Chemistry 4631 **Spring 2023**

Instructor: Dr. Teresa D. Golden. Chemistry 279, tgolden@unt.edu.

Office hours: MW 30 min before and after class and F 1:30 - 2:30 p.m. CHEM Room 207B.

Lecture: MWF 9:00 – 9:50 a.m. Room 352 Chemistry.
Attendance is required.

Exams: There will be several in-class exams and a final exam.
Dates for each exam will be announced 1 week before in class and on the class website.
The final is a comprehensive, ACS Exam scheduled for Wednesday May 10th (8:00-10:00 am) in CHEM 352 (notice earlier start time).

Absolutely no make-up exams will be given without a signed physician's note.

Course Material: Text: Principles of Instrumental Analysis, 7th or older ed.; (Skoog/Holler/Crouch).
Required prereq: Chem 3451/3452 Quantitative Analysis (w/ C or better).
This course does not use canvas – for latest info and announcements go to the **Class Website** at:
https://chemistry.unt.edu/~tgolden/courses/course_downloadsSpr23

Homework: 1) Problem sets will be assigned at the end of each chapter.
2) Spectral interpretations will periodically be assigned.

Grading: Exams, quizzes, and assignments will each be given a total point value. The student's final grade will be: (the total number of points received/total number of points possible) x 100.

Guaranteed Course Grade:

A – 90% B – 80% C – 70% D – 60% F < 60%

Additional Information:

UNT makes reasonable academic accommodation for students with disabilities. Students seeking accommodation must first register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA will provide you with an accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course. Note that students must obtain a new letter of accommodation for every semester and must meet with each faculty member prior to implementation in each class. For additional information see the ODA website at https://studentaffairs.unt.edu/office-disability-access.

Chemistry 4631 **Spring 2023** **Course Outline***

WEEK	CLASS ASSIGNMENT	TOPICS
1	Ch. 1 & 6 & Appendix Lab: No Lab	Intro Laboratory Principles, Electromagnetic Spectrum, Quantum Theory
2	Ch. 6 & 7 Lab: Check-in	General Components of Optical Instrument and Lasers
3	Ch. 7 Lab: UV-vis	Optical Instruments and Semiconductors
4	Ch. 13 & 14 Lab: UV-vis	UV Theory and Instrumentation
5	Ch. 16 & 17 Lab: FTIR/Fluorescence	Fluorescence Spectroscopy and Instrumentation
6	Ch. 15 & 18 Lab: FTIR/Fluorescence	IR Spectroscopy Theory and Instrumentation, FTIR
7	Ch. 8 & 9 Lab: AAS/ICP/NMR	Atomic Absorption or ICP Emission Spectroscopy and NMR
8	Ch. 22 Lab: AAS/ICP/NMR	Intro to Electrochemistry
9	Ch. 23 & 24 Lab: Potentiometry/ Voltammetry	Potentiometry, Conductivity, and Voltammetry Techniques
10	Ch. 24 & 25 Lab: Potentiometry/ Voltammetry	Intro to Chromatography, Chromatography Theory, Gas Chromatography
11	Ch. 26 Lab:GC-FID/ GC-MS	Gas Chromatography Instrumentation
12	Ch. 27 Lab:GC-FID/ GC-MS	High Performance Liquid Chromatography Instrumentation
13	Ch. 28 Lab:HPLC-UV/HPLC-MS	Mass Spectroscopy Instrumentation and Spectra interpretation
14	Ch. 11 & 20 Lab:HPLC-UV/HPLC-MS	Mass Spectroscopy Instrumentation and Spectra interpretation
15	QA/QC & Review Lab: Final	Assessing Quality Assurance & Quality Control in the Lab
16	Final Exam (ACS)	8:00 -10:00 a.m.

Other topics that may be substituted for any of the above include:

Statistics, Circuits,
X-Ray Spectroscopy or Diffraction, Raman Spectroscopy
Interpreting UV, IR, MS, & NMR spectra
Coulometry, STM, AFM, TGA/DSC
SCF, Ion Chromatography Capillary Electrophoresis

*This is a basic course outline and may change depending on other factors.