

Introduction to Organic and Biochemistry Laboratory Syllabus

CHEM1108 UTEP

Spring 2022



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Course description: UTEP CHEM1108 is an introductory course to organic and bioorganic chemistry laboratories. The overall goal of this course is to introduce aspiring professionals into the fundamental qualitative analysis of common structural moieties and biomolecules. We will study and identify alkanes, alkenes, alkynes, halogenated hydrocarbons, alcohols, aldehydes, ketones, carboxylic acids, esters, amines, and amides in laboratory. We will then study the structural and functional properties of water in biological systems. We will identify carbohydrates and lipids; and study their structural and functional properties. Finally, you will take leadership into a theoretical project where you will be able to teach to the class the importance of other organic moieties and biomolecules.

Course objectives:

- To learn how to work under the proper etiquette inside a chemistry laboratory.
- To study the structural and functional fundamentals of the most common functional groups in organic chemistry.
- To study the fundamentals of water, its solutions, and its relevance in biological systems.
- To study the structural and functional fundamentals of the most common biomolecules.
- To study some qualitative techniques for carbohydrates, amino acids, lipids, and nucleic acids.

Required material, PPE and attire:

- Scientific calculator
- Periodic table
- Splash goggles (**NOT laboratory glasses**)
- Lab Coat
- Gloves will be provided inside the laboratory
- Pants that cover your legs (not shorts or skirts)
- Closed-toed shoes (NOT sandals or open-toed shoes)
- Rubber bands (For people with long hair)

Safety:

Laboratory etiquette must always be followed during your sessions. Most accidents that occur in the chemistry laboratory occur due to carelessness, impatience, unauthorized experimentation, and disregard for safety rules.

The laboratory apparel is described as follows:

- Splash goggles must always be worn inside the laboratory! Splash hazards are the most significant danger present in the laboratory, and eyes are extremely sensitive.
- Laboratory coats must always be worn inside the laboratory!
- Closed shoes must always be worn inside the laboratory. Sandals, open-toed shoes, and high heels are not permitted inside the laboratory.
- Long pants and long sleeves must always be worn inside the laboratory. Shorts are prohibited to use. If you wear tank tops, make sure that the coat protects your shoulders, arms, and wrists.
- Long hair must be constrained always inside the laboratory.
- FAILING TO COMPLY WITH THE ABOVE-MENTIONED INDICATIONS WILL RESULT IN EXPULSION FROM THE LABORATORY ON THAT DAY, AND LOSS OF THE CORRESPONDING GRADE FROM THE ACTIVITY.

Attendance

Attendance to the laboratory is mandatory. You must be on-time and ready for the experiment at the beginning of each laboratory period. Failing to show up, or to comply with the safety laboratory apparel will result in the loss of the activity and the corresponding grade.

Making up laboratories is possible only under certain conditions: 1) Academic excused activity and 2) Justified medical absence that is not related to COVID-19 or any other infectious disease. This option must always be verified by your instructor **AND** TA accompanied by a Dr.'s prescription note.

Exemption of laboratory grade is possible only under certain conditions: 1) Academic excused activity, 2) Justified medical absence that IS related to COVID-19, any other infectious disease, or any other type of event that physically affects your capacity to assist to class. These options must always be verified by your instructor **AND** TA. COVID-19 related exemptions must be verified with a **nasopharyngeal** test or a Dr.'s prescription note. For other cases like infectious diseases or something that affects your capacity to assist to class, a Dr.'s prescription will be required. Any other type of verification will not be allowed.

Be mindful about handling your make-up/exemption decisions. Exemptions to the laboratory activities result in the elimination of that activity from the final score. This could not be beneficial to your final score in the long run. It is always better to make-up a session if the option is available. Ask your instructor or TA about the other times where you could assist to make-up laboratory sessions.

