



TEXAS A&M UNIVERSITY

COMMERCE

COURSE INFORMATION FOR CHEMISTRY 2125 LAB:

ORGANIC CHEMISTRY II LAB

Spring 2024

INSTRUCTOR INFORMATION

Instructor: Swapna Bodampati

Office Location: STC 344

Office Hours: Monday: 9:00 am-11:30 am and Thursday at 9:00 am-11:30 am or by appointment.

Office Phone: 903-468-8765

University Email Address: swapna.bodampati@tamuc.edu

Alternate Email Address: sbodampati@leomail.tamuc.edu

The preferred form of Communication: email

Communication Response Time: within 24 hours

COURSE INFORMATION

Section 01L meets Monday 2:00 pm – 5:50 pm in STC 308

Section 02L meets Tuesday 2:00 pm – 5:50 pm in STC 308

Section 03L meets Wednesday 2:00 pm – 5:50 pm in STC 308

Section 04L meets Thursday 2:00 pm – 5:50 pm in STC 308

Text/ Manual and other required material:

- **Custom Lab Manual: CHEM 2125 - Lab Experiments - Organic Chemistry II:** 9781337907361 Custom Lab Manual (Available in the bookstore) Purchased is required.
- **Supplies:** Safety Goggles and a **combination padlock**
- **A calculator**
- **Appropriate lab attire** (long pants without holes, no open-toed shoes, long hair tied back, no sleeveless shirts)
- **Lab coats (optional).**

Course Description: A continuation of Chem 2123. Introduction of techniques for organic chemistry laboratory, including preparation, setup, and running reactions and the characterization of the properties of representative organic compounds.

Student Learning Outcomes/Course Objectives:

By the end of the semester, I intend for my students to have realized a number of objectives.

- Learn basic synthetic organic chemistry techniques, such as how to set up reactions, how to monitor the progress of a reaction, how to calculate the amount of starting materials needed, how to calculate percent yields, and how to properly clean glassware at the end of an experiment.

- Learn basic techniques for the isolation and purification of organic molecules, such as distillation, recrystallization, chromatography (TLC and column), and extraction.
- Learn how to characterize organic compounds using techniques and instrumentation such as melting point, boiling point, retention factor, ¹H-NMR, ¹³C-NMR, IR, and UV/Vis spectroscopy.
- Learn the safety requirements and methods needed to work in an organic chemistry laboratory.
- Learn how to safely handle, utilize and dispose of chemicals.
- Learn how to document laboratory experiments, how to maintain a scientific notebook.
- Know the importance of organic chemistry and its relationship to various other disciplines such as biochemistry and medicinal chemistry and our daily lives.

COURSE REQUIREMENTS

Course specific procedures

The following are directions for preparing for the laboratory experiments. It is essential that you read these rules carefully and understand what is expected.

- It is essential to read the background information of the experiment and its procedure before coming to class.
- Labs cannot be done without safety glasses and gloves.
- Late arrival (more than 20 minutes) will result in forfeit of the grade for that lab.
- There will be 12 labs assigned with written lab reports (pre lab, data and post lab). **A minimum of 11 labs must be completed (with report) to pass the class.** Only initialed data sheet will be accepted.
- If you miss a laboratory experiment that will be your dropped laboratory report. If you miss more than one laboratory experiment, you will be assigned a grade of zero for that assignment. **It is the student's responsibility to inform the instructor of his/her absence before class starts.**
- Performing lab experiment without pre-lab report is not allowed.
- **No phones are allowed.**

Laboratory Notebooks: You must write down what you observe and measure during the time of the experiment. Compose the laboratory report in sufficient detail to allow someone else to repeat the experiment exactly. The observations section of the report must be the original notes taken during the course of the experiment (take detailed, **legible** notes during the experiment). Your notes **MUST** be signed by the TA after the experiment is completed.

