



This course supports the assessments for General Chemistry II. The course covers 9 competencies and represents 4 competency units.

Introduction

Getting Started

General Chemistry II is the second course in a two part series. In this course, you will apply concepts from General Chemistry I and continue to learn additional material including characteristics of solutions, acids and bases reactions, redox, equilibrium, nuclear chemistry, and organic and biochemistry. This course requires strong understanding of dimensional analysis. Completion of the chapter problems in WileyPLUS is essential to your success on the Objective Assessment. WileyPLUS provides online reading and practice problems. When you submit answers to problems, you will receive immediate feedback, and will be directed to the appropriate reading section if additional review is required. Optional videos provide an alternative presentation of the concepts you are expected to know, but these do not replace the reading and practicing on your own. You will need a scientific calculator for this course. A calculator and white board are allowed on the Objective Assessment, so please become comfortable using these tools prior to the exam. Course Mentors are available to answer questions and discuss concepts.

The General Chemistry II Laboratory should be completed at the same time as General Chemistry II. The labs from the lab course will provide hands on experience and real world examples to supplement the problems from the WileyPLUS learning resource.

Overview

Chemistry is the study of matter. Everything you see and many of the things you don't see are made up of atoms. By understanding these atoms and their interactions, chemists have been able to cure disease, travel to the moon, and feed a growing world. By understanding chemistry, you will find your own world expanded. You will find boiling water interesting and the back of the shampoo bottle fascinating.

The National Science Teachers Association (NSTA) has published principles and standards addressing important chemistry topics that should be covered through the K–12 curriculum. Many states have followed the NSTA's lead and are increasingly requiring that these concepts be taught to the students throughout the course of their science education. A firm grasp of the concepts covered in this course will allow you to confidently teach this material when you enter the classroom.

This is the first term of a two-term sequence in chemistry. This course is designed to provide you with a broad overview of chemistry and a fundamental understanding of basic lab techniques. To master these topics you will utilize online learning resources and a physical lab kit.

Watch the following welcome video for an introduction to this course:



Note: To download this video, right-click the following link and choose "Save as...": [download video](#).

Competencies

This course provides guidance to help you demonstrate the following 9 competencies:

- **Competency 217.1.1: The Gaseous State**
The graduate applies the kinetic molecular theory to explain the behavior of gases and solve quantitative problems.
- **Competency 217.1.2: The Solid and Liquid States**
The graduate analyzes intermolecular forces of matter and energy associated with phase changes.
- **Competency 217.1.3: Aqueous Solutions**
The graduate analyzes factors that affect the solubility of compounds and the composition and properties of aqueous solutions.
- **Competency 217.1.4: Acids, Bases, and Salts**
The graduate applies acid-base models to analyze the properties, relative acidities, and reactions of acids and bases.
- **Competency 217.1.5: Oxidation-Reduction Reactions**
The graduate examines practical applications of redox reactions by analyzing, predicting, and balancing oxidation-reduction reactions
- **Competency 217.1.6: Reaction Rate and Equilibrium**
The graduate applies the collision theory to explain how various factors affect the rate and equilibrium of reactions.
- **Competency 217.1.7: Nuclear Chemistry**
The graduate evaluates the dangers and benefits of naturally occurring radioactivity and induced nuclear changes.
- **Competency 217.1.8: Organic and Biochemistry**
The graduate analyzes the fundamental concepts of organic chemistry and biochemistry.
- **Competency 217.1.10: Analyzing Chemical Processes in Laboratory Experiments**
The graduate applies effective laboratory techniques to analyze chemical processes in real-world contexts.

Teaching Dispositions Statement

Please review the [Statement of Teaching Dispositions](#).

Course Mentor Assistance

As you prepare to demonstrate competency in this subject, remember that course mentors stand ready to help you reach your educational goals. As subject matter experts, mentors enjoy and take pride in helping students become reflective learners, problem solvers, and critical thinkers. Course mentors are excited to hear from you and eager to work with you.

Successful students report that working with a course mentor is the key to their success. Course mentors are able to share tips on approaches, tools, and skills that can help you apply the content you're studying. They also provide guidance in assessment preparation strategies and



troubleshoot areas of deficiency. Even if things don't work out on your first try, course mentors act as a support system to guide you through the revision process. You should expect to work with course mentors for the duration of your coursework, and you are encouraged to contact them as soon as you begin. Course mentors are fully committed to your success!

