Foundations of Science I

INF 1330 004

Class Details

Credit Hours: 3

Days Class Meets: TU,FR 10:00am-11:15am

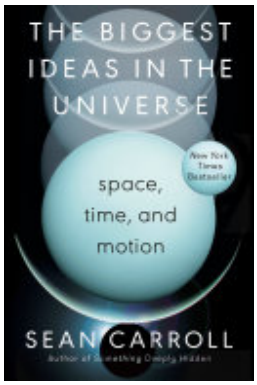
Instructor Information

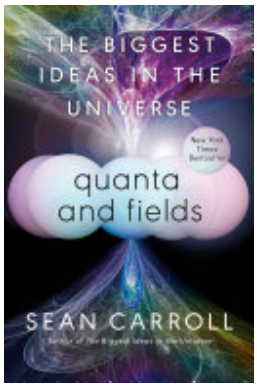
David Puelz
Email: dpuelz@uaustin.org

Recommended Texts

The Feynman Lectures on Physics
Authors: Feynman, Leightoon, Sands
Publisher: Addison Wesely
Additional Information:
https://www.feynmanlectures.caltech.edu/

The Biggest Ideas in the Universe
ISBN: 9780593186589
Authors: Sean Carroll
Publisher: Penguin
Publication Date: 2022-09-20





Quanta and Fields
ISBN: 9780593186619
Authors: Sean Carroll
Publisher: Penguin
Publication Date: 2024-05-14

Description

This course is the first part of a two-course sequence designed to explore and understand some of the most important ideas in science. This first course introduces students to a framework for scientific thinking and investigates key ideas in physical and earth sciences. Emphasis will be placed on applications and interdisciplinary connections across areas of study in the course sequence.

Course Outcomes and Objectives

Outcome
To gain exposure to applications of science at leading companies

Outcome
Upon successful completion of this course, students will be able to:

- Explain fundamental principles of scientific thinking.

- Evaluate scientific evidence and arguments critically.

- Explain key concepts associated with mechanical systems.

- Explain key concepts associated with thermodynamic systems.

- Explain key concepts associated with electrical systems.

- Explain key concepts associated with energy.

Grading Policy

30% evaluations on lunch lectures (either quizzes or reflections).

30% discussion participation, course engagement, homeworks (including reflection papers).

40% final oral exam.

Accessibility Statement

Please review the University Accessibility Statement in the student catalog. Students having special needs should contact the Polaris Center or email Accomodations@uaustin.org.

Disability Support Services: The university will make reasonable accommodations for students with disabilities in compliance with Section 504 of the Rehabilitation Act and the Americans with Disabilities Act. The purpose of accommodations is to provide equal access to educational opportunities for eligible students with academic and/or physical disabilities.

Course Requirements

Background in high school algebra and open to reading mathematical equations.

Electronics

Please do not use laptops, iPads, cell phones, or any other electronic devices during class.

Academic Misconduct

Instructors at UATX have the authority to assess possible plagiarism, unauthorized use of artificial intelligence, and other forms of cheating in their courses. Normally, cheating will result in failing the assignment. Students may appeal such decisions to the Disciplinary Council, where they may exercise their right to a public hearing, by writing to the Dean of the Center responsible for the course.

Attendance and Tardiness Policy

Students may miss 10% of classes for any reason, with no excuse needed, and without penalty, i.e., 1, 2, or 3 classes, respectively, in a 1.5, 3, or 4.5 credit course. After that, each additional absence (for any reason) will result in a 2**%** final grade penalty. Missing more than 25% of the classes in a course (without medical excuse), including "free" absences, will result in failing the course. Thus a student in a 1.5 credit course will fail if he or she misses 3 classes; a student in a 3 credit course will fail if he or she misses 6 classes; a student in a 4.5 credit course will fail if he or she misses 8 classes. Being more than 20 minutes late to a class counts as an absence.

Schedule of Class

Throughout the term, we will work our way through the following topics.

Topic 1: What is Science?

Topic 2: Classical Mechanics

Topic 3: Thermodynamics

Topic 4: Electromagnetism

Topic 5: Energy

Topic 6: Quantum and Relativity