes begin - January 12

Change of Schedule or Late Registration - January 14 to 16

Martin Luther King - No classes – January 21

Deadline for May graduates to file for graduation – February 18

Summer and Fall 2019 Schedule of Classes available - mid-March

Last Day for “W”, 4:00 p.m. – Drops after this date will receive grades of “F.” – March 25

Spring Break begins 5:00 p.m. – March 16

Classes resume – March 25

Holiday Break begins 10:00 pm – April 17

Classes resume – April 22

Last day of classes – May 3

Final examinations begin – May 4

Commencement – May 11

Refer to: [Drops, Withdrawals & Void](https://mwsu.edu/student-life/development/learning/index)

## **Desire-to-Learn (D2L)**

Use of the MSU D2L program is a part of this course. Each student is expected to be familiar with this program as it provides a source of communication regarding assignments, examination materials, and general course information. You can log into [D2L](https://d2l.mwsu.edu/) through the MSU Homepage. If you experience difficulties, please contact the technicians listed for the program or contact your instructor.

## **Attendance**

Attendance is expected as stated in the Student Handbook.

## **Instructor Class Policies**

Safety will be discussed in class. However, to reinforce: safety googles, closed toe shoes and reasonable covering of skin by clothing is required.

## **Services for Students With Disabilities**

In accordance with Section 504 of the Federal Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, Midwestern State University endeavors to make reasonable accommodations to ensure equal opportunity for qualified persons with disabilities to participate in all educational, social, and recreational programs and activities. After notification of acceptance, students requiring accommodations should make application for such assistance through Disability Support Services, located in the Clark Student Center, Room 168, (940) 397-4140. Current documentation of a disability will be required in order to provide appropriate services, and each request will be individually reviewed. For more details, please go to [Disability Support Services](http://www.mwsu.edu/student-life/disability).

## **College Policies**

### Campus Carry Rules/Policies

Refer to: [Campus Carry Rules and Policies](https://mwsu.edu/campus-carry/rules-policies)

### Smoking/Tobacco Policy

College policy strictly prohibits the use of tobacco products in any building owned or operated by WATC. Adult students may smoke only in the outside designated-smoking areas at each location.

Alcohol and Drug Policy

To comply with the Drug Free Schools and Communities Act of 1989 and subsequent amendments, students and employees of Midwestern State are informed that strictly enforced policies are in place which prohibits the unlawful possession, use or distribution of any illicit drugs, including alcohol, on university property or as part of any university-sponsored activity. Students and employees are also subject to all applicable legal sanctions under local, state and federal law for any offenses involving illicit drugs on University property or at University-sponsored activities.

NoticeChanges in the course syllabus, procedure, assignments, and schedule may be made at the discretion of the instructor.

## Course Schedule:

| Week of | Exp | Topic | Catalyst  | Quiz |
| --- | --- | --- | --- | --- |
| January 14 | No lab | No lab |  | No |
| January 21  | Check-in | Check-In |  | No |
| January 28  | 1 | IR and NMR worksheets | OP-39,40 | Yes |
| February 4 | 2 | Spectroscopy of unknowns | OP-34,37,39,40 | Yes |
| February 11  | 3 | Biodiesel | OP-37,39 | Yes |
| February 18  | 3 | cont’ Biodiesel | OP-7,18 | No |
| February 25  | 4 | Diels-Alder | OP-16,33,39,40 | Yes |
| March 4  | 5 | Banana Oil | OP-7,30,34,39 | Yes |
| March 11  | 6 | The Aldol Condensation Reaction | OP-16,28,33,40 | Yes |
| March 18  | **Break** | **Spring Break** |  |  |
| March 25  | 7 | Friedel-Crafts Acylation |  | Yes |
| April 1  | 7 | cont' Friedel-Crafts Acylation | OP-15,18,34,39,40 | No |
| April 8 | 8 | Unknown reaction | OP-16,33,39,40 | Yes |
| April 15 | 9 | Unknown reaction | OP-16,33,39,40 | Yes |
| April 22 | Final Exam | Comprehensive Written Exam and check-out |  |  |

## **Format for reports**

Pre-Lab consists of sections 1-4.

Post Lab consists of sections 5-8.

**For the Pre Lab write-up (Always include name, date, lab number, etc. on the top of every page)**:

1. **Grade sheet with** **Prelab questions: needs to be stapled to the front**

2. **Main Idea**. Write a brief sentence or two describing what you expected to learn or to accomplish along with a reaction (If applicable).

3. **Reaction(s).** Include **all** possible reactions that might occur in the lab for that week. If there is no reaction then write there are no reactions for this lab.

4. **Table of physical constants**. Include a Table of Physicals Constants which should include name of chemicals used or synthesized, **MW**, **mp/bp**, **density**, **structure**, and any special **hazard/cautionary** notes.

Two web sites that will assist in chemical property data collection are listed below.

[Chemexper](http://www.chemexper.com/)

[Chemfinder](http://chemfinder.cambridgesoft.com/)

Below is a web site for structures which can be used to obtain spectroscopic data

[AIST](http://www.aist.go.jp/RIODB/SDBS/cgi-bin/direct_frame_top.cgi?lang=eng)

**For the Post lab write-up (Always include name, date, lab number, etc. on the top of every page):**

5. **Grade sheet with** **Prelab questions: needs to be stapled to the front**

6. **Data and observations.** This is the procedure section. As you perform your lab write down in your lab book the methods you are doing and data you are obtaining. For any melting or boiling point that you measure, the literature value should also be reported. The spectra obtained should be labeled (indicate the structural features responsible for the peaks indicated) and stapled (IR, NMR, UV) to the back of your report.

7. **Calculations.** This section must include all calculations. Be sure to label all calculations clearly.

8. **Conclusions.** This is especially important for investigative type experiments. Discuss results obtained with respect to anticipated findings, any errors that may have caused your results to deviate from what was expected, and any side reactions that may have decreased yields. **Summarize what you learned. Discuss your data!!!!!!!!**

## **Laboratory Safety**

1. Wear approved eye protection in the laboratory continuously. This means eye covering which will protect both against impact and splashes. (If you should get a chemical in your eye, wash with flowing water from a sink or fountain for 15-30 min.)

2. Perform no unauthorized experiments.

3. In case of fire or accident, call instructor at once. (Note location of fire extinguisher and safety shower now so that you can use them if needed. Wet towels are very efficient for smothering fires.)

4. You must go to the infirmary for treatment of cuts, burns, or inhalation of fumes. (Your instructor will arrange for transportation if needed.)

5. Do not taste anything in the laboratory. (This applies to food as well as chemicals. Do not use the laboratory as an eating place and do not eat or drink from laboratory glassware.)

6. Exercise great care in noting the odor of fumes and avoid breathing fumes of any kind.

7. Do not use mouth suction in filling pipettes with chemical reagents. (Use a suction bulb)

8. Do not force glass tubing into rubber stoppers. (Protect your hands with a towel when inserting tubing into stoppers.)

9. Confine long hair when in the laboratory. (Also, a laboratory apron is essential when you are wearing easily combustible clothing. Such an apron affords desirable protection on all occasions.)

10. No open-toed shoes will be allowed in the laboratory.

11. Never work in the laboratory alone.

12. No smoking or other use of tobacco products in the laboratory.

13. Failure to adhere to rules will result in immediate dismissal from laboratory. I have read the above rules. I have participated in a safety orientation, and I will observe all of the safety rules of my chemistry course.