

UNIVERSITY OF TEXAS AT DALLAS

CHEM 2125 & 2025 – SPRING 2006

Organic Chemistry Lab II & Recitation

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Instructor's organic chemistry page: <http://www.utdallas.edu/~scortes/ochem>

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GENERAL INFORMATION

DESCRIPTION AND OBJECTIVES: This course is intended to provide the skills necessary to conceptualize, design, and execute organic experiments with an emphasis on syntheses. Students gain exposure to representative types of organic transformations and mechanisms, spectroscopy and structure determination, and the use of the chemical literature. Correlation with the lecture component is adequate, but practical factors prevent full overlap.

PREREQUISITES: One year of General Chemistry (theory and experiment) and first semester of introductory organic chemistry. NO EXCEPTIONS.

TEXTBOOK: Pavia, Lampman, Kriz, and Engel. Organic Laboratory Techniques: A Microscale Approach. 3rd ed. Fort Worth: Saunders, 1999.

SUPPLIES: The list below is good for two semesters of organic lab. Supplies must be obtained by the second week.

- HARDBOUND NOTEBOOK with duplicate sheets (carbon copies)
- APPROVED SAFETY GLASSES: Must have the Z87 code engraved on them. The spectacle type is strongly recommended over the goggle type. They look like regular glasses and can be worn over prescription glasses. Goggles cause discomfort due to the rubber band that wraps around the user's head and may cause certain individuals to sweat copiously.
- DISHWASHING GLOVES: Can be obtained at any store. See safety note below.
- PROTECTIVE CLOTHING: A lab coat is strongly recommended. Coats can be obtained at retail outlets such as Sears, and at most uniform and medical supplies stores.
- ITEMS OF PERSONAL USE: Hand soap, towel, economy sponge pack, tweezers, marker or pen, and masking tape (used for labeling).

SAFETY POLICY

Safety awareness is important in the organic chemistry lab due to the presence of fumes, solvents, flammables, and toxic materials. Students who disregard safety rules represent a liability to the university. When observing unsafe behavior, lab instructors have authority to reprimand offenders, deduct points from their lab report, ask them to leave the room, or refer them to the lab coordinator for further counseling. The lab coordinator reserves the right to penalize, or even

dismiss, such students.

IF YOU ARE UNWILLING TO COMPLY WITH SAFETY RULES,
READ NO FURTHER AND DROP THIS COURSE!

As a chemistry student, you are required to read the UTD undergraduate laboratory policies manual. This manual is available at the UTD Chemistry website under Safety Manual, or directly at <http://www.utdallas.edu/nsm/chemistry/resources/safety.html>. Key points are:

- Eye protection is mandatory for anyone physically present in the lab, whether conducting experiments or not. You must wear approved safety goggles as described under supplies.
- Protective gear such as a lab coat or apron is mandatory at all times. Shorts and sandals are not allowed, and long sleeves are preferred. Jewelry is discouraged.
- Gloves must be worn whenever the instructor, a chemical label, the textbook, or an MSDS recommends them. Dishwashing gloves are adequate for most purposes. Disposable gloves are not and their use is discouraged. If you wear disposable gloves YOU DO SO AT YOUR OWN RISK.
- Pregnant students are discouraged from taking this course. If you are or become pregnant while taking this course and want to stay in it, you must submit written medical approval to the Chemistry Department office (BE 2.318) or to the lab coordinator. Your request will be sent to the Dean of Natural Sciences and Mathematics for final approval.
- Contact lenses are not allowed in the chemistry labs. Safety glasses can be comfortably worn over prescription glasses. Certain commercial outlets offer prescription safety glasses. Please consult with your instructor or lab coordinator if interested.
- Allergies or other medical conditions that may be adversely affected by certain chemicals should be reported to the instructor and the lab coordinator before the student handles such chemicals.
- Drugs or medication that could impair normal mental or physical functioning are forbidden in the organic lab. If you are taking prescription drugs that might spring in this category, please notify the lab coordinator before attempting any experiments. Anyone who displays questionable behavior, in this or any other regard, is subject to referral to the lab coordinator or other authorities for further counsel.
- All accidents must be reported immediately to the instructor or the lab coordinator, however minor they might seem. Failure to do so may prevent taking appropriate measures and can further aggravate the situation.

GRADING AND COURSE POLICY

- Online quizzes 20%
 - Reports 60%
 - Final exam 20%
- Letter grades are assigned as shown below. The numbers indicate the final percent grade after round off.
- 95 - 100 = A+ 80 - 84 = B+ 65 - 69 = C+ 50 - 54 = D+
- 90 - 94 = A 75 - 79 = B 60 - 64 = C 45 - 49 = D
- 85 - 89 = A- 70 - 74 = B- 55 - 59 = C- 40 - 44 = D-

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THERE ARE NO EXCEPTIONS MADE FOR ANYONE

RECITATION LECTURES cover theory, safety issues, and procedural changes for experiments. They prepare students for experiments, quizzes, and the final exam. Some lectures will be delivered only online (available at the instructor's website). Please check the class schedule and plan ahead.

