

The University of Texas at Tyler
SPECTROSCOPY
CHEM 4332.001
Spring 2025 Syllabus

• **INSTRUCTOR CONTACT INFORMATION AND OFFICE HOURS**

Sean C. Butler, Ph.D.

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Best method of contact is email.

Office Hours:

MW 10:30–11:30 am

T 1:30–3:30 pm

(Also by Appointment)

It is my policy to be available anytime I am at the University. Please stop by **anytime** you have questions or concerns and I will do my best to assist you whenever possible. I can also set up appointments if necessary. If my door is open, I am in the department – ask someone where I am and they will point you in my direction.

• **COURSE MEETING TIMES**

<u>Days</u>	<u>Time</u>	<u>Room</u>
MW	2:30–3:55 pm	COB 111

• **PREREQUISITES**

- Organic Chemistry II (CHEM 3344)
- Organic Chemistry II Laboratory (CHEM 3145)

• **COURSE DESCRIPTION**

Study of modern analytical methods including UV/Vis spectroscopy, vibrational spectroscopy, nuclear magnetic resonance spectroscopy, and mass spectrometry. Spectral interpretation and structural correlation will be emphasized.

• **TENTATIVE LIST OF COURSE TOPICS**

- UV/Vis Spectroscopy
- Infrared Spectroscopy
- Mass Spectrometry
- 1D- and 2D-NMR Spectroscopy

• EXAMS

Semester exams are take-home style. They will be handed out on the assigned date at the end of class and will be turned in at the start of the next class (see schedule below). During finals week, there will be a sign-up sheet for you to take your test in a 3-hour time slot (several options will be available).

Tentative Exam Schedule*

	Assigned Date	Due Date
Exam 1	Monday, February 10	Wednesday, February 12
Exam 2	Monday, March 24	Wednesday, March 26
Final Exam	Sign-Up List Finals Week	

*dates subject to change depending on material covered.

Note: All exams build from previous material; however, current exams will cover most recent material discussed in class and in the readings.

• PROBLEM SETS/PRACTICE PROBLEMS

Problem Sets/Practice Problems are to help you better understand the material. You must demonstrate self-motivation and good study habits in this course. The problems will be used to allow you to practice specific concepts discussed in the course but will not be graded. I would be happy to help you understand anything you're having an issue with, but please bring the problem set as well as your attempted work toward them. You must show me that you have attempted to solve a given problem before I'm able to assist you.

• REGRADING POLICY

Questions concerning the grading of an assignment should be submitted **before** the next scheduled class meeting after the exam was returned to you. Alternatively, you may see me during office hours (or any other time you find me available) with the suspect exam in hand. All scores will be considered final one week after originally being returned to you.

Note: Not only will I regrade the problem(s) in question, but I will regrade the entire exam. During a regrade, I will treat mistakes I find in your favor the same way I find mistakes not in your favor – I will adjust them to reflect the correct answer, thus awarding or taking points away depending on the situation.

• STUDENT LEARNING OUTCOMES

By the end of this course, you should be able to:

1. Recognize and predict the functional groups in a given organic molecule using IR Spectroscopy.
2. Give a rational explanation of the different fragmentation patterns in Mass Spectrometry using arrow pushing formalisms.
3. Use NMR Spectroscopy to predict the connectivity of various organic compounds by the use of splitting patterns and coupling constants (1D- and 2D-NMR techniques)

4. Use each spectroscopic technique in conjunction with one another to predict the chemical structure of both simple and complex organic molecules.

- **CENSUS DATE AND LAST DAY TO WITHDRAW**

Deadline for all registrations, schedule changes, and section changes is **January 27, 2025** and the last day to withdraw from the course is **March 31, 2025**.

- **DEPARTMENTAL MOBILE DEVICE POLICY**

The use of mobile devices is strictly prohibited unless consent is given by the instructor. This includes: texting, photography, videography, voice recordings, searching/browsing the internet, listening to music, and things like these. These actions can lead to distractions so please be courteous to your fellow classmates by silencing and refraining from using your mobile devices during the allotted class-meeting time. You get out of class what you put into it – limit your distractions and you will be better off in the course.

