

# Nuclear Engineering (NUC ENG)

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## **NUC ENG 24 Freshman Seminars 1 Unit**

**Department:** Nuclear Engineering

**Course level:** Undergraduate

**Terms course may be offered:** Fall and spring

**Grading:** The grading option will be decided by the instructor when the class is offered.

**Hours and format:** 1 hour of Seminar per week for 15 weeks.

The Berkeley Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Berkeley Seminars are offered in all campus departments, and topics vary from department to department and semester to semester.

Course may be repeated for credit as topic varies. Course may be repeated for credit when topic changes.

## **NUC ENG 92 Issues in Nuclear Science and Technology 2 or 3 Units**

**Department:** Nuclear Engineering

**Course level:** Undergraduate

**Term course may be offered:** Fall

**Grading:** Letter grade.

**Hours and format:** 2 hours of lecture and 1 hour of discussion (optional) per week.

Introduction to technical, social, institutional, and ethical issues in nuclear engineering; nuclear reactions and radiation, radiation protection and control, nuclear energy production and utilization, nuclear fuel cycle, reactor safety, controlled fusion, nuclear waste, medical and other applications of radiation, nuclear nonproliferation and arms control and engineering ethics. Nuclear Engineering majors must enroll in 3 units; discussion section and design project required. Non-majors may take course for 2 or 3 units. Discussion section and design project not required for 2 units.

Formerly known as 39A.

## **NUC ENG 100 Introduction to Nuclear Engineering 3 Units**

**Department:** Nuclear Engineering

**Course level:** Undergraduate

**Term course may be offered:** Fall

**Grading:** Letter grade.

**Hours and format:** 3 hours of lecture per week.

**Prerequisites:** Physics 7A and 7B, Physics 7C may be taken concurrently. Mathematics 53 and 54 may be taken concurrently.

The class provides students with an overview of the contemporary nuclear energy technology with emphasis on nuclear fission as an energy source. Starting with the basic physics of the nuclear fission process, the class includes discussions on reactor control, thermal hydraulics, fuel production, and spent fuel management for various types of reactors in use around the world as well as analysis of safety and other nuclear-related issues. This class is intended for sophomore NE students, but is also open to transfer students and students from other majors.

## **NUC ENG 101 Nuclear Reactions and Radiation 4 Units**

**Department:** Nuclear Engineering

**Course level:** Undergraduate

**Term course may be offered:** Fall

**Grading:** Letter grade.

**Hours and format:** 4 hours of Lecture per week for 15 weeks.

**Prerequisites:** Physics 7C.

Energetics and kinetics of nuclear reactions and radioactive decay, fission, fusion, and reactions of low-energy neutrons; properties of the fission products and the actinides; nuclear models and transition probabilities; interaction of radiation with matter.