

CHEM3334 – Instrumental Analysis

Fall 2015

Prof. Xudong Yao

Lecture hours: 11:15-12:05 am Monday and Wednesday; Beach Hall 302

Welcome to Instrumental Analysis, CHEM3334. This course is designed to provide you with the background necessary to understand and appreciate the principles and applications for modern instrumental analysis. You should have taken prerequisite course of CHEM3332 or comparable courses with the consent of Dr. Yao.

Textbook and Reference Books

Required textbook: Principles of Instrumental Analysis, by Skoog, Holler and Crouch. Published by Brooks/Cole, Thompson Learning, 6th Edition (2007).

Major reference books: Quantitative Chemical Analysis, by Harris, 6th Ed (2002), W.H. Freeman and Co.

Course materials including lecture slides are posted on HuskyCT.

Class Schedule

Date	Topic	Read Chapter	Quiz	Homework
08/31/2015	Introduction to Instrumental Analysis	1		1-1,5,9
09/02/2015	Instrumental Quantitation Basics	1		1-1,5,9
09/07/2015	<i>Labor Day</i>			
09/09/2015	Signal and Noise	5		5-1,2,9,10,11
09/14/2015	Principles of Chromatography	26	1	HW1 due for 1 & 5
09/16/2015	Principles of Chromatography	26		26-1,14,15,16
09/21/2015	Principles of Chromatography	26		
09/23/2015	HPLC: Instrumentation	28		28-1,7,10,11,13,14,19
09/28/2015	HPLC: Instrumentation, Applications	28	2	HW2 due for 26 & 28
09/30/2015	GC	27		27-3,8,9,13,17
10/05/2015	GC	27		30-1,2,3
10/07/2015	CE and CEC	30		HW3 due for 27 & 30
10/12/2015	Exam I, in-class	08/31-10/05		
10/14/2015	Introduction to Electroanalytical Chemistry	22		22-1a,8a,9,14,16,17
10/19/2015	Potentiometry	23		23-2,4,5,7,11
10/21/2015	Voltammetry	25		25-1,6,7,11
10/26/2015	Introduction of Optical Methods, Transducers	6,7	3	HW4 due for 22, 23 & 27
10/28/2015	Light Sources, Filters and Monochromaters	6,7		6-1f-p; 7-22,23
11/02/2015	UV/Vis, Fluorescence and Phosphorescence	13,14,15		15-1,2,3,5,6,13
11/04/2015	IR and Raman	16,17,18		16-4,5, 7,8,13; 18-1,2,3
11/09/2015	Interferometers and FT Instruments	7,16	4	HW5 due for 6, 7, 15, 16, 17 & 18
11/11/2015	MS: Basics	11,20		
11/16/2015	Exam II, in-class	10/12-11/09		
11/18/2015	MS: Instrumentation	11,20		11-1; 20-4,8,11,13,13,16
11/23/2015	<i>Thanksgiving recess</i>			
11/25/2015	<i>Thanksgiving recess</i>			
11/30/2015	MS: Instrumentation	11,20		
12/02/2015	MS: Applications	11,20	5	HW6 due for 11 & 20
12/07/2015	LC-MS	11,20		
12/09/2015	Exam III, in-class	11/16-12/07		
TBD	Final Exam	Cumulative		ACS standardized exam

Homework, Quizzes and Exams

Homework will be assigned throughout the course. Answer keys will be posted on HuskyCT. It is important for you to work on homework problems right after the relevant lectures, in order to achieve continuous progress through the course. TA office hours should be wisely used at your advantage for understanding course materials and solving homework questions. Homework needs to be submitted before the class of a due date. Later submission will not be accepted, except for a valid circumstance, i.e., a doctor note showing that you were sick and would need to be excused from attending a class.

Five quizzes (about 5 minutes each) will be given as scheduled at the end of lectures. Quiz materials may include what will be discussed during the lecture of the same day as the quiz. There will be no makeup quizzes. Quizzes may be scheduled at different dates or as take-home ones. Pop-up, single-question quizzes may be possible for extra credits.

There will be three in-class examinations [Exam I (50 min), Exam II (50 min), and Exam III (50 min)] and accumulative Final Exam (120 min). The final accumulative exam will be a standardized, nationally normalized American Chemical Society exam. Exam seats will be randomized and **NO calculators on phone and scientific calculators will be allowed**. Only basic calculators can be used. **Exam questions must be answered in pen; No pencil will be allowed**.

Makeup exams (Exam I, II and III) could be administrated. However, you must notify the instructor *in advance of the exam* if a valid circumstance, according to the University's policy, prevents you from taking an exam at the scheduled time. You need to notify the instructor by email (x.yao@uconn.edu). Makeup exams without an advanced notice will only be allowed for extreme circumstances.

Final assessment week for fall 2015 takes place from Monday, December 14th through Sunday, December 18th. Students are required to be available for their exam and/or complete and assessment during the stated time. If you have a conflict with this time you must visit the Office of Student Services and Advocacy (<http://www.dosa.uconn.edu/>) to discuss the possibility of rescheduling this assessment.

Please note that vacations, previously purchased tickets or reservations, graduations, social events, misreading the assessment schedule and over-sleeping are not viable excuses for missing a final assessment. If you think that your situation warrants permission to reschedule, please contact the Office of Student Services and Advocacy (2nd floor Wilbur Cross) to meet with a staff member.

Grading

The course grade will be based on two portions. Laboratories will be accounted for 40% (Dr. A Vaze). Lectures will be accounted for 60% that will be further broken down into: (1) 20% for Exam I, (2) 18% for Exam II, (3) 8% for Exam III, (4) 8% for Final Exam, (4) 3% for quizzes, and (5) 3% for homework questions. Exam grades will not be curved. Top 3 students on the final ACS standard exam will be awarded for an increase of an half of a letter grade on the final grade for the course. Homework will be graded based on completion and submission on time. Copying homework is a serious academic misconduct.

Office Hours

Instructor office hours are 12:15 -1:15pm Mon and 1:00-2:00pm Fri. Professor Xudong Yao {A419 Chemistry Building, (Office): 860-486-6644, Email: x.yao@uconn.edu. Special office hours can be arranged via email. Help sessions can be provided immediately before examinations upon request from the class.

TA Office hours: 9:00-10:00 Fri, A201; TA1: 08/31/2015 to 10/21/2015, TA2: 10/22/2015 to 12/07/2015. Special office hours or group discussions can be arranged.

Students with Disabilities

The Center for Students with Disabilities (CSD) encourages faculty to include a statement in their courses syllabi inviting students to discuss academic accommodations with their instructors. For example:

Please contact me during office hours to discuss academic accommodations that may be needed during the semester due to a documented disability. If you have a disability for which you wish to request academic accommodations and have not contacted the Center for Students with Disabilities (CSD), please do so as soon as possible. The CSD engages in an interactive process with each student and reviews requests for accommodations on an individualized, case-by-case basis. The CSD collaborates with students and their faculty to coordinate approved accommodations and services. The CSD is located in Wilbur Cross, Room 204 and can be reached at (860) 486-2020 or at csd@uconn.edu. Detailed information regarding the process to request accommodations is available on the CSD website at www.csd.uconn.edu.

Academic Misconduct

There is ZERO tolerance for any academic misconduct.

Useful Phone Numbers

Counseling and Mental Health Services: 486-4705 (after hours: 486-3427), www.cmhs.uconn.edu; Career Services: 486-3013, www.career.uconn.edu; Alcohol and Other Drug Services: 486-9431, www.aod.uconn.edu; Dean of Students Office: 486-3426, www.dos.uconn.edu.