

Texas A&M University-Kingsville

CHEM 3125. Organic Chemistry Laboratory II

FACULTY SUPERVISOR:

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OFFICE HOURS: 2:30 – 4:30 PM, weekdays**

LABORATORY ASSISTANT:

To be named.

LABORATORY TEXT:

Because most organic laboratory texts have become quite expensive and because no one book has all the desired experiments you will need to purchase a plastic comb-bound book of experiments at the bookstore. Each experimental write-up in the lab book includes an introduction, a detailed procedure, and questions to be answered in your laboratory notebook.

ATTENDANCE:

There will be no makeup labs or makeup quizzes so you really need to attend all the lab meetings. It is absolutely crucial for you to be in the lab ON TIME, at 1:00 PM to hear the complete lab lecture. If you are later than 5 minutes you will be docked 5 points from your experiment grade of 15 points!

QUIZZES:

There will be three (3) 50 point unannounced quizzes during the term which will cover experiments you will have already performed.

GRADING:

A possible 300 points can be earned in CHEM 3123 as outlined below:

150 possible points for experiments.

150 possible points (sum of 3 50 point quiz grades)

300 possible points TOTAL

Grades will be determined according to University policy: A = 100-90 %, B = 89-80 %, C = 79-70 %, D = 60-69 %, F = less than 60 %.

SAFETY CONSIDERATIONS:

Texas State law requires eye protection (Texas A&M approved goggles) of all persons present in an academic laboratory. This statute will be enforced at all times! Failure to comply with this policy after the second time will result in you being dropped from CHEM 3123!

Open-toed shoes, bare feet, shorts, and sleeveless shirts (blouses) are not appropriate dress in the laboratory. Also, there is no eating, drinking, or smoking in the laboratory.

Please REPORT ALL ACCIDENTS, no matter how small, to your laboratory assistant immediately and learn the location of all safety equipment in the laboratory (overhead showers, eye wash fountains, and fire extinguishers).

Students are not permitted in the chemical stockrooms except with a faculty member's permission.

STANDARD LABORATORY PRACTICES:

- **Do not weigh chemicals directly on balance pans. Use weighing paper, beakers, or flasks.**
- **Dispose of all solid materials in waste baskets or earthen crocks in the hood – not in the sinks or drain troughs.**
- **Pour waste solvents and liquid chemicals in the hazardous waste bottles as directed.**
- **Add reactive chemicals only to CLEAN, DRY containers or glassware.**
- **Use flames (Bunsen burners) as a heat source only when authorized – most organic solvents are highly flammable!**
- **Do not leave experiments (reactions, distillations, etc) unattended.**
- **Return chemicals and equipment back where you got them.**
- **Do not pour excess chemicals back into reagent containers.**
- **Water should flow through condensers at a moderate rate only. Check the flow rate frequently.**

- Clean up your own work area before leaving the laboratory.
- The last three people left in the laboratory at the end of the work period are responsible for cleaning the common work areas.
- USE COMMON SENSE; ASK, IF YOU DON'T KNOW!

SUPPLIES YOU WILL NEED TO BUY:

- 1) a HARDBOUND notebook for writing up the experiments.
- 2) safety goggles
- 3) a small bottle of detergent
- 4) a roll of paper towels
- 5) matches or a cigarette lighter
- 6) a lab coat (optional)

WRITING THE LABORATORY NOTEBOOK:

Your laboratory notebook must be **BOUND** and all entries made in **INK**. If you make mistakes cross them out with a single line. Leave the first 3 or 4 pages blank for a table of contents to be filled in during the semester. Each page of your notebook should be numbered consecutively and start the write up for each new lab experiment on a new page.

Each experiment should be written up to include

- I. a. Title of Experiment
b. Date performed
c. Name of Lab Partner
- II. Purpose of Experiment (one sentence)
- III. Experimental Procedure (written procedures and sketches of apparatus)
- IV. Experimental Results (tables and/or written descriptions, yield in grams, percent yield, melting point, boiling point, and the like)
- V. Conclusions and Observations
- VI. Answers to Assigned Questions

NOTE: The purpose of a laboratory notebook is to allow an individual of similar or greater chemical experience to reproduce the work you did and presumably obtain the same results.

NOTE: Please put your **NAME** – first name, middle initial, last name – and **YOUR LABORATORY SECTION NUMBER** and **MEETING DAY** on the outside front cover of your laboratory notebook!

CARE OF GROUND GLASSWARE:

Your ground glass “Chem Kit” is expensive, with current costs about \$400. per kit. The replacement cost to you for breaking a condenser, fractionating column, or separatory funnel is \$50. to \$75. depending on the particular piece of equipment broken.

Look over the ground glass items especially carefully when you check in your equipment at the beginning of the semester. Note on your inventory sheets any chips or “dings” in these items. Small chips in ground glass equipment still allows the piece to be used but do **NOT** accept pieces with cracks. Replace any cracked pieces with a replacement piece from the stockroom.