Each laboratory report will consist of the following sections:

- Prelab Section – **40 points** (due at the beginning of the laboratory, **MUST** be signed by the TA before the experiment starts and returned back to the student)
 - Title – 2 points. The number of the experiment and its title, date of the experiment, student's name.
 - Objective – 3 points (The purpose of the experiment, method/skills)
 - Physical Constants/Reagent Data – 10 points. (Make a table to clearly list the chemical and physical properties of all the solvents and chemicals you will use. The properties include but are not limited to molecular weight, density, melting point, boiling point, color, phase, solubility, flammability, toxicity)
 - Stoichiometry/Theory – 5 points (Equation - 2 points; how much of each reactant should be used and what is the limiting reagent – 1 point. What is the theoretical yield by calculation – 2 points)

- Safety – 5 points. (Read the special instruction part carefully so that you will not be injured. How to deal with the dangerous chemicals and operations should be listed clearly)
- Procedure – 15 points. (Itemize the procedure as an outline, do not copy the text book directly. You are encouraged to explain the key steps after the particular procedures)
- Postlab Section – **60 points** (MUST be completed by the beginning of the next laboratory period and submitted along with the pre lab report)
 - Modifications to procedure – 5 points (What modification did you made? Why did you make this modification?)
 - Observations – 15 points (List the phenomenon you have observed such as bubbles formed, the color of the mixture changed from colorless to rose, two layers were formed from one phase, green crystals formed and so on)
 - Results – 10 points. (What's the physical property of your product (color, phase melting point)? How much product did you get in this part? (You should show your original data and the calculation process; three significant digits after the decimal are required. Calculate your actual yield)
 - Laboratory notes – 10 points
 - Discussion – 20 points (Explain the phenomenon you have observed; explain the results in terms of the purpose of the experiment; compare the expected results with the actual results (for example, compare the theoretical and the actual yields); explain how the purity and identity of the compound was assessed (10 points). Interpret the IR and H-NMR spectra (5 points). Answer the assigned problems according to the syllabus (5 points).

GRADING

Your laboratory grade will be based on 11 of your best experimental write-ups (lab reports) out of 12 (90%) and spectroscopy problems (10%).

| | |
|-----------------------------------|------------|
| Lab reports (prelab and postlab): | 90% |
| <u>Spectroscopy problems:</u> | <u>10%</u> |
| | 100% |

You are required to submit lab reports in a timely manner. You will incur a 10% penalty for every day that your lab report is late; thus, if a lab report is 7 days late, you will receive a zero for that report. There will be absolutely no make-ups for laboratory experiments. If you miss a laboratory experiment, it will count as your dropped laboratory write-up. If you miss more than one laboratory experiment, you will be assigned a grade of zero for that assignment. See the following website for more details about course withdrawal deadlines: <http://www.tamuc.edu/admissions/registrar/academicCalendars/>.

Grading will be based on a standard percentage scale: 100-90 = A; 89-80 = B; 79-70 = C; 69-60 = D; 59-below = F. Dishonest scholarship will earn an automatic zero (0) and initiate prosecution to the fullest extent. Incomplete grades may be given only if the student has a current average \geq 70% and is precluded from completion of the course by a documented illness or family crisis.

Lab Cleanliness: You will be expected to maintain a clean and orderly lab. At the end of every experiment, your bench space and hood space must be cleaned. Any equipment utilized during the

experiment must be cleaned as well (balances, rotovaps, etc.). You should ensure that sinks and floors are also clean. **If the lab space and equipment that you utilized during the experiment is left dirty and unorganized, you will be penalized 20% on your lab report associated with that experiment.**

1. You must bring a lock to your first laboratory meeting.
2. Safety goggles, long pants and closed toed shoes are required to be worn during all laboratory experiments.
3. The following lab number and name is based on custom lab manual from campus book store.

*Tentative Lab Schedule for CHEM 2125
Spring 2023*

| <i>Week</i> | <i>Week</i> | <i><u>Experiments & Assigned Problems</u></i> |
|-------------|---------------|---|
| 1 | 01/16 - 01/22 | Check in equipment, watch lab safety video and take safety quiz. Laboratory write-up instructions |
| 2 | 01/23 - 01/29 | Experiments 17 B and 18 A. Training on how to use computational chemistry software Spartan (second floor computer lab). Read all of chapter 17 and 18 before class. Conduct exercises 17B and 18 A. Read the essays in the chapters before class. |
| 3 | 01/30 - 02/05 | Combinatorial Chemistry. A handout will be given out and uploaded in D2L that describes this lab and its procedure. Record an IR and ¹ H-NMR spectrum of your ester and interpret the spectrum for your post-lab report |
| 4 | 02/06 – 02/12 | Oxidation of Alcohols. A handout will be given out and uploaded in D2L that describes this lab and procedure. |
| 5 | 02/13 – 02/19 | Experiment 34. Read all of experiment 34. Conduct experiment 34: Aqueous-Based Organozinc Reactions. Answer questions 1-4 in your post-lab report. |
| 6 | 02/20 – 02/26 | Experiment 42. Conduct experiment 42. Relative Reactivities of Several Aromatic Compounds. Read all of experiment 42. Answer questions 1-3 in your post-lab report. |
| 7 | 02/27 – 03/04 | Experiment 41B. Read all of experiment 41. Conduct experiment 41B: 1,4-diphenyl-1,3-butadiene (Wittig reaction). Answer questions 1-5 in your post-lab report. Set up experiment 32A |