Cell phones, smart watches, and any similar electronic devices must be turned off and put away during exams and/or quizzes. If they are observed out in a visually accessible place (i.e. between legs, on the floor, etc.), it will be assumed that they are being used to cheat; your exam will be taken away, you will receive a zero score (0 points) for the assignment, and you will be referred to the Office of Judicial Affairs where you will potentially receive a harsher penalty.

- **STUDENT ACADEMIC CONDUCT STATEMENT (see also University Policies)**

In this course, students are encouraged to study and to prepare for exams with one another. **However, during exams, students are to work alone. Cheating will not be tolerated.** The University regulations are very explicit about academic misconduct, and these regulations will be fully enforced. ***During exams, a code of honor will apply under which students are to work alone and neither give help to others nor receive help from any sources.*** Students also are expected to help enforce this code. The minimum penalty for cheating will be a zero on the exam or assignment in question. **Maximum penalties, up to university expulsion, will be pursued in extreme or repeat cases.**

The use of websites (e.g. Chegg, Course Hero, etc.) that allow others to do your work for you are strictly prohibited to use, at any time, on assignments in this course. Even viewing questions of previously posted course material is a violation. If found to have done any of this, the Office of Judicial Affairs will conduct an investigation and you could be expelled from the University

- **CONDUCT TOWARD OTHERS**

As you know, this is a chemistry course. Chemists come from all walks of life (e.g. varying ethnicities, different religious beliefs, gender, etc.) and it is important as scientists to be able to work professionally with others in different environments. Under **no circumstances** will **any** derogatory remarks or actions toward race, gender, religion, or the like be tolerated in this course.

- **CAMPUS CONCEALED CARRY**

We respect the right and privacy of students who are duly licensed to carry concealed weapons in this class. License holders are expected to behave responsibly and keep a handgun secure and concealed. More information is available at <http://www.uttyler.edu/about/campus-carry/index.php>.

• TOBACCO-FREE CAMPUS

All forms of tobacco will not be permitted on the UT Tyler main campus, branch campuses, and any property owned by UT Tyler. This applies to all members of the University community, including students, faculty, staff, University affiliates, contractors, and visitors.

Forms of tobacco not permitted include cigarettes, cigars, pipes, water pipes (hookah), bidis, kreteks, electronic cigarettes, smokeless tobacco, snuff, chewing tobacco, and all other tobacco products.

There are several cessation programs available to students looking to quit smoking, including counseling, quitlines, and group support. For more information on cessation programs please visit www.uttyler.edu/tobacco-free.

• UNIVERSITY POLICIES (also listed on Canvas with hyperlinks)

- **Withdrawing from Class** - Students are allowed to withdraw (drop) from a course through the University's Withdrawal Portal. Texas law prohibits students who began college for the first time in Fall 2007 or thereafter from dropping more than six courses during their entire undergraduate career. The number includes courses dropped at other 2-year or 4-year Texas public colleges and universities. Make sure to consider the impact withdrawing from any course has on your academic progress as well as the financial implications. We encourage you to consult your advisor(s) and financial aid for additional guidance. CAUTION #1: Withdrawing before census day does not mean students receive a full refund. Please see the Tuition and Fee Refund Schedule. CAUTION #2: All international students must check with the Office of International Programs before withdrawing. All international students are required to enroll full-time for fall and spring terms.
- **Final Exam Policy:** Final examinations are administered as scheduled. If unusual circumstances require that special arrangements be made for an individual student or class, the dean of the appropriate college, after consultation with the faculty member involved, may authorize an exception to the schedule. Faculty members are required to maintain student final examination papers for a minimum of three months following the examination date.
- **Incomplete Grade Policy:** If a student, because of extenuating circumstances, is unable to complete course requirements by the end of the semester, then the instructor may recommend an Incomplete (I) for the course. The "I" may be assigned in lieu of a grade only when all of the following conditions are met: (a) the student has been making satisfactory progress in the course; (b) the student is unable to complete all course work or final exam due to unusual circumstances that are beyond personal control and are acceptable to the instructor; and (c) the student presents these reasons prior to the time that the final grade roster is due. The semester credit hours for an Incomplete will not be used to calculate the grade point average for a student.

