**CHEM 5304**

**Mass Spectrometry & Spectroscopy**

**Spring 2018**

**COURSE SYLLABUS**

**Instructor:**  **Dr. Saiful M. Chowdhury**

CPB, Rm. 352;

Tel: 817‐272‐5439

Email: schowd@uta.edu

Office hours: T, Th 11 am – 12 pm or by appointment

**Texts: (Texts are only recommended; they are good resources for MS and spectroscopy)**

1. Chhabil Dass, *Fundamentals of Contemporary Mass Spectrometry*. John Wiley &

Sons, Inc. Hoboken, NJ. 2007 [ISBN: 978‐0‐471‐68229‐5]-

1. Mass spectrometry principle and applications, 2nd Ed., Edmond De Hoffman and Vincent Stroobant [ISBN 0-471-48566-7]
2. Instrumental Analysis, 2007, Douglas A. Skoog
3. Quantitative chemical analysis, 8th ed, Daniel C. Harris
4. Analytical Chemistry, 6th Ed. Gary Christians

**Class Schedule: Room: SH 129, Section 001: Tue and Thurs 11:00-12:20 pm**

**Description and Goals of the Course:** This course covers modern aspects of atomic and molecular mass spectrometry, as well as spectrochemical analysis. Upon completion of this course, the student will be able to: describe the basic setup and operation of mass spectrometric and spectroscopic instrumentation; interpret spectra from various instruments as a means for qualitative and quantitative analysis; apply basic knowledge of mass spectrometry and spectroscopy for practical problem solving; relate the use of mass spectrometry and spectroscopy to his or her own research interests; and compile, present, and explain modern techniques for analytical research. Written and oral presentations, as well as traditional classroom examinations, and homework will be used to assess student performance. Prerequisite includes CHEM 4461 or equivalent; or permission of instructor.

**Grading:**

30% First Exam (Spectroscopy and Mass Spectrometry)

30% 2nd exam (Mass spectrometry)

30% 3rdexam (Mass spectrometry)

10% Project/presentation

**Course Projects**

As part of this course, you will be expected to prepare a variety of materials on a special topic relevant to this course. Topics will be based on spectroscopic and mass spectrometric instrumentation or analytical method developments for small molecules, elements or large biomolecule analysis. A focus lists will be provided. Topics will be assigned by the instructor and presented at the designated time during the course of the semester (see the course schedule). The project will comprise multiple parts:

1. **1-page written prospectus** (1 extra page allowed for inclusion of figures and references; 11 pt font, 1” margins, single spaced) Due date has been provided.

2. 10 **minute PPT presentation** (7 PPT slides); an additional 5 minutes for

Question/answer and discussion…presentations will be scheduled throughout the

semester, to try to conform to material covered in lecture

3. **An up-to-date bibliography of references** (approx. 7-10 references expected covering: (a) Tutorials/reviews; (b) applications (scientific literature); and (c) other e.g.,

web/manufacturer resources); each reference should be accompanied by a 1 – 2 sentence description of what is covered therein…due on the day of presentation

5. **Evaluation rubrics**: Each class member will be expected to complete a rubric (form

provided) for each class member’s project. The average of the class evaluations will

comprises 50% of the project grade, and the instructor’s evaluation of the project will

comprise the other 50%. Failure to complete one or more rubrics by a student will result

in a deduction on their project. The instructor will assign all points with regard to evaluation.

**Project Grading:**

**Project grading rules and procedures is provided below: They are subject to change.**

|  |  |
| --- | --- |
| **Project Grading** |  |
| 1. Written Prospectus

a: Grammar and presentationb: Contents   | 20 |
| 1. PPT Presentation

a: Delivery and Q&A Proficiencyb: Contents | 20 |
| 1. Bibliography

a: Formatting ( ACS format required)b: Description and coverage  | 10 |
| 1. Evaluations (critical, constructive, and complete) (instructor only)
 | 50 |
|  TOTAL |  100 points |

**Policies and Notes:**

**Attendance:** At The University of Texas at Arlington, taking attendance is not required but attendance is a critical indicator in student success. As the instructor of this section, “I will take attendance sporadically”. However, while UT Arlington does not require instructors to take attendance in their courses, the U.S. Department of Education requires that the University have a mechanism in place to mark when Federal Student Aid recipients “begin attendance in a course.” UT Arlington instructors will report when students begin attendance in a course as part of the final grading process. Specifically, when assigning a student a grade of F, faculty report the last date a student attended their class based on evidence such as a test, participation in a class project or presentation, or an engagement online via Blackboard. This date is reported to the Department of Education for federal financial aid recipients.

**Drop Policy:** Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. Students will not be automatically dropped for non-attendance. Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (<http://wweb.uta.edu/aao/fao/>).