It is important to preserve the surfaces of the ground glass joints to keep them completely interchangeable and to keep them from freezing together. This is best done by lubricating the ground surfaces with stopcock grease by applying a light coat of grease around the upper surface of both joints to be joined together and them gently rotating the joints to evenly distribute the grease. Lubrication protects the surface of the joint, makes them easy to separate, and helps prevent leaks.

Always dismantle a ground glass apparatus assembly promptly to minimize the possibility of the joints freezing together. The residual lubricant can be wiped off the joint surfaces with a paper towel.

You should always clamp apparatus together at the locations shown in the illustrations in the experimental write ups. Realize that there is virtually no “play” in an apparatus joined by ground glass joints so it is important to clamp the apparatus together correctly and not too tightly. Sometimes large rubber bands can be used to keep various pieces of an apparatus “snugged” together.

LABORATORY SCHEDULE

Dates	Events
Week 1	----- Laboratory check in and safety instruction
Week 2	
Week 3	Laboratory Experiment 1: Synthesis of Bromobutane
Week 4	Laboratory Experiment 2: Preparation of <i>tert</i>-Butyl chloride (MACROSCALE)

Week 5	Laboratory Experiment 3: Synthesis of 1,4 di-<i>t</i>-Butylbenzene
Week 6	Laboratory Experiment 4: Nitration of Methyl Benzoate
Week 7	Laboratory Experiment 5: Multistep Synthesis of Sulfanilamide (TWO – WEEKS)
Week 8	Laboratory Experiment 6: The Aldol Condensation: Synthesis of Dibenzalacetone
Week 9	Laboratory Experiment 7: Solubility Tests
Week 10	Laboratory Experiment 8: Classification Tests for Alcohols, Aldehydes, and Ketones
Week 11	Experiment 9: Solubility Tests
Week 12	Experiment 10: Functional Group Tests
Week 13	Experiment 11: Isolation of Eugenol from Cloves
Week 14	Laboratory Experiment 9: Extraction of Eugenol From Cloves (MACROSCALE) Check Out

All laboratory notebooks must be turned in to your Laboratory Assistant in due time after each lab for final grading!

If your Laboratory Notebook is not turned in by the DUE DATE you will receive a grade of ZERO for all lab write-ups that were to be graded.

Student learner outcomes

- 1. Students will be able to prepare p-di-tert-butylbenzene and confirm its synthesis by a melting point determination.**
- 2. Student will be able to extract caffeine and confirm its identity by a melting point determination.**
- 3. Students will be able to analyze an unknown organic sample by sodium fusion and determine whether nitrogen, sulfur, chlorine, bromine or iodine are present by doing test tube reactions on the fusion solution.**

Policies for attendance, excused absences, make-up exams, late assignments, early final exams, cell phones, etc.:

Successful performance in this class requires that you attend class. Make-ups for missed exams are granted only for excused (official university) absences. Please note that attendance policies may vary by college. No late assignments will be accepted. Graduating seniors who need to schedule an early final should inform the instructor early in the semester. Students should turn off and stow their cell phones during class.

Disability statement (See pages 2 & 11 of Student Handbook):

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disability. If you believe you have a disability requiring an accommodation please contact the Disability Resource Center (DRC) as early as possible in the term. DRC is located in the Life Service and Wellness building at 1210 Retama Drive, or call (361) 593-3024.

Academic misconduct statement (see page 23, section 100 of student handbook):

You are expected to adhere to the highest academic standards of behavior and personal conduct in this course and all other courses. Students who engage in academic misconduct are subject to university disciplinary procedures. Make sure you are familiar with your Student Handbook, especially the section on academic misconduct, which discusses conduct expectations and academic dishonesty rules.

Forms of academic dishonesty:

- 1) Cheating:** Using unauthorized notes or study aids, allowing another party to do one's work/exam and turning in that work/exam as one's own; submitting the same or similar work in more than one course without permission from the course instructors; deception in which a student misrepresents that he/she has mastered information on an academic exercise that he/she has not mastered; giving or receiving aid unauthorized by the instructor on assignments or examinations.
- 2) Aid of academic dishonesty:** Intentionally facilitating any act of academic dishonesty. Tampering with grades or taking part in obtaining or distributing any part of

a scheduled test.

- 3) **Fabrication:** Falsification or creation of data, research or resources, or altering a graded work without the prior consent of the course instructor.
- 4) **Plagiarism:** Portrayal of another's work or ideas as one's own. Examples include unacknowledged quotation and/or paraphrase of someone else's words, ideas, or data as one's own in work submitted for credit. Failure to identify information or essays from the Internet and submitting them as one's own work also constitutes plagiarism.
- 5) **Lying:** Deliberate falsification with the intent to deceive in written or verbal form as it applies to an academic submission.
- 6) **Bribery:** Providing, offering or taking rewards in exchange for a grade, an assignment, or the aid of academic dishonesty.
- 7) **Threat:** An attempt to intimidate a student, staff or faculty member for the purpose of receiving an unearned grade or in an effort to prevent reporting of an Honor Code violation. Please be aware that the University subscribes to the Turnitin plagiarism detection service. Your paper may be submitted to this service at the discretion of the instructor.