The student and the instructor must submit an Incomplete Form detailing the work required and the time by which the work must be completed to their respective department chair or college dean for approval. The time limit established must not exceed one year. Should the student fail to complete the work for the course within the time limit, the instructor may assign zeros to the unfinished work, compute the course average for the student, and assign the appropriate grade. If a grade has not been assigned within one year, then the Incomplete will be changed to an F or to NC, if the course was initially taken under the CR/NC grading basis.

- **Grade Appeal Policy:** - UT Tyler's Grade Appeal policy requires the completion of a Grade Appeal form for this action to take place. The grade appeal begins with the instructor of the course. If a student does not agree with the decision of the instructor, the student may then move the appeal to the department chair/school director for that course. If the student is still dissatisfied with the decision of the chair/director, the appeal moves to the Dean of the College offering that course, who has the final decision. Grade appeals must be initiated within sixty (60) days from the date of receiving the final course grade. The Grade Appeal form is found on the Registrar's Form Library.
- **Disability/Accessibility Services:** In accordance with Section 504 of the Rehabilitation Act, Americans with Disabilities Act (ADA) and the ADA Amendments Act (ADAAA), The University of Texas at Tyler offers accommodations to students with learning, physical and/or psychological disabilities. If a student has a disability, including a non-visible diagnosis such as a learning disorder, chronic illness, TBI, PTSD, ADHD, or a history of modifications or accommodations in a previous educational environment, the student is encouraged to visit <https://hood.accessiblelearning.com/UTTyler> and fill out the New Student application. The Student Accessibility and Resources (SAR) office will contact the student when the application has been submitted and schedule an appointment with the Assistant Director Student Accessibility and Resources/ADA Coordinator. For more information, including filling out an application for services, please visit the SAR

webpage at <http://www.uttyler.edu/disabilityservices>, the SAR office located in the University Center, # 3150 or call 903.566.7079.”

- **Military Affiliated Students:** UT Tyler honors the service and sacrifices of our military-affiliated students. If you are a student who is a veteran, on active duty, in the reserves or National Guard, or a military spouse or dependent, please stay in contact with your faculty member if any aspect of your present or prior service or family situation makes it difficult for you to fulfill the requirements of a course or creates disruption in your academic progress. It is important to make your faculty member aware of any complications as far in advance as possible. Your faculty member is willing to work with you and, if needed, put you in contact with university staff who are trained to assist you. Campus resources for military-affiliated students are in the Military and Veterans Success Center (MVSC). The MVSC can be reached at MVSC@uttyler.edu or via phone at 903.565.5972.
- **Academic Honesty and Academic Misconduct:** The UT Tyler community comes together to pledge that “Honor and integrity will not allow me to lie, cheat, or steal, nor to accept the actions of those who do.” Therefore, we enforce the Student Conduct and Discipline policy in the Student Manual of Operating Procedures (Section 8).
- **FERPA** - UT Tyler follows the Family Educational Rights and Privacy Act (FERPA) as noted in University Policy 5.2.3. The course instructor will follow all requirements in protecting your confidential information.
- **Recording of Class Sessions:** Class sessions may be recorded by the instructor for use by students enrolled in the course. Recordings that contain personally identifiable information or other information subject to FERPA shall not be shared with individuals not enrolled in the course unless appropriate consent is obtained from all relevant students. Class recordings are reserved only for the use of students enrolled in the course and only for educational purposes. Course recordings should not be shared outside of the course in any form without express permission.
- **Absence for Official University Events or Activities:** All courses follow the practices related to approved absences as noted by the Student Manual of Operating Procedures (Sec. 1 -501).
- **Absence for Religious Holidays:** Students who anticipate being absent from class due to a religious holiday are requested to inform the instructor by the second class meeting of the semester.
- **Campus Carry:** We respect the right and privacy of students who are duly licensed to carry concealed weapons in all courses. License holders are expected to behave responsibly and keep a handgun secure and concealed. More information is available at <http://www.uttyler.edu/about/campus-carry/index.php>.