**Disability Accommodations:** UT Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including *The Americans with Disabilities Act (ADA), The Americans with Disabilities Amendments Act (ADAAA),* and *Section 504 of the Rehabilitation Act.* All instructors at UT Arlington are required by law to provide “reasonable accommodations” to students with disabilities, so as not to discriminate on the basis of disability. Students are responsible for providing the instructor with official notification in the form of a letter certified by the Office for Students with Disabilities (OSD). Only those students who have officially documented a need for an accommodation will have their request honored. Students experiencing a range of conditions (Physical, Learning, Chronic Health, Mental Health, and Sensory) that may cause diminished academic performance or other barriers to learning may seek services and/or accommodations by contacting:

The Office for Students with Disabilities, (OSD) [www.uta.edu/disability](http://www.uta.edu/disability) or calling 817-272-3364. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at [www.uta.edu/disability](http://www.uta.edu/disability).

Counseling and Psychological Services, (CAPS) [www.uta.edu/caps/](http://www.uta.edu/caps/) or calling 817-272-3671 is also available to all students to help increase their understanding of personal issues, address mental and behavioral health problems and make positive changes in their lives.

**Non-Discrimination Policy:** *The University of Texas at Arlington does not discriminate on the basis of race, color, national origin, religion, age, gender, sexual orientation, disabilities, genetic information, and/or veteran status in its educational programs or activities it operates. For more information, visit*[*uta.edu/eos*](http://www.uta.edu/hr/eos/index.php)*.*

**Title IX Policy:** The University of Texas at Arlington (“University”) is committed to maintaining a learning and working environment that is free from discrimination based on sex in accordance with Title IX of the Higher Education Amendments of 1972 (Title IX), which prohibits discrimination on the basis of sex in educational programs or activities; Title VII of the Civil Rights Act of 1964 (Title VII), which prohibits sex discrimination in employment; and the Campus Sexual Violence Elimination Act (SaVE Act). Sexual misconduct is a form of sex discrimination and will not be tolerated. *For information regarding Title IX, visit* [www.uta.edu/titleIX](http://www.uta.edu/titleIX) or contact Ms. Jean Hood, Vice President and Title IX Coordinator at (817) 272-7091 or [jmhood@uta.edu](file:///C%3A%5CUsers%5Cschowd%5CAppData%5CLocal%5CTemp%5Cjmhood%40uta.edu).

**Academic Integrity:** Students enrolled all UT Arlington courses are expected to adhere to the UT Arlington Honor Code:

*I pledge, on my honor, to uphold UT Arlington’s tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.*

*I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.*

UT Arlington faculty members may employ the Honor Code in their courses by having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System *Regents’ Rule* 50101, §2.2, suspected violations of university’s standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student’s suspension or expulsion from the University. Additional information is available at <https://www.uta.edu/conduct/>.

**Lab Safety Training:** Students registered for CHEM2285 (laboratory part of this course) must complete all required lab safety training prior to entering the lab and undertaking any activities. Once completed, Lab Safety Training is valid for the remainder of the same academic year (i.e., Fall through Summer II) and must be completed a new in subsequent years. There are no exceptions to this University policy. Failure to complete the required training will preclude participation in any lab activities, including those for which a grade is assigned.

**Electronic Communication:** UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at <http://www.uta.edu/oit/cs/email/mavmail.php>.

**Campus Carry:** Effective August 1, 2016, the Campus Carry law (Senate Bill 11) allows those licensed individuals to carry a concealed handgun in buildings on public university campuses, except in locations the University establishes as prohibited. Under the new law, openly carrying handguns is not allowed on college campuses. For more information, visit <http://www.uta.edu/news/info/campus-carry/>

**Student Feedback Survey:** At the end of each term, students enrolled in face-to-face and online classes categorized as “lecture,” “seminar,” or “laboratory” are directed to complete an online Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student’s feedback via the SFS database is aggregated with that of other students enrolled in the course. Students’ anonymity will be protected to the extent that the law allows. UT Arlington’s effort to solicit, gather, tabulate, and publish student feedback is required by state law and aggregate results are posted online. Data from SFS is also used for faculty and program evaluations. For more information, visit <http://www.uta.edu/sfs>.

**Final Review Week:** for semester-long courses, a period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week *unless specified in the class syllabus*. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

**Emergency Exit Procedures:** Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit, which is located left and right to the classroom entrance. When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist individuals with disabilities. Students should also be encouraged to subscribe to the MavAlert system that will send information in case of an emergency to their cell phones or email accounts. Anyone can subscribe at <https://mavalert.uta.edu/> or <https://mavalert.uta.edu/register.php>

**Student Support Services:** UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include [tutoring](http://www.uta.edu/universitycollege/current/academic-support/learning-center/tutoring/index.php), [major-based learning centers](http://www.uta.edu/universitycollege/resources/college-based-clinics-labs.php), developmental education, [advising and mentoring](http://www.uta.edu/universitycollege/resources/advising.php), personal counseling, and [federally funded programs](http://www.uta.edu/universitycollege/current/academic-support/mcnair/index.php). For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to resources@uta.edu, or view the information at <http://www.uta.edu/universitycollege/resources/index.php>.

