Organic Chemistry Lab, CHEM 272-01  
Western Carolina University  
Department of Chemistry and Physics

Fall 2001

Monday and Wednesday, 2:00 to 4:50 PM (and then some)  
Natural Science 217

Text:  

Instructor:  
William R. Kwochka

Where to find me:  
NS 225 (office), phone: 3673 (direct line) or 7260 (department)  
NS 218/220 (lab)  
NS 214 (NMR, GC/MS, SGI lab)  
E-mail: kwochka@email.wcu.edu

Office Hours:  
By appointment or when you can find me.

Course Description:  
This lab course is designed to enhance your CHEM 241/242 class experience by putting into practice the concepts learned in lecture and serve as an introduction to research in organic chemistry. We will begin by synthesizing simple organic molecules that do not require very delicate procedures and gradually move toward more complicated reactions that require good technical skill. This course will emphasize the techniques involved in synthetic chemistry such as running the reaction, workup of the reaction, purification of the reaction product, and, finally, characterization of that material primarily via $^1$H NMR.

Grading Policy:  
There will be no exams in this course. The final grade will be based upon your notebook (which I will check periodically) and a formal write-up (or worksheet) of each of the synthetic schemes. There are a total of 725 points that can be accumulated during the course of the semester; the amounts for each individual lab are listed in the tentative schedule. The grade scheme for the course is as follows:  

- **A** = 100-93,  
- **A-** = 93-90,  
- **B+** = 90-87,  
- **B** = 87-83,  
- **B-** = 83-80,  
- **C+** = 80-77,  
- **C** = 77-73,  
- **C-** = 73-70,  
- **D+** = 70-67,  
- **D** = 67-63,  
- **D-** = 63-60,  
- **F** = 60 and below.

Each time you have completed a lab you must hand in a packet containing the following:
- The synthesized material in a properly labeled container.
- The completed notebook.
- A formal, text-processed write-up of the work using the format of the Journal of Organic Chemistry with computer-drawn chemical structures (or the appropriately completed worksheet). Each report must contain all pertinent spectral data (IR, GC, $^1$H NMR and sometimes $^{13}$C NMR) in a folder (see handout).
Each lab write-up will be due approximately 1-2 weeks after the experiment is completed. I will provide more information about the specific requirements for each experiment at the appropriate time. Late lab reports will be penalized five percent per day, excluding weekends.

**Course Outline:** Essentially what we are doing in this course is bridging the gap between the traditional lab and undergraduate research. As with research, you must be flexible with your time. Some experiments will require short setup times with little time actually spent performing the reaction, others may need constant attention. The following is a *tentative* schedule for labs during the semester:

I. **Dyes: Preparation and Use of Indigo** 50 points (*worksheet*)

II. **Fermentation: The Biosynthesis of Ethanol** 100 points (*write-up*)

III. **Fischer Esterification: Flavors and Fragrances** 100 points (*write-up*)

IV. **Sugars: The Glucose Pentacetates** 75 points (*worksheet*)

V. **Ketone to Amide: The Beckmann Rearrangement** 100 points (*write-up*)

VI. **Biochemical Catalysis: Synthesis of the anticonvulsant drug, Dilantin** 100 points (*worksheet*)

VII. **“Green” Chemistry: Alkylation of Ferrocene** 100 points (*write-up*)

VIII. **Stereoisomerism: Resolution of (R,S)-Benzoylamino Acids** 100 points (*write-up*)

There will be **no class** on **October 8** (Fall Break)

or **November 21** (Thanksgiving).

*Good Luck and Enjoy the Chemistry!*