ONLINE QUIZZES. Quizzes are available for several days prior to the experiment to which they refer (see schedule on p. 5 for exact dates). If you miss a quiz you will receive a grade of zero. You're allowed two trials for each quiz and the highest grade prevails. You can drop one quiz grade per semester.

To take a quiz, log on to webCT and locate the quiz link inside this course (recitation section, NOT lab section).

To access webCT you need a UTD NetID, issued by the Computer Help Desk. Call 972-883-2911, or go to JO3.906 (Jonsson, third floor).

REPORTS. This term may refer to either assignments or experiment records. Assignments are typically completed outside the lab and handed in using a specified format. Experiment records result from work performed in the organic lab and must always be written in the lab notebook. All reports are graded on a 100 point scale. For a set of guidelines on how to write lab reports refer to the Guide for writing lab reports, available at the instructor's website under CLASS MATERIALS.

FINAL EXAM. This is a written test taken during class time on the last week of labs (see p. 5 for exact date). It is based on recitation notes, quizzes, and assigned questions from the textbook. Therefore, it is to your advantage to answer the quizzes without help if you want to do well in the final exam.

MISSED EXPERIMENTS POLICY

1. All incomplete experiments count as missed experiments. If you work with a partner, both must be present for the entire experiment. Doing otherwise negates the concept of team work and will result in a missed experiment for the missing partner.
2. The FIRST missed experiment will be dropped without penalty.
3. The SECOND missed experiment will carry a grade of zero.
4. The THIRD missed experiment will result in automatic failing grade in the course, regardless of how the student performs otherwise. If you miss more than two experiments you should drop the course.
5. No experiments can be made up, and no section switching is allowed.

LAB ETIQUETTE

DISRUPTIVE BEHAVIOR such as horseplay and pranks in the chemistry lab can be dangerous and precipitate accidents. Therefore, the lab coordinator and the lab staff reserve the right to reprimand, penalize, or even dismiss students who consistently disregard the rules of etiquette.

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PUNCTUALITY POLICY. Students who are late invariably cause unnecessary delays and strain in the organic lab schedule. After the first 15 minutes, any students who arrive late to the lab session without a justifiable reason will receive a 20 point deduction from the corresponding lab report.

TIDINESS. There are approximately 10 sections of organic lab running in the same room on any given week. It is imperative that you clean after yourself after every experiment, or others will have to do it.

As a matter of courtesy to others, always leave the work space as you would like to find it.

OTHER IMPORTANT POINTS

CHECKING EQUIPMENT IN AND OUT. You will receive a drawer with equipment that you will be responsible for during the semester. Any equipment missing from your drawer at checkout time will be charged to your student account.

If you quit attending or drop the course, you must check out as soon as possible to avoid unnecessary charges to your account.

DROP DEADLINES. It is your responsibility to observe drop deadlines. Stopping attendance without official withdrawal results in automatic failing grade.

INCOMPLETE GRADES. You can request an Incomplete only if you miss the final exam, and if a compelling and documented reason is provided. You cannot request an incomplete if you missed 3 or more experiments. In that case, you should drop the course, or you will get an automatic failing grade. Any incomplete grades that are not removed within one term turn into failing grades. The deadlines for graduate students are different and usually shorter.

Please consult your advisor if in doubt, or view the UTD catalog link for Grading Policy at

<http://www.utdallas.edu/student/catalog/undergrad04/policies-grades.html>

PREFERENTIAL TREATMENT occurs when a student is granted exceptional status based on bias, unsubstantiated claims, frivolous arguments, or tenuous evidence. The instructor will not honor requests for preferential treatment, so please do not ask!

DISHONEST CONDUCT. Engaging in questionable behavior or activities is a personal, albeit not a trivial choice. Offenders are subject to applicable policy and are accountable not only to the instructor, but to the university system as a whole, and ultimately to the people of the State of Texas.

BE INFORMED AND MAKE WISE DECISIONS!

Before deciding to engage in dishonest activities, view the UTD catalog link for Student Conduct and Discipline policy at <http://www.utdallas.edu/student/catalog/undergrad04/app1.html>

CHEATING IS THE FEEBLEST APPROACH TO THE CHALLENGES THAT COLLEGE AND LIFE WILL POSE TO YOUR CHARACTER. RECITATION, EXPERIMENTS, AND QUIZ SCHEDULES

These schedules are subject to revision as needed.

Students have one week to turn in assignments and lab reports from the original date of the assignment or completion of the experiment. Late materials will receive a 10 point deduction per day.

As a college student you are responsible for managing your time efficiently. You are responsible for managing the following three schedules as you see fit. Any oversights on your part that result in missed quizzes or experiments are your responsibility, and not the instructor's. Accordingly,

THERE ARE NO MAKEUPS FOR QUIZZES OR EXPERIMENTS.

