

# Syllabus Chem 29B Organic Chemistry Laboratory

## J. Dekker, Reedley College.

**Spring 2000** TTh 10:30 am - 1:20 PHY-77

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**Office hours** M T Th 2:30-3:30 pm or by appointment.

**Subject prerequisites:** Chem 28A and Chem 29A. Chem 28B has to be taken concurrently.  
**Web site** <http://www.rc.cc.ca.us> Click on Academic Programs followed by Chemistry Department.

**Textbooks** 1. Svoronos/Sarlo, Organic Chemistry Laboratory Manual, second edition.  
2. Solomons, Organic Chemistry, seventh edition.

**Required materials** 1. A lab research notebook.  
2. Safety goggles.

**Course objectives and outcomes** Students will become familiar with safety procedures and lab equipment for semi-micro organic experiments. They will be capable of synthesizing and purifying organic compounds, of measuring melting points, refractive index, optical activity etc. Hands on experience will be obtained with a Midac 2000 FTIR. They will also learn how to identify unknown compounds by analyzing their MS, IR and NMR spectra. Through interactive computer programs the students will receive extensive support in thoroughly understanding the concepts taught in the organic chemistry lecture (Chem 28B). One program being used is Organic Chem TV, which is developed at UCLA.

**Homework** Students are expected to come to lab well prepared. This means that the steps to be taken to properly complete the experiment are underlined in the text of the lab manual or written down in the lab notebook ahead of time. Typically, the theoretical explanations in the lab manual are too brief to fully comprehend the experiment. Therefore preparation reading Solomons' text on the subject is appropriate.

**Lab report** This semester 3 experiments are finalized with a lab report using the observations and data collected in the experiment. The extensive lab reports are a write-up of the experiment, but in essence, they are also a research paper. The student will have to use resources in the library to find appropriate theoretical background information and use the Internet, which will be available to each student in the Organic Chemistry Lab, room PHY-77. This semester, due dates and due times for the Lab reports are Th 2/3, Th 3/16 and Th 5/4, every time 9:00 am in FEM-4E. Approximately two weeks ahead of time a hand out will be given to prepare the report.

**Lab materials** Expensive grounded glassware and other delicate lab supplies will be made available. Students will be held responsible for their own desk inventory.

**Attendance** Attendance at all labs is mandatory. In accordance with Community College policy role will be taken every lab session. Students will have to complete all the laboratory assignments. You will be dropped if you miss two weeks without further notice.

**Grading** To determine the final grade in this class the average of the timely submitted and neatly typed lab reports will count towards 60% and the individually graded labs towards 40% of your final grade.

We will also take into account the quality of the product, the working technique, and the efforts to reach the experimental goal and occasionally the quantity of the compound.

General grade break-off: A 90% and up, B 80-89%, C 70-79%, D 60-69%, F 59% and lower.

**Drop date** The drop date is Friday MARCH 10, 2000. After this date a letter grade will have to appear on your transcripts. If you are dropped from the class before this date you will receive a W.

**Lab rules** It is MANDATORY to use safety glasses at any time that you are in the lab. You will have to read each experiment, including the Safety Tips ahead of time. In addition, to safe time, it is strongly advised to prepare the post lab questions before coming to the lab.

You have to perform all the assigned experiments. If for whatever reason you have to miss a lab, you are accountable to inform the instructor ahead of time and make arrangements to make up the lab **within one week**. The grade for a missed lab is a 0 (=zero).

Copying of experimental data and answers to questions in lab reports is considered fraudulent behavior and will result in a zero grade for the copier and the originator.

Lab reports have to be turned in **in time**. If the due date and due time is not made a minimum of 10 points (=one letter grade) will be deducted.

**Lab schedule Chem 29B Spring 2000** Please, turn over.--->

## Lab Schedule Chem 29B Spring 2000

Every experiment takes 1-2 lab sessions.

Title of activity or experiment, followed by the page in the Lab Manual where your reading needs to start.

1. Safety in the Lab. Take the Safety Quiz. Sign the Safety Agreement. Check in the desk inventory. Refer to page 1 of your Lab Manual.
2. Experiment 12. Conjugated dienes: The Diels Alder reaction. Refer to page 147 of the Lab Manual.
3. Synthesis of ferrocene, refer to hand out.
4. Experiment 15.5 Benzyne, the synthesis of triptycene, page 200.
5. Experiment 16.2 Hydrolysis of benzonitrile, page 211.
  
6. Experiment 16.4 Synthesis of isoamylacetate, page 216.
7. Experiment 16.6 Saponification of an ester, page 221.
8. Experiment 17.2 Reduction of cyclohexanone to cyclohexanol, page 226.
9. Experiment 17.3 Acetal formation: synthesis of 4,5-dimethyldioxolane, page 229.
10. Experiment 18.1 The aldol condensation: synthesis of dibenzalacetone, page 243.
  
11. Experiment 18.3 Michael addition: reaction of aniline with benzalacetophenone (= chalcone), page 249.
12. Experiment 19.2 Synthesis of acetanilide, page 255.
13. Experiment 19.3 The coupling of diazonium compounds, azo dye formation. The synthesis of para-red. Bring a T-shirt to dye, page 258.
14. Experiment 20.1 Oxidation of 2-methylnaphtalene, page 260.
15. Experiment 20.2 Synthesis of benzimidazole, page 262.
  
16. Experiment 21.1 The acid catalyzed hydrolysis of sucrose. A kinetic study, page 264.
17. Experiment 21.2 Qualitative tests for carbohydrates, page 273.
18. The synthesis of benzocaine, hand out.
19. Experiment 22.1. Three step synthesis of a peptide. Perform the ninhydrin test. Section b, page 283.
20. Experiment 22.2 Qualitative tests for amino acids and proteins, page 290.
  
21. Experiment 23.1. Preparation and properties of a soap, page 305.
22. Experiment 23.2. Qualitative determination of unsaturation in lipids, page 311.
23. Experiment 24.1. Qualitative analysis, page 325.