COVID-19 and other conditions: Statement and Policy

The current pandemic situation calls for clear indications in the event of suspected COVID-19 exposure or any other medical condition that is considered dangerous. READ VERY CAREFULLY all the indications:

- 1) If you show COVID-19 symptoms or were exposed to an environment with active COVID-19 in recent days before your class, DO NOT ATTEND THE SESSION NOR CAMPUS BY ANY MEANS! Notify your instructor and TA immediately.
- 2) All COVID-19 exemptions will be valid only after your instructor and TA have received your COVID-19 test results or Dr.'s prescription note. ONLY NASOPHARYNGEAL TESTS WILL BE ALLOWED TO EXEMPT YOUR GRADE. Remember that we share campus with people that are currently unvaccinated, older people and people with underlying conditions who are more at risk of developing fatal health conditions. Be civil and help us at stopping the spread of the disease.
- 3) We will not accept COVID-19 testing results or Dr.'s prescription notes that show a date that is **2 days after your notification** to your instructor or TA. Being exposed to COVID-19 is a very important instance that needs to be taken seriously!

For example: If you have your class on a Tuesday morning and you suspect that you are infected with COVID-19 on Monday evening; you should notify us immediately. DO NOT ATTEND YOUR CLASS NOR UTEP AT ANY CIRCUMSTANCE! You will have until Wednesday at 11:59 PM to send your **NASOPHARYNGEAL** COVID-19 result or any document where we can read very clearly that you got tested for COVID-19 before Wednesday.

- 4) COVID-19 testing can also be very helpful to identify other diseases like the flu. Make sure to know the places where you can get the appropriate medical assistance on time. At UTEP, the following link describes such locations: <https://www.utep.edu/resuming-campus-operations/testing/>.
- 5) After 2 absences in a row due to **suspected** COVID-19, there will be no more exemptions for this same reason. While we understand that the current pandemic situation is hard for everybody, you must understand that you have two big responsibilities by taking in-person courses: you must comply and ace your courses while also help your community to stop the spread the disease. We encourage you to practice social distancing, wearing a mask inside and outside campus and lowering your exposure to active COVID-19 environments to avoid this problem.
- 6) In the event of testing positive for COVID-19 or any other similar disease, please communicate with your instructor immediately so you can work a solution with respect to your grades. No penalization on your grade will be done during the time that it takes for you to recover, but other activities might be proposed to you to not lose chances to improve your grades at home.
- 7) No student will be allowed to pass the class without a 70% completion of the in-person laboratory activities under ANY CIRCUMSTANCE. As a laboratory class, it is of outmost importance that you receive the proper experimental education that complements your lecture. Plan your semester accordingly.

Laboratory Rules:

- Upon entry to the laboratory, the student must be properly attired. Splash goggles, and lab coat will be required AT ALL TIMES!
- Once everybody is admitted into the laboratory, the TA will **REVIEW** (not explain) the procedures, materials, and safety hazards of your experiment. Your TA can ask questions during this part, and you are expected to be prepared to answer.
- You are expected to know everything related to the experiment before being admitted. Lack of preparation displays will result in the penalization of your attendance/compliance grade.
- The student is responsible for cleaning the workspace and any assigned laboratory areas before leaving. Failing to comply will result in the penalization of your attendance/compliance grade. Failing in identifying the culprit(s) for this misconduct will result in the penalization of the attendance/compliance grade of EVERYBODY IN THE CLASS. Please be courteous to your laboratory mates.

Course description and evaluation:

During this course, you will perform activities during your session and in Blackboard. It will be very important that you comply with the activities in the corresponding due dates, and that you keep a calendar with the activities at hand. Online Blackboard activities are divided into learning modules that are easy to access. The final grade of your course will be calculated by the following criteria:

Average of Prelabs – 25% (Online activities)

Average of Lab Reports – 25% (In-person activities)

Average of Attendance/Compliance – 25% (In-person activities)

Final Presentation – 25% (TBA)

Weekly presentation of the experiment: This course does not have a book or a manual, so we will work with presentations that will be provided to you weekly. Make sure to study and read the presentation completely. The information in your presentations will be needed to answer your prelabs, lab reports, and to guide you into obtaining a good attendance/compliance grade.

Prelabs: Prelabs are designed to test your knowledge on the topic and the experiment that you will perform in class. They will be displayed in the form of Yuja tests in Blackboard. **You will only have one chance to solve this prelab, so it is very important to pay close attention when you complete it.** When the due date of your prelab has elapsed, you will have access to the

experiment's video (not the test). This will give you a chance to review the content as many times as you desire and prepare yourself for your weekly session.

