

SYLLABUS: Analytical Chemistry I

Chemistry 601, Fall 2019

Professor Xin Yan
xyan@chem.tamu.edu

Textbooks (available electronically and on reserve):

Building Scientific Apparatus, 4th Edition. Moore, Davis and Coplan, 2009.
Principles of Instrumental Analysis, 6th Edition. Skoog, Holler and Crouch, 2007.

Lecture: TTh 12:45pm - 2:00pm CHEM 2122

Office hours: By appointment

Class Website: All materials will be posted to e-campus

General Course Outline:

Dates	Subject	
Aug. 29, Sept. 3	Intro/Instrumental methods, signals and noise	HW1 posted on Sept. 3
Sept. 5, 10	Circuits and Electrical Components	HW1 due on Sept. 10; HW2 posted on Sept. 10
Sept. 12, 17	Semiconductors and semiconductor devices	Project topic due on Sept. 17; HW2 due on Sept. 17.
Sept. 19, 24	Operational amplifiers in chemical instrumentation	Project abstract due on Sept. 24*
Sept. 26	Review	
Oct. 1	<i>Exam 1</i>	
Oct. 3	Project presentation	
Oct. 8, 10, 15	Optical measurements: components, light sources, detectors	HW3 posted on Oct. 15
Oct. 17, 22, 24	Optical measurements: signal averaging, lock-in techniques	HW3 due on Oct. 22
Oct. 29	Review	
Oct. 31	<i>Exam 2</i>	
Nov. 5	Project presentation	
Nov. 7	Mass spectrometry: ionization methods	
Nov. 12, 14	Mass spectrometry: analyzers	HW4 posted on Nov. 14
Nov. 19, 21	Applications of mass spectrometry	HW4 due on Nov. 21
Nov. 26	Review	
Dec. 3	Project presentation	
Dec. 5	Review	
Dec. 10	FINAL EXAM	

* Project: Find a specific analytical technique that you are interested in. Present its mechanism and applications. Abstract (around 200 words) is due on Sept. 24.

Learning objectives for this course: Students in this course will learn the fundamental operational principles behind the typical modern instrumentation used for chemical analysis. This will include developing an understanding of how instrumentation works, their specific applications and information that can be obtained from various measurements. This will include electrical and spectroscopic measurements. Students will be expected to develop an understanding of methods of detection, detection limits and the basic functions of instrumentation.

Grading Policy:

Homework	15 %
Project	20%
Exam 1, 2	40 %
Final Exam	25 %

Grade	Percentage
A	85 – 100
B	75-84
C	65-74
D	50 – 64
F	< 50

The Rules:

1) Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the TAMU community from the requirements or the processes of the Honor System. (aggiehonor.tamu.edu)

“An Aggie does not lie, cheat, or steal or tolerate those who do.”

2) Excused Absences: Makeup examinations for major exams or other graded work (other than un-announced "pop" quizzes) will be given only for University-excused absences provided the appropriate documentation is provided within the time frame specified in the TAMU Rules and Regulations. Please note that Student Rule 7 (<http://student-rules.tamu.edu/rule07/>) regarding Attendance and Excused Absences has been modified since 2014. Absences of less than three days due to injury or illness will require that you provide either a physician's note affirming the date and time of visit related to the absence or the newly established **TAMU Explanatory Statement for Absence from Class form (attached)**.

You may use this form to document excused absences of less than three days if you do not have a physician's note but please keep in mind that the information will be verified. Any misinformation included on the form or an inability to verify the information will lead to sanctions under the Aggie Code of Honor (

rules.tamu.edu/). Absences of three or more days due to illness or injury will definitely require a physician's or other acceptable documentation. Appropriate documentation will be required for other excused absences. The university policy has an absolute deadline (by the end of the second working day after the absence) by which you must notify the professor of any excused absence. I expect you to contact me the day of the examination or before the examination if you must miss an exam for any reason. Rarely would it be impossible for you, your roommate, a friend, or parent to contact me during this time frame. Delays in notification usually raise some doubts about the validity of the excuse. Do not take this admonition lightly since some people receive zeros on exams each semester for failure to follow this University regulation.

My phone (979-589-0068) has a 24-hour message service so you may leave a message (always leave a phone number where you may be reached) or talk directly to me. I will tell you in advance that the excuse "I couldn't get in touch with you since I was out of town" is not acceptable. If you are unable to call me then have your roommate, parents, etc. make the contact for you. It is your responsibility to notify me within the specified time frame if you have a legitimate University-excuse for missing an exam or quiz. Remember, it is **YOUR** responsibility to contact me and to arrange for a makeup. **It is not my responsibility to contact you, so simply e-mailing me asking me to contact you is not acceptable. You must keep trying to contact me to talk with me either in person or on the phone until you are successful.**

3) Title IX and Statement on Limits to Confidentiality

Texas A&M University and the College of Science are committed to fostering a learning environment that is safe and productive for all. University policies and federal and state laws provide guidance for achieving such an environment. Although class materials are generally considered confidential pursuant to student record policies and laws, university employees — including instructors — cannot maintain confidentiality when it conflicts with their responsibility to report certain issues that jeopardize the health and safety of our community. As the instructor, I must report (per Texas A&M System Regulation 08.01.01) the following information to other University offices if you share it with me, even if you do not want the disclosed information to be shared:

- Allegations of sexual assault, sexual discrimination, or sexual harassment when they involve TAMU students, faculty, or staff, or third parties visiting campus. These reports may trigger contact from a campus official who will want to talk with you about the incident that you have shared. In many cases, it will be your decision whether or not you wish to speak with that individual. If you would like to talk about these events in a more confidential setting, you are encouraged to make an appointment with the Student Counseling Service (<https://scs.tamu.edu/>). Students and faculty can report non-emergency behavior that causes them to be concerned at <http://tellsomebody.tamu.edu>.