

# Scientific Research

## Course Overview and Syllabus

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**Grade level:** 9–12

**Prerequisite Courses:** None

**Credits:** 0.5

### Course Description

Scientific Research is a semester-long high school course that describes activities from the point of view of a professional scientist. The lessons provide support, accessible ideas, and specific language that guide students through most of the steps, insights, and experiences eventually faced if continued through higher education toward a graduate degree. Knowing the practical, everyday basics of scientific thinking and laboratory activity serves as a necessary first step to a career as a technician or a lab assistant. While these jobs are hands-on and technical, the intellectual and historical background covered in the course provides an awareness that is essential to working in such an atmosphere.

### Course Objectives

Throughout the course, you will meet the following goals:

- Evaluate evidence vs. proof in science, the dynamic vs. static nature of science and scientific discovery, peer-review, and “junk science”
- Investigate the scientific method and how to apply it to answer questions about the world
- Convert a research question into a feasible research design
- Collect, analyze, and evaluate data
- Discuss statistical analysis and the related concept of statistical significance
- Explore basic statistics, including the chi-square test, the t-test, and the use of contingency tables
- Show how scientific research is distilled into a publishable report

### 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 Scientific Research and Exploration
- Unit 2:** The Scientific Method and Scientific Inquiry
- Unit 3:** Designing and Conducting an Experiment
- Unit 4:** The Data: Evaluating Results and Drawing Conclusions
- Unit 5:** Reporting Your Findings