Lab Reports: A copy of the blank lab report be given to you at the beginning of each session. Lab Reports must display the results that you obtained in class, and they are designed to summarize your findings, as well as to further test you on the knowledge behind the activity. They must be handed out to your TA by the end of the session (**NO EXCEPTIONS!**) and he or she will grade them and have them available for you in your next session.

Attendance/compliance: Contrary to the common belief, one does not only get a full passing grade by showing up to class. A large component of this grade is the compliance, which is often misunderstood. It is mandatory that you know and apply the etiquette rules for the laboratory, which include: always using the proper laboratory attire, knowing the experiment and its intricacies before entering the classroom, knowing the laboratory rules, knowing the location of the facility's elements, properly handling the waste, and cleaning the workspace. Occasional knowledge questions will be asked to you and failing to answer them will affect the grade too.

Final presentation: Detailed information about this activity will be available to you through Blackboard. Make sure to read very carefully the instructions for this last activity by the last weeks of the semester.

Grading system:

A = 90 - 100

B = 80 - 89

C = 70 - 79

D = 60 - 69

F = 0 - 59

Experiment description schedule for the semester:

Date	Activity	Molecule or topic	Experiment
1 – Jan 18 – 21	Week 1 - General Chemistry Review	General Chemistry review	None (NO LAB but you must self-study the presentation)
2 – Jan 24 – 28	Week 2 - Safety Training	Safety Training	None (Presentation in LAB)
3 – Jan 31 – 4	Week 3 - Introduction to Organic Chemistry	Organic Chemistry Intro Alkanes, alkenes, alkynes	Bromination and oxidation of unsaturated hydrocarbons.
4 – Feb 7 – 11	Week 4 - Identification of Alcohols	Alcohols	Lucas and chromic acid test
5 – Feb 14 – 18	Week 5 - Identification of Aldehydes and Ketones	Aldehydes and Ketones	DNPH (Brady's) and Tollen's test
6 – Feb 21 – 25	Week 6 - Preparation of Fragrances	Carboxylic Acids and Esters	Synthesis of fragrant esters by Fischer esterification
7 – Feb 28 – March 4	Week 7 - Synthesis of Azo Dyes	Amines	Synthesis of aromatic aniline-based azo dyes
8 – Mar 7 – 11	Week 8 – Analysis of the Lassaigne's Extract	Halogens, nitrogen and sulfur-containing molecules	Preparation and analysis of the Lassaigne's extract
9 – Mar 14 – 18	SPRING BREAK		
10 – Mar 21 – 25	Week 10 – Water and its Solutions	Water	pH tests using indicators
11 – Mar 28 – Apr 1	Week 11 – Smoke bomb	Carbohydrates	Study of the combustion of carbohydrates
12 – Apr 4 – 8	Week 12 - Saponification	Lipids	Fabrication of soap
13 – Apr 11-15	Preparation of final presentations (NO LAB)		
14 – Apr 18 – 22	FINAL PRESENTATION (During class times)		
15 - Apr 25 – 29	FINAL PRESENTATION (During class times) – Official week for the end of the laboratory courses		
16 -May 2 - 6	If needed, and extra activity or exam can be scheduled during this week for students in need of improving grades. The activity will be decided as we get closer to this date.		

*** Friday March 25th – Cesar Chavez's day (no classes). Friday session on "Water and its Solution" will be ONLINE.**

Deadline for assignments:

