

# CHEM 2335

## QUANTITATIVE CHEMISTRY (Spring 2014)

### COURSE SYLLABUS

Instructor: Dr. Saiful M. Chowdhury (CPB 352)  
817-272-5439  
[schowd@uta.edu](mailto:schowd@uta.edu)

- Contact relating to miscellaneous items by email preferred

Office hours: WF 12 pm (noon) – 1 pm or by appointment

Text: Preferred text books (we will talk about in the class)

Gary D. Christian, Dasgupta and Schug, Analytical Chemistry, 7<sup>th</sup> Ed. [ISBN 978-0-470-88757-8]

Daniel C. Harris, Quantitative Chemical Analysis, 8<sup>th</sup> Ed. [ISBN: 978-1-4292-1815-3]

Class Schedule: Lecture: CRB 114 MWF 11 – 11:50 am

Description and Goals of the Course: This course explores the fundamental basis of quantitative analysis. Upon completion of the course, the student will be able to: a) understand various quantitative measurement techniques; b) interpret data using proper error analysis and statistics; c) treat chemical equilibria (especially acid-base equilibria) and coupled reactions; d) perform titrations; and e) understand basic analytical chemistry techniques. Student's knowledge in these areas will be tested through three exams spaced throughout the semester, and a comprehensive final exam. A general lay-out of course material to be covered is given at the end of this syllabus.

<u>Grading:</u>	Exams	300 (3 x 100 points)
	Final	100 (lowest score dropped)

Problems: You are strongly encouraged to work ALL relevant chapter problems in preparation for the exams.

Tests, Finals, and Grading: At least a 10-point grading scale will be assumed (e.g. 90-100 A; 80-89 B; etc.), however the instructor reserves the right to adjust this scale to accommodate the spread of grades in the course. All exams will be given on the date specified by the instructor (approximate dates are given at the end of the syllabus). No make-up exams will be given. Of the four (4) exams (including the comprehensive)

given during the semester, the lowest grade will be dropped. The comprehensive final exam will be given on the date assigned by the University. Those students who have a 90% average or higher for all three (3) regular semester exams (without dropping), will receive an "A" in the course regardless of their score on the final exam. Extra credit does not contribute toward the 90% average.

Homework assignments will be given approximately daily. Completion and submission of these assignments when they are due will provide you extra points towards your exams. Homework submission is mandatory. If you do not complete the homework assignments, you will lose points on your exams. Homework will not be returned but keys will be posted after due dates.

### **Tools for Success:**

1. Attend class!!
2. Keep up with material. Read relevant chapters before lecture and formulate questions if a concept is unclear.
3. Dedicate appropriate study time. In Chemistry, you should consider spending three (3) hours studying outside of class for every one (1) hour of lecture.
4. Review your lecture notes after every class and seek to clarify any points which are unclear.
5. Work a lot of problems. Do not look up the answer until you have given your best effort to solve the problem on your own.
6. Don't procrastinate. These concepts take time and practice to sink in, so do not leave studying until the night before an exam.
7. Form a study group. Meet regularly to solve problems together and obtain help with difficult concepts. Collect contact info for each of your study group members.

### **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://www.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](http://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](mailto:resources@uta.edu), or view the information at [www.uta.edu/resources](http://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>.

**Final Review Week:** 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.

### COURSE SCHEDULE

Approximate Schedule of Events: (Subject to Change)

<b>01/13/14 (Monday) class starts</b> <b>The Analytical Process/Objectives</b>
<b>Stoichiometric calculations/Chemical Measurements</b>
<b>Experimental Error/Data Handling</b>
<b>Statistics</b>
<b>Test 1 (100 points)</b> <b>02/10/14</b>
<b>Quality Assurance/Method Validation and Calibration Methods</b>
<b>Chemical Equilibrium</b>
<b>Activity and Systematic Treatment of Equilibrium</b>
<b>Monoprotic Acid-Base Equilibria</b>
<b>Polyprotic Acid-Base Equilibria</b>
<b>Test 2 (100 points)</b> <b>03/19/14</b>

<b>Acid-Base and Complexometric titrations</b>
<b>Fundamentals of Electrochemistry</b>
<b>Electrodes and Potentiometry</b>
<b>Redox and Potentiometric Titrations</b>
<b>Electro-analytical Techniques (fundamentals)</b>
<b>Test 4 (100 points)</b> <b>04/21/14</b>
<b>Sampling and Sample Preparation</b>
<b>Chemical Analysis Overview</b>
<b>Comprehensive (100 points)</b>

“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. – Dr. Saiful M Chowdhury.”