



CHM 114: General Chemistry for Engineers

Overview

Have you ever wondered what's inside your mobile phone case? Why batteries aren't lighter and have to be recharged? How different colors can be shown on your computer screen? Or why glass shatters when you hit it with a hammer? These, along with other questions of how atoms and molecules combine to make macroscopic materials with desired properties, are at the heart of countless challenges addressed by chemists and engineers every day. The course introduces general chemistry topics and explains directly how these concepts are related to engineering. You will develop the language and chemistry skills necessary to work as an engineer in a team with chemists. You will simultaneously learn the language of chemistry and how to think like a chemist by exploring the chemistry embedded in engineering challenges.

What You'll Learn

- Solve engineering challenges using tools from chemistry
- Apply molecular ideas to understanding the properties of materials and functionality of modern devices
- Predict chemical and physical properties from molecular or material structures
- Evaluate suitability of chemicals and materials for applications like batteries or fuel cells based on chemical and physical properties

How to Succeed

To be successful in this course, we recommend English language fluency and computer literacy. We also encourage you to make sure your laptop or desktop computer meets the [technical requirements](#).

MAT 170 Precalculus is strongly suggested as a prerequisite for success in this course.

Earn College Credit

This course appears on your transcript identically to how it appears on the transcript of an enrolled ASU student.

This course includes a lab and satisfies 4 credit hours toward the Natural Science - Quantitative (SQ) General Studies requirement at Arizona State University. It is strongly encouraged that you consult with your institution of choice to determine how these credits will be applied.

In order to receive academic credit for this course, you must earn a grade of "C" or better. You have one year to add the course to your transcript.

Exams and Grading

10%

Learning Activities

15%

Quizzes

25%

Labs

20%

Midterm Exam

30%

Final Exam

CHM 114: Continued

Time Commitment

This is an asynchronous, online course. This means, while you will have deadlines, you do not need to be at your computer at specific times or participate in live activities.

To be successful in this class, you must view all course pages and complete all graded work by the deadlines indicated. Also, keep in mind that "attendance" in an online course means logging into the platform on a regular basis, checking for course announcements, and visiting and participating in the discussion forums.

This 4 credit, 8 week course requires about 180 hours of work. Therefore, expect to spend approximately 20-25 hours per week preparing for and engaging in this course.

Materials

This course makes use of open educational resources (OERs) provided within the course, **no purchase necessary**.

Graded Assignments

Graded assignments are required and count towards your final grade. Students must submit all assignments via the course site unless otherwise instructed.

Learning Activities (10%): Understanding chemistry and being able to solve chemistry problems are two different, but related skills. To help you reach your goal, this course includes many practice problems.

Quizzes (15%): You will take a total of seven quizzes, and the lowest scored one will be dropped from your total grade. Each quiz is open book/open notes, but must be completed by you by the specified deadline. The quizzes consist of both multiple choice and true/false questions.

Labs (25%): There are a total of seven labs in this course. Labs will consist of experiments you perform in simulations, or view in videos.

Midterm Exam (20%): The midterm covers content from weeks 1-3. You may take the midterm exam at any time during the open window; however, once you start, you will have two hours to complete it.

Final Exam (30%): The final is a **proctored**, cumulative exam, i.e. covers content from all weeks of the course. You may take the final exam at any time during the open window; however, once you start, you will have two hours to complete it. Proctoring information will be provided.

Assignment Deadlines

Your instructional team will provide all content and learning activities on or through your course site. It is your responsibility to review all content, fulfill all assignments on time, and ask any questions you have in the designated discussion area. It is also your responsibility to determine the due dates and times for all course assignments according to your time zone. Due to the large-scale format of Universal Learner Courses, late assignments will not be accepted at any point during the course, and we cannot make exceptions.

Course Communication

All communication will take place via the discussion forums and course announcement page. There will be a discussion forum where you can post general questions, comments, and direct inquiries for the instructor and course team. Please use these forums to ensure a timely response. Your instructor will not be able to respond to email.

Additional Information

If you have questions about Universal Learner Courses and how they work, please visit ea.asu.edu or contact our support team at ulcourses@asu.edu.