Date	Activity	Prelab in Blackboard	Lab report in-person
1 – Jan 18 – 21	Week 1 - General Chemistry Review	N/A	Quiz due on 01/28/2021 at 10:00 PM
2 – Jan 24 – 28	Week 2 - Safety Training	N/A	Quiz due on 01/28/2021 at 10:00 PM
3 – Jan 31 – 4	Week 3 - Introduction to Organic Chemistry	The day before class at 10:00 PM	At the end of the experiment, before leaving the room
4 – Feb 7 – 11	Week 4 - Identification of Alcohols	The day before class at 10:00 PM	At the end of the experiment, before leaving the room
5 – Feb 14 – 19	Week 5 - Identification of Aldehydes and Ketones	The day before class at 10:00 PM	At the end of the experiment, before leaving the room
6 – Feb 21 – 25	Week 6 - Preparation of Fragrances	The day before class at 10:00 PM	At the end of the experiment, before leaving the room
7 – Feb 28 – March 4	Week 7 - Synthesis of Azo Dyes	The day before class at 10:00 PM	At the end of the experiment, before leaving the room
8 – Mar 7 - 11	Week 8 – Preparation and Analysis of the Lassaigne’s Extract	The day before class at 10:00 PM	At the end of the experiment, before leaving the room
9 – Mar 14 – 18	SPRING BREAK		
10 – Mar 21 – 25	Week 10 – Water and its solutions	The day before class at 10:00 PM	At the end of the experiment, before leaving the room
11 – Mar 28 – Apr 1	Week 11 – Preparation of a Smoke Bomb	The day before class at 10:00 PM	At the end of the experiment, before leaving the room
12 – Apr 4 – 8	Week 12 - Saponification	The day before class at 10:00 PM	At the end of the experiment, before leaving the room
13 – Apr 11-15	Final Project Preparation (NO LAB)	N/A	N/A
14 – Apr 18 – 22	Final Project Preparation (NO LAB)	N/A	N/A
15 - Apr 25 – 29	FINAL PRESENTATION (During lab times)	N/A	N/A

*** Friday March 25th – Cesar Chavez’s day (no classes). Friday session on “Water and its Solution” will be ONLINE.**

Final Presentations Calendar:

Date	Monday 11:30 AM	Tuesday 12:00 PM	Thursday 8:00 AM	Friday 11:30 AM
14 – Apr 18 – 22	-Aromatic Compounds -Nucleic Acids	-Ethers and Acyl Halides -Beta Oxidation	None	-Mercaptans and thioethers -Glycolysis
15 - Apr 25 – 29	-Urea Cycle	-Ureas and Carbamoyl Chlorides	-Cellular Respiration	-Krebs Cycle
16 -May 2 - 6	If needed, and extra activity or exam can be scheduled during this week for students in need of improving grades. The activity will be decided as we get closer to this date.			

Academic dishonesty:

UTEP rules will be strictly enforced, academic dishonesty including but not limited to cheating, plagiarism, data falsification will not be tolerated. Minor incidences will result in a score of zero for the designated activity, and recurrence will result in the failure of the course. Please review the UTEP Academic Integrity Policy in the following link <http://www.utep.edu/hoop/section-2/student-conduct-and-discipline.html>.

Computer lab hours available at UTEP:

To complete the online activities, UTEP offers working spaces that are open to the public. The following link will indicate where these workspaces are located:

https://www.utep.edu/technologysupport/ServiceCatalog/COMP_ComputerPrintingLabs.html. Contact helpdesk@utep.edu if you have any technical question or difficulty during the use of the campus's facilities. **There will be no tolerance to late work submissions.**

ADA Policies:

UTEP is committed to provide an educational environment that is accessible to all students, those that need accommodations for a disability, please contact the Center for Accommodations and Support Services (CASS), located at Unio Building East Room 106, or visiting its website <http://sa.utep.edu/cass/home> for an appointment to discuss your needs and the process for requesting accommodations.

Important academic dates:

Jan 18th Spring classes begin

Jan 18th-21st – Late registration (Fees are incurred)

Feb 2nd – Spring Census Day Note: This is the last day to register for classes. Payments are due by 5:00 PM.

Feb 14th – 20th class day note: students who were given a payment deadline extension will be dropped at 5:00 PM if payment arrangements have not been made.

Feb 18th - Graduation application deadline for degree conferral

Mar 14th – 18th – Spring Break (*TENTATIVE*)

Mar 25th – Cesar Chavez Holiday – no classes (does not apply to our classes)

Apr 1st – Spring Drop/Withdrawal Deadline

Apr 15th – Spring Study Day; Deadline to submit candidates' names for commencement program

May 5th Spring – Last day of classes

May 6th Dead day

May 9th – 13th – Spring Final Exams

May 14th-15th – Spring Commencement

May 18th – Grades are Due