

U244-103: General Chemistry I

Course Format: Online

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Course credits: 3

Pre/Corequisites: Completion of U3600-110 College Algebra with a C or better or the equivalent; One year high school chemistry recommended; Appropriate for advanced high school and first-year or higher college students

Course Description: General Chemistry I is an online course that provides a survey of principles relating to inorganic, Analytical and Physical chemistry, with an introduction some topics of Organic Chemistry. Topics covered in this course include the nature and properties of elements and compounds as well as the different phases of matter. You will learn the fundamental principles of atomic structure, ionic and covalent bonding in molecules, chemical reactions, chemical calculations and solution chemistry. In most chapters you will find a discussion of real-world applications of particular topics as they relate to environmental and applied sciences. You will develop qualitative and quantitative reasoning skills as they apply to these principles and learn to discuss the topics of study both numerically and verbally.

Required Course Materials

- ePack: MindTap General Chemistry, 1 Term (6 months) Instant Access (ISBN-13: 978-1-333-7102575; ISBN-10: 1337102571). Note: The textbook is linked in the course syllabus section and starting in module one. Click on these links to purchase your access.

Optional/Recommended Course Materials

- There are no additional or recommended course materials beyond those provided in the links found throughout the course. However, you are *actively encouraged* to use any resources you may find on the internet or in your library to supplement your learning. That said, when producing written work for homework assignments for exams, you just use your own phrasing; if you quote from a found or provided sources please provide a basic citation in any format that explains your source.

Course Learning Objectives

- Recognize foundational concepts from inorganic, physical and analytical chemistry.
- Develop quantitative reasoning and calculation skills.
- Identify terms for different size regimes, such as nano vs micro vs macro.
- Classify matter on the large scale as well as on the atomic and molecular level.
- Differentiate between the basic types of reactions.
- Apply quantitative analysis tools, such as dimensional analysis and stoichiometry.
- Describe how the flow of energy into and out of matter affects its properties.
- Describe the flow of energy into and out of matter as it transitions between these three phases.
- Determine the types of bonds between atoms and how the bonding informs other traits we see in matter.

- Compare the three phases of matter with changes in temperature, pressure, and volume.

Course Overview

MODULE	MODULE TOPIC	EVALUATED ACTIVITIES
1	Matter on the Atomic Scale	<ul style="list-style-type: none"> • MindTap Practice • Module Quiz • Module Homework
2	Elements and Compounds	<ul style="list-style-type: none"> • MindTap Practice • Module Quiz • Module Homework
3	Stoichiometry	<ul style="list-style-type: none"> • MindTap Practice • Module Quiz • Module Homework
4	Chemical Reactions and Solution Stoichiometry	<ul style="list-style-type: none"> • MindTap Practice • Module Quiz • Module Homework
	Unit Exam	<ul style="list-style-type: none"> • Exam 1 – D2L Only
5	Thermochemistry	<ul style="list-style-type: none"> • MindTap Practice • Module Quiz • Module Homework
6	Electromagnetic Radiation and the Electronic Structure of the Atom	<ul style="list-style-type: none"> • MindTap Practice • Module Quiz • Module Homework
	Unit Exam	<ul style="list-style-type: none"> • Exam 2 – D2L Only
7	Electron Configurations and the Properties of Atoms	<ul style="list-style-type: none"> • MindTap Practice • Module Quiz • Module Homework
8	Covalent Bonding and Molecular Structure	<ul style="list-style-type: none"> • MindTap Practice • Module Quiz • Module Homework
9	Theories of Chemical Bonding	<ul style="list-style-type: none"> • MindTap Practice • Module Quiz • Module Homework
	Unit Exam	<ul style="list-style-type: none"> • Exam 3 – D2L and Take Home
10	Gases	<ul style="list-style-type: none"> • MindTap Practice • Module Quiz • Module Homework
11	Intermolecular Forces and the Liquid State	<ul style="list-style-type: none"> • MindTap Practice • Module Quiz • Module Homework
12	The Solid State	<ul style="list-style-type: none"> • MindTap Practice • Module Quiz • Module Homework
	Unit Exam	<ul style="list-style-type: none"> • Exam 4 – D2L and Take Home

Evaluation Methods

Your final grade will be based on your performance on the following:

1. MindTap Practice = 5% of Grade
2. Module Quizzes = 15% of Grade
3. Module Homework = 48% of Grade
4. Unit Exams = 32% of Grade

MindTap Practice (249 points)

You will have practice assignments to complete in every module. These are graded by participation only, as long as you put forth a good faith effort, you will receive full credit for each section completed. Each section is worth 1 point. You will have an unlimited amount of attempts in the practice section. Use this to prepare for your quizzes and exams.

Module Quizzes (233 points)

Each module will contain a quiz to check your progress and focus your study. These are meant to help you assess your own learning of the material and help me ensure that you understand the content. You will complete these using the quiz tool within D2L. The first two exams are entirely online. These exams have a 2 hour time limit. You will get two attempts for each exam with limited feedback in between the exams. The second two exams have an online and a take-home portion. The online portion will have a 90 minute time limit. The take home portion has no time limit. All exams are open book, open note.

Module Homework (1299 points)

Each module will contain homework assignments to help develop your understanding of the content and develop your quantitative reasoning and calculation skills. These assignments are tools for learning, not tests. As such, you will be given multiple attempts to get all the questions correct on any given assignment. Once you submit a complete assignment to the dropbox, I will grade it and provide you with feedback on any incorrect answers to help you determine where the problem is and aid you in another attempt. ***If a question requires a calculation, you must show your work to receive credit. Simply answering the question will receive only half the credit, even if the answer is correct.*** Many formats are acceptable. If you can submit these in a word document that's easiest for me. However, if you do your work by hand then you can submit a series of photos or scanned images. Just be sure the pictures are clear and that the final answer is clearly indicated.

Exams (369 points)

This course contains four exams meant to assess your understanding of the material. Formats for the exams are described below.

Exam Method: Online Without Proctoring with a take-home portion for two exams.

This course requires all students to complete exams online. Students receive two attempts on each exam. If you elect to take a second attempt, the highest score of either exam will be recorded.

Grading Scale

The following grading scale is used to evaluate all course requirements and determine your final grade:

A = 93–100	B = 83–87.9	C = 70–77.9	D = 60–69.9
AB = 88–92.9	BC = 78–82.9		F = Below 60

Pass/Fail Option

Students who enroll in an Independent Learning (IL) course under the pass/fail option will receive a final grade of S in place of a final grade equivalent to an A, AB, B, BC, or C and a final grade of U in place of a final grade equivalent to a D or F.