The next 3 labs will test your synthetic chemistry skills as the product from one experiment will be utilized for the next experiment! So hopefully you have material at the end of each lab that will serve as your starting material for the subsequent lab.

| | | |
|----|---------------|--|
| 8 | 03/05 – 03/18 | Experiment 32A. Read all of experiment 32: Multistep Reaction Sequences: The Conversion of Benzaldehyde to Benzilic Acid. Conduct experiment 32A. KEEP your product at the end of this experiment because you will use it next experiment. Answer questions 1 and 4 in your post-lab report |
| 9 | 03/11-03/15 | Spring break, no lab |
| 10 | 03/19 – 03/25 | Experiment 32B. Conduct experiment 32B: Preparation of Benzil. Use your product from last week as this week starting material. KEEP your product at the end of the experiment because you will use it next experiment. |
| 11 | 03/26 – 04/01 | Experiment 32C. Conduct experiment 32C: Preparation of Benzilic Acid. Use your product from last week as the starting material. Obtain yields from each individual step and the overall yield for the three step reaction for your report. Answer questions 1-3 in your post-lab report. |
| 12 | 04/02 – 04/8 | Experiment 50AB. Read the essay on pages 382-391: Polymers and Plastics. Conduct experiments 50A and 50B: Polyesters and Polyamide (Nylon). Answer questions 1-7 in the post-lab report. Set up and experiment 16. |
| 13 | 04/09 – 04/15 | Experiment 16. Read the essay on page 116-118: Ethanol and Fermentation Chemistry. Complete experiment 16 which was started last week. Answer questions 1-6 in your post-lab write-up. |
| 14 | 04/16 – 04/22 | Experiment 37. Read all of experiment 37. Conduct experiment 37: The Aldol Condensation: Preparation of Benzalacetophenones (Chalcones). Answer questions 1, 2, and 4 in your post-lab report. Spectroscopy Problems due. |
| 15 | 04/23 – 04/29 | Check out |
| 15 | 04/30 - 05/06 | <u>No lab</u> |

TECHNOLOGY REQUIREMENTS

LMS – myLeo Online – D2L Brightspace

All course sections offered by Texas A&M University-Commerce have a corresponding course shell in the myLeo Online Learning Management System (LMS). Below are technical requirements.

LMS Requirements:

<https://community.brightspace.com/s/article/Brightspace-Platform-Requirements>

LMS Browser Support:

https://documentation.brightspace.com/EN/brightspace/requirements/all/browser_support.htm

YouSeeU Virtual Classroom Requirements:

<https://support.youseeu.com/hc/en-us/articles/115007031107-Basic-System-Requirements>

ACCESS AND NAVIGATION

You will need your campus-wide ID (CWID) and password to log into the course. If you do not know your CWID or have forgotten your password, contact the Center for IT Excellence (CITE) at 903.468.6000 or helpdesk@tamuc.edu.

Note: Personal computer and internet connection problems do not excuse the requirement to complete all course work in a timely and satisfactory manner. Each student needs to have a backup method to deal with these inevitable problems. These methods might include the availability of a backup PC at home or work, the temporary use of a computer at a friend's home, the local library, office service companies, Starbucks, a TAMUC campus open computer lab, etc.

COMMUNICATION AND SUPPORT

If you have any questions or are having difficulties with the course material, please contact your Instructor.

Technical Support

If you are having technical difficulty with any part of Brightspace, please contact Brightspace Technical Support at 1-877-325-7778. Other support options can be found here: <https://community.brightspace.com/support/s/contactsupport>

Interaction with Instructor Statement

Communication: If the instructor needs to contact an individual student, it will be via the student's Texas A&M –Commerce email account.