RECITATION SCHEDULE

Jan. 11, 12
Introduction,
Library Assignments
Jan. 18, 19 Experiment 31
Jan. 25, 26 Proton NMR - Part 1
Feb. 1, 2 Experiment 28
Feb. 8, 9 Proton NMR - Part 2
Feb. 15, 16 Experiment 46
Feb. 22, 23 Carbon NMR
Mar. 1, 2 Experiment 37
Mar. 15, 16 No recitation
Mar. 22, 23
Experiment 38 and
Final Announcements

EXPERIMENT SCHEDULE

Jan. 9 - 16 NO LABS
Jan. 17 - 23
Library Instruction and
CHECK IN
NOTE: After Mon. Jan. 16 all new experiments start on Tuesday. Notice that all experiments, except for the last two, are two weeks long. PLAN ACCORDINGLY.
Jan. 24 - Feb. 6 Experiment 31 (two weeks)
Feb. 7 - 20 Experiment 28 (two weeks)
Feb. 21 - Mar. 13 Experiment 46 (two weeks)
Mar. 14 - 27 Experiment 37 (two weeks)
Mar. 28 - Apr. 3 Experiment 38 (one week)
Apr. 4 - 10
NMR Instrumentation
demos
Apr. 11 - 17
FINAL EXAM
and CHECK OUT
QUIZ SCHEDULE
Jan. 18 - 23 Quiz 1 on exp. 31
Jan. 25 - 30 Quiz 2 on H-NMR, pt. 1
Feb. 1 - 6 Quiz 3 on exp. 28

Feb. 8 - 13 Quiz 4 on H-NMR, pt. 2
Feb. 15 - 20 Quiz 5 on exp. 46
Feb. 22 - 27 TBA
Mar. 1 - 13 Quiz 6 on exp. 37
Mar. 15 - 20 No quiz
Mar. 22 - 27 Quiz 7 on exp. 38
Mar. 29 - Apr. 10 All quiz review

NOTE: All quizzes start at 12:00 am on the beginning date, and end at 11:55 pm on the ending date.

TOPIC DESCRIPTIONS

INTRODUCTION - Course preview and general information.

Assignments: Obtain from the instructor's website under Class Materials - Org. Lab. II - Chem. Literature Exercise. These exercises are to be completed after attending the library lecture (second full week, see below). Each exercise counts as a separate report, due as follows:

Assignment # 1 is due a week after the library lecture - 100 pts.
Assignment # 2 is due two weeks after the library lecture - 100 pts.

WEEK OF JAN. 17 - 23: LIBRARY INSTRUCTION: INTRO. CHEMICAL LITERATURE & SCIENTIFIC DATABASES - CHECK-IN.

- Readings: Sections 20.10 through 20.14 (p. 766-773).
- Class meets in the library lobby at 9 am (morning sections), 1 pm (afternoon sections), or 6 pm (evening sections), followed by check-in in BE 2.330, EXCEPT FOR THE FOLLOWING SECTIONS:
 - o Section 105 - wed. Jan. 18 - Library instruction at 2 pm in the library lobby Check in after library instruction in BE 2.330.
 - o Section 106 - Thur. Jan. 19 - Check in at 1 pm in BE 2.330 - Library instruction at 3 pm in the library lobby.
 - o Section 102 - Mon. Jan. 23 - Check in at 1 pm in BE 2.330 - Library instruction at 3 pm in the library lobby.
- ARRIVE ON TIME TO YOUR LIBRARY LECTURES, OR YOU WILL BE LEFT BEHIND.

EXP. 31A - PREP. TRIPHENYLMETHANOL. Grignard reactions. Carbon nucleophiles in synthesis.

- Readings: p. 292-299.
 - Assigned questions from exp. 31A: # 1, 3 (p. 301). Please include with your lab report.
- EXP. 28A - C. REDOX SCHEME: BORNEOL, CAMPHOR, ISOBORNEOL. Use of sodium borohydride, oxidation-reduction schemes in organic synthesis, use of NMR for product characterization.

- Readings: p. 266-278 and readings therein.
 - Assigned questions: # 1, 3 (p. 278). Please include with your lab report.
- EXP. 46 - PREP. SULFANILAMIDE. Sulfa drugs. protecting groups, aromatic substitution.
- Readings: p. 378-385.
 - Assigned questions: # 3, p. 385. Please include with your lab report.
- EXP. 37 - ENAMINE REACTIONS. Preparation of 2-Acetylcyclohexanone: Enamine acylations, azeotropic distillation, keto-enol tautomerism.

- Readings: p. 323-330.
- EXP 38 - PREP. CONJUGATED DIENE. Wittig reaction and alkene synthesis.
- Readings: p. 333-338 and readings therein.
 - Assigned questions: # 1, 2 (p. 338). Please include with your lab report.
- NMR INSTRUMENTATION DEMOS take place during lab time and count as an experiment.

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Attendance will be taken.

FINAL EXAM and CHECKOUT – Takes place during lab time. No checkout is allowed prior to this date unless you withdraw from the course. All lab reports are due on this date.