

CHEM 5304
Mass Spectrometry & Spectroscopy
Fall 2013
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]
2. Mass spectrometry principle and applications, 2nd Ed., Edmond De Hoffman and Vincent Stroobant [ISBN 0-471-48566-7]
3. Instrumental Analysis, 2007, Douglas A. Skoog
4. Quantitative chemical analysis, 8th ed, Daniel C. Harris
5. Analytical Chemistry, 6th Ed. Gary Christians

Class Schedule: Room: SH 315, Section 001: M, W, F 11:00-11:50 am

Grading:

20% homework assignments (3*100 = 300 points)
20% Project/presentation
20% First Exam (spectroscopy)
20% 2nd exam (Mass spectrometry)
20% 3rd exam (Mass spectrometry)

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.

Course Project

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 assigned by the instructor and presented at the designated time during the course of the semester (schedule to be provided). The project will comprise multiple parts:

1. **2-page written prospectus** (min. 1.5, max 2.5 written, not including 1 extra page Allowed for inclusion of figures and references; 11 pt font, 1" margins, single spaced) Due has been provided.
2. **10 minute PPT presentation** (10 – 12 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. 100 references expected covering: (a) Tutorials/reviews; (b) applications (scientific literature); and (c) other e.g., web/manufacture resources); each reference should be accompanied by a 1 – 2 sentence description of what is covered therein...due on the day of presentation
4. **A compilation of at least five (5) test questions** on the topic with answers provided. At least one question must be calculation based. Questions should assume basic instrumental analysis knowledge and be directed to graduate level instruction...due on the day of presentation. Some questions will be selected for incorporation into class exams.
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 70% of the project grade, and the instructor's evaluation of the project will comprise the other 30%. 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	
1. Written Prospectus a: Grammar and presentation b: Contents	20 points 10 points 10 points
2. PPT Presentation a: Delivery and Q&A Proficiency b: Contents	20 points 10 points 10 points
3. Bibliography a: Formatting (ACS format required) b: Description and coverage	20 points 10 points 10 points
4. Adequacy of Sample Questions and Answers	10 points
5. Evaluations (critical, constructive, and complete) (instructor only)	30 points
TOTAL	100 points

CHEM 5304 PROJECT RUBRIC

Student Name:

Project Name:

Evaluator's Name:

A. Written Prospectus

Grammar & Presentation _____ (1 – 10)

- Is the document easy to read, clear, concise, and attractive?

Content _____ (1 – 10)

- Is appropriate coverage given to the topic in the space provided?

B. PPT Presentation

Delivery and Q&A Proficiency _____ (1 – 10)

- Was the material delivered smoothly and clearly?

- Were questions answered with adequate degree of knowledge and thought?

Content _____ (1 – 10)

- Was appropriate coverage given?

- Did you gain new and adequate understanding of the topic?

C. Bibliography

Formatting (ACS style with minimal/no errors) _____ (1 – 10)

Descriptions and coverage of topics _____ (1 – 10)

- Is adequate coverage given to tutorials, applications, and other resources?

- Are the descriptions compelling and well-written?

D. Adequacy of Sample Questions and Answers _____ (1 – 10)

- Do the questions assume appropriate prior knowledge?

- Are the questions constructed and phrased for graduate level?

- Are solutions comprehensive and accurate?

F. Evaluations (Instructor only) _____ (30)

Specific Comments (brief):

- **Provide scores of 1 – 10 (1 = unsatisfactory; 5 = satisfactory; 10 = absolutely amazing) where indicated. Specific comments are appreciated and expected.**
- **Name will be removed before giving it to the student**

- ***A score on completeness of evaluations will be given by the instructor only.**

Project Topics:

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.

Approximate Schedule of Events: (Subject to Change)

Date(s): Event/Material:

08/23/13 First Day of Class (Introduction and Syllabus)

08/26/13 – 09/18/13 (Spectroscopy)

09/20/13 Exam 1 (Spectroscopy)

Select project topics 09/15/13

09/23/13 – 10/25/13 Mass Spectrometry (ionization source and mass analyzer)

10/25/13 Exam 2 (Mass Spectrometry)

Submit project topics 11/05/13

PPT presentation starts from 11/15/13

10/28/13 – 11/27/13 (Mass analyzer, Tandem Mass spectrometry, hyphenated techniques, spectral interpretation)

11/27/13 –Exam 3 (Mass spectrometry)

11/28/13-112/01/13—Thanksgiving (No class)

12/02/13 to 12/04/13: finished presentation if remains.

Policies and Notes:

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/ses/fao>).

Americans with Disabilities Act: The University of Texas at 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)*. 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 that disability. Any student requiring an accommodation for this course must provide the instructor with official documentation in the form of a letter certified by the staff in the Office for Students with Disabilities, University Hall 102. Only those students who have officially documented a need for an accommodation will have their request honored. Information regarding diagnostic criteria and policies for obtaining disability-based academic

accommodations can be found at www.uta.edu/disability or by calling the Office for Students with Disabilities at (817) 272-3364.

Academic Integrity: All students enrolled in this course 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.

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.

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, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. 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 www.uta.edu/resources.

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>.

Student Feedback Survey: At the end of each term, students enrolled in classes categorized as lecture, seminar, or laboratory shall be directed to complete a 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 enters the SFS database anonymously and is aggregated with that of other students enrolled in the course. UT Arlington's effort to solicit, gather, tabulate, and publish student feedback is required by state law; students are strongly urged to participate. For more information, visit <http://www.uta.edu/sfs>.

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.