COURSE AND UNIVERSITY PROCEDURES/POLICIES

Attendance Policy: All students are expected to attend classes on a regular basis. The Department of Chemistry adheres to the attendance policy set by the University as stated in the most current Undergraduate Catalog. The attendance record is taken from the **daily sign-in sheet**. A student who is late by more than 5 minutes or fails to sign the sign-in sheet will be counted as missing a class. **Excessive absence is defined as missing more than 10% of the class without excusable reasons.** Excessive absence will be reported to the Dean of the College and the Dean of Students. In addition, **according to the TAMU-Commerce Procedure 13.99.99.R0.001, if a student has excessive absences, the instructor may drop the student from the course.** The instructor will only excuse an absence if the student provides, with appropriate document, an excusable reason allowed by the TAMU-Commerce Procedure **13.99.99.R0.001**. Good class attendance will be necessary in order to pass this course.

Syllabus Change Policy

The syllabus is a guide. Circumstances and events, such as student progress, may make it necessary for the instructor to modify the syllabus during the semester. Any changes made to the syllabus will be announced in advance.

University Specific Procedures Student Conduct

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. The Code of Student Conduct is described in detail in the [Student Guidebook](#).

<http://www.tamuc.edu/Admissions/oneStopShop/undergraduateAdmissions/studentGuidebook.aspx>

Students should also consult the Rules of Netiquette for more information regarding how to interact with students in an online forum: [Netiquette](#)

<http://www.albion.com/netiquette/corerules.html>

TAMUC Attendance

For more information about the attendance policy please visit the [Attendance](#) webpage and [Procedure 13.99.99.R0.01](#).

<http://www.tamuc.edu/admissions/registrar/generalInformation/attendance.aspx>

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/academic/13.99.99.R0.01.pdf>

Academic Integrity

Students at Texas A&M University-Commerce are expected to maintain high standards of integrity and honesty in all of their scholastic work. For more details and the definition of academic dishonesty see the following procedures:

[Undergraduate Academic Dishonesty 13.99.99.R0.03](#)

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/undergraduates/13.99.99.R0.03UndergraduateAcademicDishonesty.pdf>

[Graduate Student Academic Dishonesty 13.99.99.R0.10](#)

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/graduate/13.99.99.R0.10GraduateStudentAcademicDishonesty.pdf>

ADA Statement Students with Disabilities

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 disabilities. If you have a disability requiring an accommodation, please contact:

Office of Student Disability Resources and Services

Texas A&M University-Commerce

Gee Library- Room 162

Phone (903) 886-5150 or (903) 886-5835

Fax (903) 468-8148

Email: studentdisabilityservices@tamuc.edu

Website: [Office of Student Disability Resources and Services](#)

<http://www.tamuc.edu/campusLife/campusServices/studentDisabilityResourcesAndServices/>

Nondiscrimination Notice

Texas A&M University-Commerce will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status.

Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

Campus Concealed Carry Statement

Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in Texas A&M University-Commerce buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and A&M-Commerce Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations.

For a list of locations, please refer to the [Carrying Concealed Handguns On Campus](#) document and/or consult your event organizer.

Web

url:

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf>

Pursuant to PC 46.035, the open carrying of handguns is prohibited on all A&M-Commerce campuses. Report violations to the University Police Department at 903-886-5868 or 9-1-1.

A&M-Commerce Supports Students' Mental Health

The Counseling Center at A&M-Commerce, located in the Halladay Building, Room 203, offers counseling services, educational programming, and connection to community resources for students. Students have 24/7 access to the Counseling Center's crisis assessment services by calling 903-886-5145. For more information regarding Counseling Center events and confidential services, please visit www.tamuc.edu/counsel

Students should not attend class when ill or after exposure to anyone with a communicable illness. Communicate such instances directly with your instructor. Faculty will work to support the student getting access to missed content or completing missed assignments.

AI use policy

Texas A&M University-Commerce acknowledges that there are legitimate uses of Artificial Intelligence, ChatBots, or other software that has the capacity to generate text, or suggest replacements for text beyond individual words, as determined by the instructor of the course. Any use of such software must be documented. Any undocumented use of such software constitutes an instance of academic dishonesty (plagiarism).

Individual instructors may disallow entirely the use of such software for individual assignments or for the entire course. Students should be aware of such requirements and follow their instructors' guidelines. If no instructions are provided the student should assume that the use of such software is disallowed.

In any case, students are fully responsible for the content of any assignment they submit, regardless of whether they used an AI, in any way. This specifically includes cases in which the AI plagiarized another text or misrepresented sources.

13.99.99.R0.03 Undergraduate Academic Dishonesty

13.99.99.R0.10 Graduate Student Academic Dishonesty