

Syllabus®
Comprehensive General Chemistry (CHEM 1310 B)
Spring 2020

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Supplies

- E-text (available for free):
Modified OpenStax Chemistry as Libguides: <https://georgiasouthern.libguides.com/chem1310>
- Laboratory Manual (required):
Chemistry 1310 Laboratory Manual, 2019-2020 edition. Available for purchase in bookstore.
- Homework platform with iClicker Reef included (required):
www.saplinglearning.com/login
You can purchase an access code from book store first (ISBN: 9781319357795) or purchase online directly when you register into the course. Instructions to register into Sapling are uploaded in Folio "Syllabus and Stuff" folder.
- Other Required Supplies:
Splash proof laboratory safety goggles (NOT safety glasses!); 5 scantron sheets (scroll down to see an image of the kind of scantron you need) for all exams;
Non-programmable scientific calculator (such as the TI-30 or the Casio fx 300 or similar model)

Course Description

Course Prerequisite: Ability to use College Algebra. Prior completion of a high school chemistry course is assumed. This course is designed to meet general chemistry requirements of engineering students. It is an accelerated introductory course emphasizing the fundamentals of chemistry to prepare students for further study in the sciences and engineering. We will cover the fundamentals of atomic structure and theories of chemical reactions. Topics include atomic structure, stoichiometry, properties of matter; chemical thermodynamics, electrochemistry, and kinetics. Other topics may be included as deemed necessary.

Course Objectives

At the end of this course, student should be able to:

- Demonstrate the understanding of the basic terms and concepts of chemistry in explaining and classifying matter
- Demonstrate the ability to solve quantitative problems using dimensional analysis
- Demonstrate the ability to solve stoichiometry problems using appropriate conversion factors
- Demonstrate the ability to explain chemical and physical properties of elements using the periodic table
- Demonstrate the ability to explain chemical and physical properties of materials in terms of microscopic (atomic and molecular) structure
- Demonstrate the understanding of the common types of chemical reactions
- Demonstrate the ability to deduce shapes of molecules based upon their electronic structure
- Demonstrate the ability to relate physical properties of materials on geometry and

intermolecular interactions

- Demonstrate the understanding of basic chemical thermodynamics and kinetics including the knowledge of the factors controlling rates of reactions and how they influence equilibrium concentrations
- Demonstrate basic understanding of acid/base and redox reactions
- Perform basic chemistry/laboratory experiments that manipulate chemical equipment, glassware, and measurement instrumentation
- Demonstrate the understanding of the uncertainty in measurement and its propagation

Some topics in this course are taught in a flipped classroom format. This means: on some topics, you are assigned one or two videos that you are expected to watch before coming to class. Class will begin with a quiz based on the video you have watched. The material in the video will not be taught in the class again but any related questions will be answered. The rest of the class will build on the assigned video, so it is important to come prepared to understand the class better.

Tentative Schedule*

Week	Chapter Coverage	Lab	Stress of the Week
Jan 13	Introduction and Chapter 01: Matter and Measurements	No Lab	Practice assignment and math review
Jan 20	Chapter 01 and Chapter 02: Atoms, Molecules, & Ions	1A: Measurement and Safety (Room 1221-dry lab)	Hwk 1 on Sunday Prelab on Wednesday Folio quiz on the weekend
Jan 27	Chapter 03: Composition of Substances and Solutions	1B: Safety and Measurement (Room 1201/1240-wet lab)	Hwk 2 on Sunday Prelab on Wednesday
Feb 3	Chapter 04: Stoichiometry of Chemical Reactions	2A: Exploring the nature of matter- Internet Lab (1221-dry)	Exam-1 on Tuesday Prelab on Wednesday
Feb 10	Chapter 4: Stoichiometry of Chemical Reactions Chapter 5: Thermochemistry	2B: Study of Hydrates (1201/1240-wet)	Hwk 3 on Sunday Prelab on Wednesday
Feb 17	Chapter 5: Thermochemistry	3A: Limiting Reagents (1221-dry)	Hwk 4 on Sunday Prelab on Wednesday Folio quiz on the weekend
Feb 24	Chapter 6: Gases	3B: Many Colors of Copper (1201/1240-wet)	Hwk 5 on Sunday Prelab on Wednesday
Mar 2	Chapter 8: Liquids, Solids and Modern Materials	4A: Colorimetry (1221-dry)	Exam-2 on Tuesday Prelab on Wednesday
Mar 9	Chapter 9: Solutions and Colligative Properties	4B: Iron titration (1201/1240-wet)	Hwk 6 on Sunday Prelab on Wednesday
Mar 16	SPRING BREAK! NO CLASSES		
Mar 23	EXTENDED SPRING BREAK DUE TO COVID		
Mar 30	Chapter 10: Kinetics	5A: Molecular structure lab and	Hwk 7 on Sunday Prelab on Wednesday Folio quiz on the weekend
Apr 6	Chapter 10: Kinetics	5B: Periodic Trends (Substituted with Electrochemistry lab due to COVID)(1201/1240-wet)	Hwk 8 on Sunday Prelab on Wednesday
Apr 13	Chapter 11: Chemical Equilibria and its Applications	6B: Kinetics of Crystal Violet	Exam-3 Prelab on Wednesday
Apr 20	Chapter 11: Chemical Equilibria and its Applications	6A: Buffers and Acid/base Equilibria (1221-dry)	Hwk 9 on Sunday Prelab on Wednesday
Apr 27	Chapter 12: Thermodynamics Chapter 13: Electrochemistry	Review	Exam-4 Prelab on Wednesday Hwk 10 on Sunday Worksheet due on Folio
May 4	Final Exam on Tuesday May 5th, 3-5 pm		

*The instructor reserves the right to make changes in the schedule (and the syllabus) whenever deemed necessary. Students will be notified of the changes made through announcement in class and/or folio. You are expected to be abreast with any updates in the syllabus either posted on folio or announced in class/email. Labs may not always align with lectures. In fact some of the material in this class is taught through labs. You are expected to read the textbook and lab manual to complete MC prelab assignments and come prepared for labs.