

STEM and Problem Solving

Course Overview and Syllabus

Grade level: 9–12

Prerequisite Courses: None

Credits: 0.5

Course Description

Science, technology, engineering, and mathematics (STEM) are active components in the real world. STEM and Problem Solving is a semester-long high school course that outlines how to apply the concepts and principles of scientific inquiry, encouraging the use of problem-solving and critical-thinking skills to produce viable solutions to problems. Students learn the scientific method, how to use analytical tools and techniques, how to construct tests and evaluate data, and how to review and understand statistical information. This course is designed to help students understand what we mean by problem solving and to help understand and develop skills and techniques to create solutions to problems. Advanced problem-solving skills are necessary in all science, technology, engineering, and mathematics disciplines and career paths. This problem-solving course stresses analytic skills to properly format problem statements, use of the scientific method to investigate problems, the use of quantitative and qualitative approaches to construct tests, and an introduction to reviewing and interpreting statistical information.

Course Objectives

Throughout the course, you will meet the following goals:

- Discover how problem solving borrows many elements from the scientific method
- Understand and define critical thinking and use logical reasoning to construct an argument
- Evaluate different types of studies as descriptive or explanatory
- Design a research project, including defining a research population and creating a sample
- Explore how researchers review and interpret statistical information and research data by using statistical tests to study variable relationships

Student Expectations

This course requires the same level of commitment from you as a traditional classroom course. Throughout the course, you are expected to spend approximately 5–7 hours per week online on:

- Interactive lessons that include a mixture of videos, readings, and tasks
- Assignments in which you apply and extend learning in each lesson
- Assessments, including quizzes, tests, and cumulative exams

Communication

Your teacher will communicate with you regularly through discussions, email, chat, and system announcements. You will also communicate with classmates, either via online tools or face to face, as you collaborate on projects, ask and answer questions in your peer group, and develop your speaking and listening skills.

Grading Policy

You will be graded on the work you do online and the work you submit electronically to your teacher. The weighting for each category of graded activity is listed below.

Grading Category	Weight
Lesson Quizzes	20%
Unit Tests	20%
Cumulative Exams	20%
Assignments	10%
Projects	30%
Additional	0%

Scope and Sequence

When you log into Edgenuity, you can view the entire course map—an interactive scope and sequence of all topics you will study. The units of study are summarized below:

- Unit 1:** Introduction to Problem Solving
- Unit 2:** Critical Thinking and Problem Solving
- Unit 3:** Professional Research and the Scientific Method
- Unit 4:** Design a Research Project
- Unit 5:** Reviewing and Interpreting Statistical Information and Research Data