Preparing for Success

The information in this section is provided to detail the resources available for you to use as you complete this course.

Learning Resources

The learning resources listed in this section are required to complete the activities in this course. For many resources, WGU has provided automatic access through the course. However, you may need to manually enroll in or independently acquire other resources. Read the full instructions provided to ensure that you have access to all of your resources in a timely manner.

Manually Enrolled Learning Resources

You will be using the same lab kit from General Chemistry I Lab. You are not required to order any additional resources. Please contact your mentor if you have questions

Laboratory Kit

The "General Chemistry" lab kit from Carolina Biologicals is a physical shipment. This lab kit is covered by your program lab fee and is required to complete the performance assessments for General Chemistry I and II Labs. You have already enrolled for this resource through General Chemistry I Lab. This kit includes all of the science equipment, supplies, and chemicals necessary to complete laboratory experiments at home. The lab manual with lab instructions can be found using the link below. It can also be found in TaskStream and the course search feature. The experiments reinforce science content and teach laboratory techniques. At the completion of the course you will have completed the labs required for your final student project.

- [Lab Manual](#)

Automatically Enrolled Learning Resources

You can access the learning resources listed in this section by clicking on the links provided throughout the course. You may be prompted to log in to the WGU student portal to access the resources.

WileyPLUS

The WileyPLUS General Chemistry learning resource is an online course complete with readings, videos, and interactive exercises. Targeted feedback and self-assessment tools, as well as trackable exercises, will help you assess your strengths and quickly address misconceptions. The assignments are designed to guide you through the full course.

The WileyPLUS General Chemistry learning resource utilizes the following e-text:

- Malone, L. J. & Dolter, T. (2013). *Basic concepts of chemistry* (9th ed.). John Wiley & Sons. ISBN-13: 978-0-470-93845-4



Other Learning Resources

You will use the following learning resources for this course.

Formula Sheet

The General Chemistry II objective exam has been designed to measure your understanding of topics addressed in the course. Successful passage is an indication of your competencies with the topics. To assist in your preparation for the objective exam, please review the equations and periodic table form. This form will be provided during your objective exam, and covers commonly used equations and the periodic table. There is no need to memorize this information. To become more familiar with the resources available to you, please use the form on your pre-assessment.

- [General Chemistry II Formula Sheet](#)

Course Mentor Support

Your course mentor team is prepared to help you reach your educational goals. As subject matter experts, course mentors are fully committed to your success. You are encouraged to contact your course mentor team as soon as you begin the course. Course mentors are able to share study tips, and provide guidance in assessment preparation strategies and troubleshoot specific content areas. You can contact the course mentors at the following email: chemistry@wgu.edu

If you would like to schedule an appointment with one of your course mentors, you can do so by accessing the [team calendar](#).

Pacing Guide

The pacing guide suggests a weekly structure to pace your completion of learning activities. It is provided as a suggestion and does not represent a mandatory schedule. Follow the pacing guide carefully to complete the course in the suggested timeframe.

Week 1

- Day 1: Talk to your SM or CM about when to take the first preassessment
- 39 10RA: The Nature of the Gaseous State and the Effects of Conditions
 - Complete "Engineering a Better Air Bag" lab
- 40 10QA: The Nature of the Gaseous State and the Effects of Conditions
- 41 11RA: The Solid and Liquid States
- 11QA: The Solid and Liquid States

Week 2

- 43 11RB: The Liquid State and Changes in State
- 44 11QB: The Liquid State and Changes in State
- 45 12RA: Solutions and the Quantities Involved



- 46 12QA: Solutions and the Quantities Involved

Week 3

- 47 12RB: The Effects of Solutes on the Properties of Water
 - Complete "Molar Mass by Freezing Point Depression" lab
- 48 12QB: The Effects of Solutes on the Properties of Water
- 49 13RA: Acids, Bases and the Formation of Salts
- 50 13QA: Acids, Bases and the Formation of Salts

Week 4

- 51 13RB: The Measurement of Acid Strength
 - Complete "Characteristics of a Buffer" lab
- 52 13QB: The Measurement of Acid Strength
- 53 13RC: Salts and Oxides and Acids and Bases
- 54 13QC: Salts and Oxides and Acids and Bases

