

CHM 241 01 Quantitative Analysis Lecture
CHM 241 11, 12, 13 Quantitative Analysis Lab

Fall 2007

Course Information

Lecture time: MWF 10:00 - 10:50 a.m

Location: Chemistry Forensic Science Building, Room 103

Lab: Chemistry Forensic Science Building, Room 219, Section 11 (Mon.) /
Section 12 (Wed.) / Section 13 (Fri.), 1:00-4:50 p.m.

Instructor

Dr. Chi Chung Yu (Jorn Yu)

Office: CFS 221 F

Office hours: Drop in or by appointment

E-mail: jornyu@shsu.edu

Phone: 936-294-4412

WebPage: www.shsu.edu/~ccy002

Textbook

Quantitative Chemical Analysis, 7th Edition by Daniel Harris,
<http://bcs.whfreeman.com/qca7e/>

E-book address: <http://www.ebooks.bfwpub.com/qchem.php>

Teaching Assistant

Sajini Randeniya, E-mail: srr006@shsu.edu

Course Description

The fundamental principles of quantitative analysis are emphasized. Acid-base, complexometric, precipitation, and redox titrations, solution equilibria, chromatography and spectrophotometric analysis are discussed.

Laboratory exercises involve all types of volumetric procedures and colorimetric analysis. Prerequisite: A minimum grade of C in CHM 139. Fall, Spring, Summer I. Credit 4.

Course Objective:

The objective of this chemistry course is to provide both theoretical and practical analytical chemistry skills for Chemistry, Biology, Environmental Studies and Forensics majors and minors. Techniques in quantitative chemical measurement will be taught with an emphasis in figures of merit.

Testing in This Course

There will be three 50 minutes long tests, and a two-hours long final:

The first Exam date is Monday, Sept. 10.

The second Exam date is Monday, Oct. 8.

The third Exam date is Monday Nov. 12.

The Final Exam will be 2 hours long and has been scheduled for December 10 at 11 am to 1 pm.

The scheduled test dates are not negotiable, except for the final may be changed by the instructor.

Grading in This Course

Exam:

Exam 1	(Monday, Sept. 10)	15%	
Exam 2	(Monday, Oct. 8)	15%	
Exam 3	(Monday, Nov. 12)	15%	
Final Exam	(Monday, Dec. 10)	25%	70 %

Lab:

Test on Chapter 1, 2, and 3	(Sept. 10,11,12)	15%	
Assignment		5%	
Formal reports (2 x 15%)		30%	
Analysis reports (5 x 5%)		25%	
Lab notebook		15%	
TA's evaluation of correct laboratory techniques		10%	
	Sub total	100%	Convert to → 30%
	TOTAL		100 %

Grade scale:

90 – 100	A
80 – 89	B
70 – 79	C
60 – 69	D
Below 60	F

Attendance Policy

Attendance is mandatory. In accordance with SHSU policy, attendance will be recorded each class period.

Tentative schedule of Lectures

Your reading of the text book is highly recommended. The first CHM 241 laboratory is the week of September 10. You must have lab goggles and lab notebook purchased by then (see CHM 241 Lab Manual for details).

Week	Topic	Chapters
Aug. 20	Introduction.	1, 2, 3
Aug. 27	Preparing chemical solutions. Experimental error	
Sept. 3	Statistics	4
Sept. 10	Quality Assurance and Calibration Methods	5
	Exam 1: Sept. 10 (Monday) Test on Chapter 1,2,3: Sept. 10,11,12 (in lab)	
Sept. 17	Chemical Equilibrium	6
Sept. 24	Activity and the Systematic Treatment of Equilibrium	8
Oct. 1	Monoprotic and Polyprotic Acid-Base Equilibria	9,10
Oct. 8		
	Exam 2: Oct. 8 (Monday)	
Oct. 15	Fundamentals of Spectrophotometry (and applications)	18,19
Oct. 22	Spectrophotometers	20
Oct. 29	Introduction to Analytical Separations	23
Nov. 5		
	Exam 3: Nov. 12 (Monday)	
Nov. 12	Gas chromatography	24
	High-performance liquid chromatography	25
Nov. 19	Thanksgiving week	
Nov.26	Ion chromatography	26
Dec. 3	Capillary Electrophoresis	
	Final exam: Dec. 10 (Monday)	

Laboratory:

List of Experiments

1. Preparing Standard Base and Titrating Unknown Acid.
2. Spectrophotometric Determination of Iron
- * 3. Iodometric Titration of Vitamin C
4. Gravimetric Determination of Iron
5. Determination of Copper by Complexation, Solvent-Extraction and Spectrophotometry
6. Gas Chromatography of Organic Compounds with Flame Ionization Detection
- * 7. Determination of Quinine in Tonic Water by Spectrofluorometry

Formal Reports for 2007 Fall are indicated by an asterisk (*).

