

CHEM 497-03X Advanced Mass Spectrometry Techniques VI

LAB TIME AND LOCATION: Mon-Thur; SCI # 313/309/354.

INSTRUCTOR: Dr. Laurence Angel, SCI 341

Phone: 5391, Laurence.Angel@tamuc.edu

OFFICE HOURS: Mon-Fri: 9:00-10:00am.

COURSE DESCRIPTION: The course will provide students with the knowledge and skills needed to conduct advanced mass spectrometry research, analyze research data, and write research reports. Data analysis and report writing skills are important aspects for interpreting the laboratory research and producing technically concise scientific reports. Over the duration of the course you will apply a range of instrumental, computational and data analysis techniques. You will be expected to become familiar with the software MassLynx, Driftscope, Excel and/or SigmaPlot for data analysis, and the software of Web of Knowledge and Endnote for searching and collecting scientific literature related to your project. You will also be required to develop critical reading skills of research papers and develop your technical writing skills. The student will be assessed by the completion of weekly research assignments, the submission of lab reports and an end of semester research report and research presentation. The class is 3 semester hours.

STUDENT LEARNING OUTCOMES: Students will gain the necessary skills involved in conducting instrumental and/or computational scientific research. The instrumental analysis portion of the course will cover quadrupole and time-of-flight mass spectrometry (Q-TOF MS) and ion mobility techniques, and may include high performance liquid chromatography (HPLC), fluorescence, ultra-violet and visible (UV-VIS) spectroscopy, and circular dichroism (CD). The computational portion of the course will use the Gaussian computational suite of programs on the high-performance computer cluster for exploring a range of chemical properties of peptides and RNA molecules such as molecular geometries, collision cross sections, and metal ion binding affinities. During the course you will develop the skills to collect the materials necessary for a technical research report. The database searching portion of the course will familiarize you with the software tools of Web of Science and Endnote. Students will be required to complete weekly research assignments and present their research results to the professor through a PowerPoint presentation and a final written report.

COURSE REQUIREMENTS, ASSIGNMENTS AND GRADING:

Lab conduct and productivity: based on the completion of weekly lab assignments (40%)

PowerPoint presentation: your lab and literature research presented to the lab group (30%)

Final research report: based on introduction/background of your research including a literature review, experimental section of the research techniques, research results, conclusions, and bibliography. (30%)

A: >85.0; **B:** 75.0 ~ 84.9; **C:** 65.0 ~ 74.9; **D:** 55.0 ~64.9; **F:** <55.0

LABORATORY ATTENDANCE POLICY: All students are expected to attend lab sessions at the agreed time schedule. Students who are not present in lab during their assigned time will be issued a warning. Continued absence will result with a removal of the student from the course with a grade of "F". The student is also required to complete lab assignments on a weekly basis. The attendance record is also kept by the completion of assignments and on a weekly basis and

the submission of the weekly lab report. Being more than 10 minutes late to lab is equivalent to missing the lab. Excessive absence is defined as missing more than 10% the laboratory sessions without excusable reasons. A final lab report and research presentation is also required for the course.

DISHONESTY: The reports must be written by the student. Any instance of cheating will result in a grade of “F” for and result in dismissal from the course. Freedom to discuss problems and your research does not mean that you can copy other peoples work. You must develop individual reports of your own. Blatant plagiarism will result in a grade of “F” for the course. Proven offenders will be dismissed from the research group.

Tentative Class Schedule

Week	Subject
1	Introduction to metal binding peptides and instrumental techniques
2	Metal binding studies using ion mobility – mass spectrometry
3	Titration and ion mobility – mass spectrometry
4	Date analysis techniques– MassLynx/Driftscope/SigmaPlot
5	Presentation of data/ scientific writing
6	Titration and ion mobility – mass spectrometry
7	Titration and fluorescence/UV-Vis spectrophotometry
8	Molecular Modeling using Gaussian/GaussView PowerPoint Presentations
9	Date analysis techniques PowerPoint Presentations
10	Presentation of data/ scientific writing Final report due

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)

<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)

<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/)

<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.

TECHNOLOGY REQUIREMENTS

LMS

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>