Other Forms of Academic Misconduct:

- 1) Failure to follow published departmental guidelines, professor's syllabi, and other posted academic policies in place for the orderly and efficient instruction of classes, including laboratories, and use of academic resources or equipment.
- 2) Unauthorized possession of examinations, reserved library materials, laboratory materials or other course related materials.
- 3) Failure to follow the instructor or proctor's test-taking instructions, including but not limited to not setting aside notes, books or study guides while the test is in progress, failing to sit in designated locations and/or leaving the classroom/ test site without permission during a test.
- 4) Prevention of the convening, continuation or orderly conduct of any class, lab or class activity. Engaging in conduct that interferes with or disrupts university teaching, research or class activities such as making loud and distracting noises, repeatedly answering cell phones/text messaging or allowing pagers to beep, exhibiting erratic or irrational behavior, persisting in speaking without being recognized, repeatedly leaving and entering the classroom or test site without authorization, and making physical threats or verbal insults to the faculty member, or other students and staff.
- 5) Falsification of student transcript or other academic records; or unauthorized access to academic computer records.
- 6) Nondisclosure or misrepresentation in filling out applications or other university records.
- 7) Any action which may be deemed as unprofessional or inappropriate in the professional community of the discipline being studied.

Non-academic misconduct (see page 23, section 100 of the student handbook): The university respects the rights of instructors to teach and of students to learn. Maintenance of these rights requires campus conditions that do not impede their exercise. Campus behavior that interferes with these rights will not be tolerated; examples include

- 1) interfering with the instructor's ability to conduct the class,
- 2) causing inability of other students to profit from the instructional program, or
- 3) any interference with the rights of others.

An individual engaging in such disruptive behavior may be subject to disciplinary action. Such incidents will be adjudicated by the Dean of Students under non-academic procedures.

Ongoing behaviors or single behaviors considered distracting (e.g., coming late to class, performing a repetitive act that is annoying, sleeping or reading a newspaper in class, etc.) will be addressed by the faculty member initially either generally or individually. Cases in which such annoying behavior becomes excessive and the student refuses to respond to the faculty member's efforts can be referred to the Dean of Students. In the case of serious disruptive behavior in a classroom the instructor may first request compliance from the student and if it is not received, an instructor has the authority to ask the student to leave the classroom. If the student fails to leave after being directed to do so, assistance may be obtained from other university personnel, including University Police Department. An individual engaging in such disruptive behavior is subject to disciplinary action. Such incidents will be adjudicated by the Dean of Students under non-academic procedures to determine if the student should be allowed to return to the classroom.

Harassment /Discrimination (See page 23, section 200 of Student Handbook):

Texas A&M University-Kingsville will investigate all complaints that indicate sexual harassment, harassment, or discrimination may have occurred by the facts given by the complainant. Sexual harassment of anyone at Texas A&M University-Kingsville is unacceptable and will not be tolerated. Any member of the university community violating this policy will be subject to disciplinary action. A person who believes he/she has been the victim of sexual harassment, harassment, or discrimination may pursue either the informal or the formal complaint resolution procedure. A complaint may be initially made to the complainant's immediate supervisor, a department head, any supervisory employee, the Dean of Students (593-3606), or the Office of Compliance (593-4758). Regardless of who the complaint is filed with, the Compliance Office will be notified of the complaint so it can be investigated.

Six-drop policy:

The following provision (new in Fall 2007) does not apply to students with Texas public college or university credits prior to Fall 2007. The Texas legislature has enacted a limit to the number of course drops allowed to a student without penalty. After a student has dropped six courses, a grade of QF will normally be recorded for each subsequent drop. If you need additional information on Senate Bill 1231 and how it affects you, please contact the Registrar's Office in College Hall, Room 105.

Comments:

- I will not take formal attendance but class attendance is a very practical necessity. Please note that attendance policies may vary by college). No late assignments will be

accepted. Graduating seniors who need to schedule an early final should inform the instructor early in the semester. Students should turn off their cell phones during class.

- The syllabus is intended to be informational and not contractual. The instructor reserves the right to amend, alter, change, delete, or modify the syllabus with notice (announced during the lecture season) in any manner that is deemed necessary and in the best interest of the Department of chemistry and Texas A & M University-Kingsville.
- It is the responsibility of the student to keep the original graded copies of all materials (exams, problem set, in-class assignments, etc.) that have been returned for his/her records. Graded final exams are retained by the instructor for his/her permanent records.