GENERAL INFORMATION

Course Title: Analytical Chemistry, CHEM 2510

Field: Chemistry

Credit Weight: 4

Semester and Year: Spring 2025

Pre-requisites: CHEM 1400 Fundamentals of General Chemistry

Course Description

Analytical chemistry is a measurement science consisting of a set of powerful ideas and methods that are useful in all fields of science and medicine. The course teaches basic theory and knowledge of analtical chemistry. The course to be covered include instrumental methods of analysis, theorem of acid-base and redox titrations as well as the principles of buffer solution and precipitation equilibria, etc. The laboratory of this course will teach students skills in dealing with substances and apparatus in quantitative methods. In this course, you should make chemical measurements yourself and you also need to understand analytical results reported by others.

Learning Objectives

By the end of this course, students will be able to do the following:

- Understand the basic theory and knowledge related to analtical chemistry
- Master the equilibrium laws of solution, and understand the basic principle and method of chemical analysis under the balance laws
- Conduct laboratory experiments of quantitative and instrument analysis with accuracy and precision and perform lab reports
- Understand the application of this course in different industry fields and train students' scientific thinking methods

Required Text/Readings:

Daniel C. Harris; W.H., (2010). ***Quantitative Chemical Analysis*** *(8th ed.)*. Freeman and Company: New York.

Accessibility Services (Accommodations)

Students with documented academic, medical, emotional, and/or physical disabilities, who require accommodation, must provide current documentation attesting to the specific nature of their disability to Carolyn Draht, Academic Accommodations Coordinator and Associate Registrar, at accommodations@elmira.eduor in McGraw Hall room 113. Students are responsible for submitting the appropriate documents and forms in a timely manner. A meeting to review documentation and discuss accommodations is strongly recommended. If you have questions concerning this, please contact me or Carolyn Draht directly.

Academic Honesty

Please read the relevant section of the College's policy on academic honesty in the student Code of Conduct. Briefly academic dishonesty includes: cheating, fabrication, and plagiarism. Please ask me if

you have any questions about whether something constitutes academic dishonesty. Academic dishonesty will not be tolerated and will result in failure of the course. Institutional penalties may also apply.

Attendance Policy & Class Participation

You are expected to complete all assignments and exams on time, attend class regularly, and come to class prepared to participate actively. Please have readily available the assigned readings and texts. They will be a valuable resource for our discussions and will assist you in following lectures.

Evaluation of Performance

Final grades will be determined as follow:

Assignments	20%
Lab Reports	30%
Exams	50%
Total	100%

Grades will be assigned as follows:

Grade		Grade	
A	(93- 100%)	C	(73-76%)
A-	(90-92%)	C-	(70-72%)
B+	(87-89%)	D+	(67-69%)
B	(83-86%)	D	(64-66%)
B-	(80-82%)	D-	(60-63%)
C+	(77-79%)	F	(<60%)

Content

Module Topics	**Materials**	**Tasks**
Measurements and Statistics; Analytical Process; Instrumental Methods of Analysis; Measurement Tool; Chemical Measurements; Chemical Equilibrium; Quantitative Methods	Chapter 1-10	Assignment 1; Lab Report 1
Acids and Bases; Acid-Base Equilibrium; Monoprotic Acid-Base Equilibria; Polyprotic Acid-Base Equilibria; Acid-Base Titrations; Redox Titrations; Electrochemistry; Spectrophotometry	Chapter 11-20	Assignment 2; Lab Report 2; Exam 1
Atomic Spectroscopy; Buffer Solution; Precipitation Equilibria; Analytical Separations; Gas Chromatography; Chromatographic Methods	Chapter 21-28	Lab Report 3; Exam 2

This syllabus is subject to change. Keep aware of the changes that might occur. There will be announcement if that happens.