

# NUCLEAR ENGINEERING: RADIATION SCIENCES

The radiation sciences option of the nuclear engineering major (<http://guide.wisc.edu/undergraduate/engineering/nuclear-engineering-engineering-physics/nuclear-engineering-bs/>) provides a pathway for careers in medical applications of radiation. Understanding how radiation interacts with biological material is a natural extension of the nuclear engineering fundamentals in modern physics and mathematics. Many students continue to graduate school to get advanced degrees in medical physics, either at UW-Madison or elsewhere.

Radiation science students will use their engineering analysis skills on challenges that range from working with patients to developing new medical devices and equipment. Patients experience radiation to diagnose diseases as well as to treat them. In both cases it may rely on radioactive tracers injected into their bodies or on radiation exposure from outside. Deciding how to administer the radiation to maximize the benefit and minimize the harm requires skills at the intersection between medicine and nuclear engineering. Nuclear engineers in the radiation sciences option also design, analyze and build devices that will generate novel radioactive tracers, deliver radiation externally in ever more precise ways, and detect the radiation levels to ensure the accuracy of the treatments.

Following the same deep curriculum in physics and math in the early years, students in the radiation sciences option will complete their degree with graduate courses from the internationally recognized Medical Physics program. After learning the consequences of radiation interaction with both healthy and diseased tissue, students can take courses in imaging and radiation detection, the production of radiation with radioisotopes or engineered devices, and dig deeper into the use of radiation in medicine.

Talk to your academic advisor about declaring this option.