The IDEAS Center (2nd Floor of Central Library) offers free tutoring to all students with a focus on transfer students, sophomores, veterans and others undergoing a transition to UT Arlington. To schedule an appointment with a peer tutor or mentor email IDEAS@uta.edu or call (817) 272-6593.

**The English Writing Center (411LIBR):** The Writing Center Offers free tutoring in 20-, 40-, or 60-minute face-to-face and online sessions to all UTA students on any phase of their UTA coursework. Our hours are 9 am to 8 pm Mon.-Thurs., 9 am-3 pm Fri. and Noon-6 pm Sat. and Sun. Register and make appointments online at http://uta.mywconline.com. Classroom Visits, workshops, and specialized services for graduate students are also available. Please see [www.uta.edu/owl](http://www.uta.edu/owl) for detailed information on all our programs and services.

The Library’s 2nd floor Academic Plaza offers students a central hub of support services, including IDEAS Center, University Advising Services, Transfer UTA and various college/school advising hours. Services are available during the library’s hours of operation. <http://library.uta.edu/academic-plaza>

Librarian to Contact: [Optional.] [Insert the name and contact information – look up here: <http://www.uta.edu/library/help/subject-librarians.php> ] [See the end of this document for additional information about library links that might be embedded in your syllabus or other course materials.]

[**Course Schedule**

*Approximate* Schedule of Events: (*Subject to Change*)

Date(s): Event/Material:

01/16/2018 First Day of Class (Introduction and Syllabus)

01/16/18 – 02/27/18 (Spectroscopy and Mass Spectrometry ionization sources)

03/01/18 Exam 1

**Select project topics 02/24/18**

03/06/18– 04/10/18 Mass Spectrometry (mass analyzer)

04/12/18 Exam 2 (Mass Spectrometry)

**Submit project topics 04/01/18**

**PPT presentation starts from 04/06/18**

04/16/18 – 05/01/18 (Mass analyzer, Tandem Mass spectrometry, hyphenated techniques, spectral interpretation)

05/03/18 –Exam 3 (Mass spectrometry)

03/12/18-03/17/18—Spring Vacation (No class)

**“*As the instructor for this course, I reserve the right to adjust this schedule in any way that serves the educational needs of the students enrolled in this course. –“Saiful M. Chowdhury.”***

**Emergency Phone Numbers:** In case of an on-campus emergency, call the UT Arlington Police Department at 817-272-3003 (non-campus phone), 2-3003 (campus phone). You may also dial 911. Non-emergency number 817-272-3381

Library Home Page [library.uta.edu](http://library.uta.edu/)

Resources for Students

Academic Help

Academic Plaza Consultation Services [library.uta.edu/academic-plaza](http://library.uta.edu/academic-plaza)

Ask Us [ask.uta.edu/](http://ask.uta.edu/)

Library Tutorials [library.uta.edu/how-to](http://library.uta.edu/how-to)

Subject and Course Research Guides [libguides.uta.edu](http://libguides.uta.edu/)

Subject Librarians [library.uta.edu/subject-librarians](http://library.uta.edu/subject-librarians)

Resources

A to Z List of Library Databases [libguides.uta.edu/az.php](http://libguides.uta.edu/az.php)

Course Reserves [pulse.uta.edu/vwebv/enterCourseReserve.do](http://pulse.uta.edu/vwebv/enterCourseReserve.do)

FabLab [fablab.uta.edu/](http://fablab.uta.edu/)

Special Collections [library.uta.edu/special-collections](http://library.uta.edu/special-collections)

Study Room Reservations [openroom.uta.edu/](http://openroom.uta.edu/)

Teaching & Learning Services for Faculty

Copyright Consultation [library-sc@listserv.uta.edu](http://library-sc@listserv.uta.edu)

Course Research Guide Development, Andy Herzog [amherzog@uta.edu](http://amherzog@uta.edu) or your subject librarian

Data Visualization Instruction, Peace Ossom-Williamson [peace@uta.edu](http://peace@uta.edu)

Digital Humanities Instruction, Rafia Mirza [rafia@uta.edu](http://rafia@uta.edu)

Graduate Student Research Skills Instruction, Andy Herzog [amherzog@uta.edu](http://amherzog@uta.edu) or your subject librarian

Project or Problem-Based Instruction, Gretchen Trkay [gtrkay@uta.edu](http://gtrkay@uta.edu)

Undergraduate Research Skills Instruction, Gretchen Trkay [gtrkay@uta.edu](http://gtrkay@uta.edu) or your subject librarian.