Week 5

- 55 14RA: Redox Reactions
- 56 14QA: Redox Reactions
- 57 14RB: Spontaneous and Nonspontaneous Redox Reactions
 - Complete "Developing an Activity Series" lab
- 58 14QB: Spontaneous and Nonspontaneous Redox Reactions

Week 6

- 59 15RA: Collisions of Molecules and Reactions at Equilibrium
 - Complete "The Scientific Method" lab
- 60 15QA: Collisions of Molecules and Reactions at Equilibrium
- 61 15RB: The Quantitative Aspects of Reactions at Equilibrium
 - Complete "Equilibrium and Le Chatelier's Principle" lab
- 62 15QB: The Quantitative Aspects of Reactions at Equilibrium

Week 7

- 63 16RA: Naturally Occurring Radioactivity
- 64 16QA: Naturally Occurring Radioactivity
- 65 16RB: Induced Nuclear Changes and their Uses
- 66 16QB: Induced Nuclear Changes and their Uses

Week 8

- 67 17RA: Functional Groups
 - Complete "Aspirin Synthesis" lab



- 68 17QA: Functional Groups
- 69 18RA: Three Basic Types of Biochemical Compounds
- 70 18QA: Three Basic Types of Biochemical Compounds

Week 9

- 71 Prepare for Chem II Test
- 72 Chemistry II prep exam
- Take the second preassessment

Week 10

- Take objective exam

Note: This pacing guide does not replace the course. Please continue to refer to the course for a comprehensive list of the resources and activities.

General Chemistry

This course is designed to provide you with a broad overview of chemistry and a fundamental understanding of basic lab techniques. Topics include the following:

- gaseous
- solid and liquid states
- aqueous solutions
- acids bases and salts
- oxidation-reduction reactions
- reaction rates and equilibrium
- nuclear chemistry
- organic chemistry
- biochemistry

To master these topics you will utilize online learning resources and a physical lab kit.

Using the WileyPLUS General Chemistry Learning Resource

In this topic you will learn how to navigate and use the WileyPLUS General Chemistry learning resource.

Learning Resource Navigation

When you enter the WileyPLUS General Chemistry learning resource, you will be directed to the Assignment page. Sort the view by name by clicking on the "Assignment" column heading.

Start work on Assignment 38 ("Welcome to Chemistry II") and work through the assignments sequentially to the end.

During the course of these assignments you will be directed to the labs needed for the student project. Save your lab reports for submittal in TaskStream at the end of the course.



Access the learning resource by clicking the following link:

- [WileyPLUS General Chemistry](#)

Final Steps

Congratulations on completing the activities in this course! This course has prepared you to complete the assessments associated with this course. If you have not already been directed to complete the assessments, schedule and complete your assessments now.

Formula Sheet

The General Chemistry II objective exam has been designed to measure your understanding of topics addressed in the course. Successful passage is an indication of your competencies with the topics. To assist in your preparation for the objective exam, please review the equations and periodic table form. This form will be provided during your objective exam, and covers commonly used equations and the periodic table. There is no need to memorize this information. To become more familiar with the resources available to you, please use the form on your pre-assessment.

- [General Chemistry II Formula Sheet](#)

Accessibility Policy

Western Governors University recognizes and fulfills its obligations under the Americans with Disabilities Act of 1990 (ADA), the Rehabilitation Act of 1973 and similar state laws. Western Governors University is committed to provide reasonable accommodation(s) to qualified disabled learners in University programs and activities as is required by applicable law(s). The Office of Student Accessibility Services serves as the principal point of contact for students seeking accommodations and can be contacted at ADASupport@wgu.edu. Further information on WGU's Accessibility policy and process can be viewed in the student handbook at the following link:

[Accessibility Policy](#)

Student Support

WGU values your input! Please submit any feedback you have using the following form:

[Course Feedback](#)

Access the WGU Library 24 hours a day, 7 days a week:



WGU Library

Visit the Student Success Center to access a variety of topics that will help you succeed at WGU:

Student Success Center

Contact the WGU Writing Center for help with any part of the writing or revision process:

WGU Writing Center