On-line Learning Recourses

On-line quizzes of each Chapter are available on the website of the Textbook. You can complete the quizzes with your reading progress. Open web browser and link to <http://bcs.whfreeman.com/qca7e/>. Please register and logon as a student. When you sign up as a student user, fill in jornyu@shsu.edu as your instructor's e-mail. Your score of on-line quizzes will be reported to me from this website. Try to complete those quizzes after your reading of each chapter. These on-line quizzes will not be graded. However, complete these quizzes will help you improve your performance in Exams.

Required Calculator

To limit the use of memory-intensive calculators that can store text, formulae, and chemical nomenclature, you are required to use a Texas Instruments TI30 model calculator in this course during class test. There are multiple different TI30 models and all of them will work but I suggest the TI30Xa. TI models such as TI34 or TI36 are not TI30 series calculators by this definition.

Microshoft Office Excel will be the major program for data analysis for your lab report. Basic statistics functions, e.g. AVERAGE (), STDEV (), LINEST (), should be mastered by yourself through the "Help" of the program.

Blackboard

The course Home Page for CHM241 01 can be reached via: blackboard.shsu.edu
Login with your university username and password. Since announcements and handouts will be posted on the course home page, it is your responsibility to check the course home page regularly in order to keep up with the course.

Student Absences on Religious Holidays

An institution of higher education shall excuse a student from attending classes or other required activities, including examinations, for the observance of a religious holy day, including travel for that purpose. A student whose absence is excused under this subsection may not be penalized for that absence and shall be allowed to take an examination or complete an assignment from which the student is excused within a reasonable time after the absence. A student who plans to miss a class or required activity to observe a religious holy day should inform the professor in writing prior to planned absence.

STUDENTS with Disabilities

It is the policy of Sam Houston State University that no otherwise qualified disabled individual shall, solely by reason of his/her disability, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any academic, Student Life program or activity. Students with disabilities may request academic assistance when needed from a Committee for Continuing Academic Assistance for Disabled Students by visiting the director of the Counseling Center, located in the annex of the Lee Drain Building across the sidewalk from Farrington Building, or call (936) 294-1720 (For additional information see the University Catalog). For assistance other than academic, the student with disabilities should contact the

department from which assistance is needed, such as University Police for parking, the Registrar's Office for registration, etc. If problems are not resolved on the departmental level, contact the Interim Coordinator, Americans with Disabilities Act, or call (936) 294-1015. Students with disabilities may benefit by using CCTV's and voice-activated reading machines available in the Counseling Center. Hours of operation are Monday - Friday, 8:00 a.m. to 5:00 p.m. For further information, contact the Counseling Center staff at (936) 294-1720. CCTV and a voice-activated reading machine are also available in the library.

SHSU adheres to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations for students with disabilities. If you have a disability that may affect adversely your work in this class, then I encourage you to register with the SHSU Counseling Center and to talk with me about how I can best help you.

All disclosures of disabilities will be kept strictly confidential. NOTE: no accommodation can be made until you register with the Counseling Center.

Academic Honesty

The Faculty Handbook states that the University expects all students to engage in all academic pursuits in a manner that is above reproach. Students are expected to maintain complete honesty and integrity in the academic experiences both in and out of the classroom. Any student found guilty of dishonesty in any phase of academic work will be subject to disciplinary action. Furthermore, the University and its official representatives may initiate disciplinary proceedings against a student accused of any form of academic dishonesty including, but not limited to, cheating on an examination or other academic work which is to be submitted, plagiarism, collusion and the abuse of resource materials.

How to succeed

Spend as much time as you can afford working the problem examples and exercises in the text of each chapter and the problems at the end of each chapter that illustrates the concepts introduced in the lessons. While problems and assigned homework will not be graded, it will have a dramatic effect on your learning.

Attend all lectures to learn what type of question would likely appear in the exam.

Useful Links:

Student Services Activities Calendar: <http://www.shsu.edu/calendar/>

Schedule of Classes: <http://www.shsu.edu/schedule/>

Academic calendar: <http://www.shsu.edu/catalog/calendar.html>

Blackboard: <http://blackboard.shsu.edu/>

Student Syllabus Guidelines: <http://www.shsu.edu/syllabus/>