CHM131 General Chemistry I

(3 credit hours)

Course Syllabus

Course Description

A first semester course in general chemistry. Topics covered include molecular theory, atomic structure, gasses, aqueous solutions, thermo-chemistry, bonding, and molecular geometry.

Course Learning Outcomes

By the end of this course, you will be able to:

1. Identify steps of the scientific method, conduct calculations and measurement using The SI units.
2. Identify and characterize physical and chemical properties of substances.
3. Describe the structure of atomic and sub-atomic particles, and the rules of nomenclature.
4. Balance chemical equations, calculate percent composition of compounds, and predict mass-energy relationships in chemical reactions.
5. Differentiate between aqueous reactions, and use properties of gases to solve practical applications.
6. Construct electronic structures of atoms and identify periodic classifications of the elements.
7. Apply theories of molecular geometry and hybridization in predicting bonding and anti-bonding of molecules, and energy in chemical reactions.

Prerequisites/Corequisites

CHM 131L lab required.

Required Textbook(s) and Resources

Nivaldo, J. (2020). *Chemistry: A Molecular Approach* (5th Edition). Pearson MyLab.

Be sure to also review the weekly **Explore** sections for additional library or web resources. For access to databases, research help, and writing tips, visit the Tiffin University Library.

Time Commitment

Effective time management is possibly the single most critical element to your academic success. To do well in this online class you should plan your time wisely to maximize your learning through the completion of readings, discussions, and assignments. Because of our accelerated, seven-week term, TU online courses are designed with the expectation that you dedicate a little over **six (6)** hours per credit hour to course activities and preparation **each**

week. For example, for successful completion of a three-credit, seven-week online course you should reserve roughly **twenty (20) hours per week**.

To help plan your time and keep on track toward successful course completion, note the distinctive rhythm of assignment due dates:

1. All times assume Eastern Time (GMT-4).
2. Weeks begin at 12:00 a.m. ET on Monday and end at 11:55 p.m. ET on Sunday.
3. Unless otherwise noted, initial assignments or discussion posts are due by **11:55 p.m. ET** on **Wednesdays.**
4. Additional assignments or follow-up discussion posts are due by **11:55 p.m. ET** on **Saturdays, and**
5. Major assignments and reflections are typically due by **11:55 p.m. ET** on **Sundays.**

Learning Activities

Throughout this course you will have assigned learning activities in both Moodle and the Mastering Chemistry site. These include assigned readings, Watch and Learn Activities, Dynamic Study Modules, Exams, Discussion forums, and Chapter Problem Sets. Numerous tips, explanations, and resources have been provided in each of these assignments to provide you with tips and guidance for each of these.

Grading

The chart below identifies the individual contributions from each type of activity, per week.

Activity	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Total
Discussion	30	15	15	15	15	15	15	**120**
Assignments	98	85	84	98	100	82	91	**638**
Exams	0	60	0	60	0	60	62	**242**
Total	**120**	**120**	**200**	**120**	**100**	**140**	**200**	**1000**

Grading Scale

A: 90-100% | B: 80-89% | C: 70-79% | D: 60-69% | F: <60%

Topic	**Learning Activities** (Due by 11:55 p.m. ET on day designated)
Start Here	❑ MON: Mastering Chemistry ❑ MON: Introduction to Mastering Chemistry (in Mastering Chemistry) ❑ MON: How DSMs work (in Mastering Chemistry) ❑ MON: Ch00: Common Mathematical Operations In Chemistry Learn (in Mastering)
Week 1: Matte, Measurement, and Problem Solving	❑ WED: Activity 1.1 (Forum): Studying General Chemistry ❑ WED: Activity 1.2: Chapter 1 Watch and Learn Activities (in Mastering Chemistry) ❑ WED: Activity 1.3: Learning: Learn Ch 01: Matter_Measurement and Problem Solving (in Mastering Chemistry) ❑ SUN: Activity 1.4: Chapter 1 Problem Set (in Mastering Chemistry) ❑ SUN: Activity 1.5: Chapter 2 Watch and Learn Activities (in Mastering Chemistry) ❑ SUN: Activity 1.6: Learning: Ch 02: Atoms and Elements (in Mastering Chemistry)
Week 2: Atoms, Elements , Molecules, & Compounds	❑ WED: Activity 2.1: Chapter 2 Problem Set (in Mastering Chemistry) ❑ WED: Activity 2.2: Chapter 3 Watch and Learn Activities (in Mastering Chemistry) ❑ WED: Activity 2.3 (Forum): ACS Reactions Segment Search and Share ❑ Activity 2.4: Learning: Ch 03: Molecules and Compounds Nomenclature (in Mastering Chemistry) ❑ SAT: Activity 2.5: Learning: Ch 03: Molecules and Compounds Calculations (in Mastering Chemistry)

