CHM 142/L GENERAL CHEMISTRY I

Troy University - Hanoi University of Science and Technology
Spring, 2024

Course code: CHM/L 142
Course title: General Chemistry I
Credit value: 4 [Theory: 3, Practice: 1]
Required or elective: College Core Requirement for Troy University Computer Science Program
Textbook(s) and other required materials:

- ***Textbook:*** Chemistry: The Central Science, Global Edition, by T.E. Brown, H. E. LeMay, B. E. Bursten, C. Murphy, P. Woodward, M. E. Stoltzfus, Pearson, 15th Edition, 2021.
- ***Periodic table:*** A periodic table is required for assignments, quizzes, exams, and in-class activities.
- ***Calculator:*** A calculator is also required for assignments, quizzes, exams, in-class practice, and laboratory.
- Lecture materials, handouts, problem sets, and homework assignments (available on the course website: MS Teams)
- Lab manual is provided by the lab instructor
- Access to a personal smart device capable of accessing the internet to answer questions during lectures and meetings.

Course objectives:

1. Atomic, molecular, and ionic structure of matter and its relation to the physical and chemical properties of substances;
2. Measurement and stoichiometric calculations of quantities of substances and their quantitative behavior in chemical reactions;
3. Organization of the elements in the periodic table and the relationship of their physical and chemical properties as represented by the table;
4. Physical nature of mixtures (solutions) and basic expressions of concentration;
5. Nature of energy and energy relationship in physical changes and chemical reactions;
6. Nature of chemical reactions in solution.
7. Nature of chemical bondings and their relations to the molecular geometry

Learning outcomes: After mastering this course, students will be able to:

1. Describe the atoms and molecules, the chemical calculation and Apply the calculation for the solution;
2. Explain how the atomic properties relate to chemical reactivity and physical properties
3. Describe the thermochemistry, chemical thermodynamics, and chemical equilibrium;
4. Describe the quantum theory, the atomic structure, ionic bonds and compounds, and covalent bonding;
5. Apply bond theory to draw and explain the geometry of ions and molecules
6. Get hands-on experience in the lab, write quality science reports, and communicate effectively in a team.

Tuesday Afternoon Class: 14:00 PM – 16:45PM, at D9-303
Wednesday Afternoon Class: 14:00 PM – 16:45PM, at D9-303
Course Instructor: Dr. Vu Thi Ngoc Minh
Contact: on Teams
Office: C4-103
Office hours: by appointment.

Grade Assignments

The following grading system is applied		*Contribution to the Final Grade*
A	90% and above	20% by Homework
B	80 – 89%	10% by Quiz
C	70 – 79%	20% by Lab Reports
D	60 – 69%	20% by Midterm Exam
F	0 – 59%	30% by the Final Exam

Parts of the course

Microsoft Teams. Class materials and assignments are uploaded to Microsoft Teams. You must turn in your homework/assignments on Teams.

Textbook. You should read the book before and after the lecture to complete your understanding of the material outlined in the lectures.

Lectures. Before each chapter, I will review the previous one, outline the objectives of the current one, discuss the contents, and give illustrations and demonstrations. You will want to take notes during my talk.

In-class quizzes. There will be a short quiz given before each session. These assignments are designed to help you restate a concept presented in the previous session in your own words or to solve a simple problem as part of a group. Thus, you are expected to come to class prepared and ready to participate.

Homeworks. There will be assignments given after each chapter. These assignments are designed to help you restate a concept presented in each chapter in your own words. You must turn in your work one week after the assignments are given.

Examinations. The Midterm Exam is scheduled for Week 9. The Final Exam is scheduled for Week 15. The exams will include 30 multiple-choice questions and a short answer question. No make-up exams will be given, and there will be no excused absences. A calculator, a periodic table, an A4-sized sheet of handwritten notes, and regular pens and pencils are allowed to use during the exams. No other devices are allowed!

Lab. Laboratory experiments will be conducted on the fourth floor of the C1 Building.

Attendance. Full lab participation is required, i.e., if you do not attend all the lab sessions, you will get an F for the course. As for the class, for more than 3 absent days with or without the faculty's permission, a student will not be allowed to sit in the final exam and will get an F for the course.

Penalty. Serious penalties (e.g., one lower letter grade) will be given for cheating, faking lab data, and plagiarism. You will get an F for using communication/smart devices, including but not limited to smartphones and laptops, other than a calculator in the exam.

Working with your classmates.

Collaboration is encouraged. However, simply copying a friend's or classmate's ideas or answers is not acceptable. Unless the assignment states explicitly that a group report can be turned in when you study/work within a group, write the answers in your own words.

Tentative Schedule

Week (Date)	Lecture Material	Workshop/Exam	Homework
1 (Feb. 20,21)	Course Introduction Chapter 1. Introduction: Matter and Measurement		
2 (Feb. 27,28)	Chapter 2. Atoms, Molecules, and Ions		
3 (Mar. 05,06)	Chapter 3. Chemical Reactions and Reaction Stoichiometry		
4 (Mar. 12,13)	Chapter 3. Chemical Reactions and Reaction Stoichiometry (cont.)		HW 1 assignment
5 (Mar. 19,20)	Chapter 4. Reactions in Aqueous Solution		HW1 due
6 (Mar. 26,27)	Chapter 4. Reactions in Aqueous Solution (cont.)		
7 (Apr. 02,03)	Chapter 5. Thermochemistry		
8 (Apr. 09,10)	Chapter 5. Thermochemistry (cont.) Review		HW 2 assignment
9 (Apr. 16,17)	No lecture	Midterm exam	HW2 due
10 (Apr. 23,24)	Chapter 6. Electronic Structure of Atoms Review		
11 (May 07,08)	Chapter 7. Periodic Properties of the Elements		
12 (May 14,15)	Chapter 8. Chapter 8: Basic Concepts of Chemical Bonding		
13 (May 21,22)	Chapter 9: Molecular Geometry and Bonding Theories		
14 (May 28,29)	Chapter 9: Molecular Geometry and Bonding Theories (Cont.) Review		HW 3 assignment
15 (Jun. 04,05)	No lecture	Final Exam (60 minutes)	HW3 due
June 15	Deadline for grade submission		