

Analytical Chemistry
CHEM 3310K
Fall 2016

Purpose

This is an introduction to concepts and techniques of modern analytical chemistry.

Text “Fundamentals of Analytical Chemistry,” by Skoog, West, Holler, and Crouch. 9th Ed., Thomson-Brooks/Cole Publisher.

Learning Outcomes

- To develop an appreciation for errors and measurements and how to live with them.
- To learn how to answer both quantitative and qualitative chemical questions.
- To develop problem solving skills and conceptual understanding of equilibria.
- To be introduced to the analytical concepts and applications of electrochemistry, spectroscopy, and chromatography.

Instructor	Office	Office Hours
Douglas A. Stuart, Ph.D.	TLC 2125 678-839-6022 office 773-330-1392 cell dstuart@westga.edu	T&R 9-10 A.M Drop-ins are usually ok, Check the door if I am out.

Laboratory

The laboratory will have its own syllabus. It will contribute 40% toward the final grade in the course. Lab reports are due at the beginning of the next lab period no exceptions. You will be graded on accuracy of lab results and calculations, **as well as** record keeping/ procedural design. You will submit lab reports via D2L. Please use the file naming convention *lastname_Lab#_labname.doc* Your pre-lab assignments will count as 10% of each lab. All relevant notebook pages must be turned in along with the formal report. Your lab grade comprises 40% of the overall course grade.

Homework: Homework will be assigned and completed using Sapling Learning.

Quizzes: There are both daily clicker quizzes (1/2 your HW grade), and weekly Friday quizzes (the average of which counts as 1 exam grade).

Attendance Policy: You are expected to be present and **prepared** for each class meeting. Due dates for Homework and examinations are scheduled and will not be moved. No late work will be accepted and no make-up exams will be given.

Flipped Class: This class will be taught using a completely “flipped” style. Videos of the lecture will be posted on CourseDen, rather than *via* traditional in-class lecture. Treat these as you would your regular lecture. They are a way of conveying information content to you, but provide the added benefit of being able to access the “lecture” at your own pace; pausing, re-winding, etc. We will use the lecture periods go into greater depth than in typical lecture: to dialog about the material, to answer questions, to solve problems, to perform demos, and to discuss lab.

Academic Dishonesty

The Honor Code of the University of West Georgia is in effect. Any infractions will be mediated through this process.

All Students Please Note!

For important policy information, i.e., the UWG Honor Code, Email, and Credit Hour policies, as well as information on Academic Support and Online Courses, please review the information found in the **Common Language for Course Syllabi** documentation at <http://www.westga.edu/UWGSyllabusPolicies/>. Additions and updates are made as institution, state, and federal standards change, so please review it each semester

Grades: Your course average will be calculated as follows:
 $(\text{Exam Average} \times 0.5) + (\text{Homework Average} \times 0.1) + (\text{Laboratory Average} \times 0.4) = \text{Course Average}$

[90% - 100% = A] [80% - 89% = B] [70% - 79% = C] [60% - 69% = D] [0% - 59% = F]

FINAL: The standardized examination for analytical chemistry developed by the American Chemical Society will serve as the final examination. Please remember to bring a #2 pencil. *Programmable (graphing) calculators are NOT allowed on the ACS final*, so unless you're really good with algebra, invest in a regular scientific calculator.

FINAL EXAM: DEC 7th at 8:00A.M.

Date	Day	Class	Chapter	Topic	Lab	
10-Aug	W		1	1,2	Intro and Syllabus	No Lab
15-Aug	M		2	4,5	Analytical Chemistry, Errors in Chemical Analysis	1 Calibration of glassware
17-Aug	W		3	6	Random Errors in Chemical Analysis	1 Calibration of glassware
22-Aug	M		4	7, 12	Statistical Data Treatment and Evaluation	2 Gravimetry
24-Aug	W		5	8,9	Aqueous Solutions and Chemical Equilibria	2 Gravimetry
29-Aug	M		6	10	Effect of Electrolytes on Chemical Equilibria	"no lab"
31-Aug	W		7		EXAM 1	"no lab"
5-Sep	M				NO CLASS	No Lab
7-Sep	W		8	11	Systematic Treatment of Equilibria	No Lab
12-Sep	M		9	13	Volumetric Analysis	3 NaOH standardization
14-Sep	W		10	14	Principles of Neutralization Titrations	3 NaOH standardization
19-Sep	M		11	15,16	Titration Curves for Complex A/B Systems	4 Amino Acid Titration
21-Sep	W		12		Titration Curves for Complex A/B Systems	4 Amino Acid Titration
26-Sep	M		13	17	Complexation Reactions and Titrations	5 EDTA Titration
28-Sep	W		14		EXAM 2	5 EDTA Titration
3-Oct	M		15	18	Introduction to Electrochemistry	6 Ascorbic Acid Titration
5-Oct	W		16	19	Applications of Standard Electrode Potentials	6 Ascorbic Acid Titration
10-Oct	M		17	21	Potentiometry	7 Electrochemistry
12-Oct	W		18	22	Electrolysis: Electrogravimetry and Coulometry	7 Electrochemistry
17-Oct	M		19	23	Voltammetry	8 Cyclic voltammetry
19-Oct	W		20	23	Voltammetry	8 Cyclic voltammetry
24-Oct	M		21	24	Introduction to Spectrochemical Methods	9 Beer's Law
26-Oct	W		22		Exam 3	9 Beer's Law
31-Oct	M		23	24	Introduction to Spectrochemical Methods	10 Keq Lab
2-Nov	W		24	25	Instruments for Optical Spectrometry	10 Keq Lab
7-Nov	M		25	26,27,28	Molecular Fluorescence & Atomic Spectroscopy	No Lab
9-Nov	W		26	30,31	Intro to Separations	No Lab
14-Nov	M		27	32	Gas Chromatography	11 Gas chromatography
16-Nov	W		28	33,34	Liquid Chromatography, ast. Methods	11 Gas chromatography
21-Nov	M				NO CLASS	
23-Nov	W				NO CLASS	
28-Nov	M		29		Catch up day	
30-Nov	W		30		EXAM 4	