	❑ SAT: Activity 2.6: Chapter 3 Problem Set (in Mastering Chemistry) ❑ SUN: Activity 2.7: Exam 1 (in Mastering Chemistry)
Week 3: Chemical Reactions and Qualities & Solutions and Aqueous Reactions	❑ WED: Activity 3.1: Chapter 4 Watch and Learn Activities (in Mastering Chemistry) ❑ WED: Activity 3.2: Learning: Ch 04: Chemical Reactions and Chemical Quantities (in Mastering Chemistry) ❑ WED: Activity 3.3 (Forum): ACS Reactions Segment Search and Share ❑ SAT: Activity 3.4: Chapter 4 Problem Set (in Mastering Chemistry) ❑ SAT: Activity 3.5: Chapter 5 Watch and Learn Activities (in Mastering Chemistry) ❑ SUN: Activity 3.6: Learning: Ch 05: Introduction to Solutions and Aqueous (in Mastering Chemistry) ❑ SUN: <Activity title here>
Week 4: Solutions, Aqueous Reactions, and Gases	❑ WED: Activity 4.1: Chapter 5 Problem Set (in Mastering Chemistry) ❑ WED: Activity 4.2: Chapter 6 Watch and Learn Activities (in Mastering Chemistry) ❑ WED: Activity 4.3 (Forum): ACS Reactions Segment Search and Share ❑ SAT: Activity 4.4: Learning: Ch 06: Gases (in Mastering Chemistry) ❑ SAT: Activity 4.5: Chapter 6 Problem Set (in Mastering Chemistry) ❑ SUN: Activity 4.6: Exam 2 (in Mastering Chemistry)
Week 5: Thermochemistry and Quantum-Mechanical Model of the Atom	❑ WED: Activity 5.1: Chapter 7 Watch and Learn Activities (in Mastering Chemistry) ❑ WED: Activity 5.2: Learning: Ch 07: Thermochemistry (in Mastering Chemistry) ❑ WED: Activity 5.3 (Forum): ACS Reactions Segment Search and Share ❑ SAT: Activity 5.4: Chapter 7 Problem Set (in Mastering Chemistry) ❑ SAT: Activity 5.5: Chapter 8 Watch and Learn Activities (in Mastering Chemistry) ❑ SAT: Activity 5.6: Learning: Ch 08: The Quantum-Mechanical Model of the Atom (in Mastering Chemistry) ❑ SAT: Activity 5.7: Chapter 8 Problem Set (in Mastering Chemistry)
Week 6: Periodic Properties of the Elements and Chemical Bonding: The Lewis Model	❑ WED: Activity 6.1: Chapter 9 Watch and Learn Activities (in Mastering Chemistry) ❑ WED: Activity 6.2: Learning: Ch 09: Periodic Properties of the Elements (in Mastering Chemistry) ❑ WED: Activity 6.3 (Forum): ACS Reactions Segment Search and Share ❑ SAT: Activity 6.4: Chapter 9 Problem Set (in Mastering Chemistry)

	❑ SAT: Activity 6.5: Exam 3 (in Mastering Chemistry) ❑ SUN: Activity 6.6: Chapter 10 Watch and Learn Activities (in Mastering Chemistry)
Week 7: Chemical Bonding II:. The Molecular Structure of Molecules	❑ WED: Activity 7.1: Learning: Ch 10: Chemical Bonding 1: The Lewis Model (in Mastering Chemistry) ❑ WED: Activity 7.2: Chapter 10 Problem Set (in Mastering Chemistry) ❑ WED: Activity 7.3 (Forum): ACS Reactions Segment Search and Share ❑ WED: Activity 7.4: Chapter 11 Watch and Learn Activities (in Mastering Chemistry) ❑ SAT: Activity 7.5: Learning: Ch 11: Chemical Bonding II (in Mastering Chemistry) ❑ SAT: Activity 7.6: Chapter 11 Problem Set (in Mastering Chemistry) ❑ SUN: Activity 7.7: Exam 4 (in Mastering Chemistry)

Tips for Success

Successful online learning requires a good deal of self-discipline and self-direction. As seekers of the truth, we should be willing to challenge and review one another's academic work in a spirit of respectful comradery and constructiveness. You should accept constructive feedback as a gift. Your course is a place for you to stretch and grow as you benefit from the expertise, knowledge, experience and diverse perspectives of your instructor and peers. Constructive feedback will challenge you to stretch your own thinking, thereby expanding your knowledge, understanding and application.

To get the most out of your learning experience, you should actively engage (participate) in **ALL** course activities. Course elements in any given week are arranged chronologically. To complete a week, simply work your way "down the page" through all of the course materials and activities.

For More Information:

Be sure to review the Support, Policies, and Procedures addendum.