

PHYS 70700
Introduction to Nuclear Physics
(1 credit)
Graded S/U

- Structure of the nucleon (Jlab physics and the puzzle of the proton spin).
- Nuclear forces
- Nuclear size and mass (liquid drop model; electron scattering; "halo" nuclei).
- Nuclear shell model ("no-core" shell model calculations; effective field theory; renormalization group)
- Nuclear collective model ("super-deformation")
- Fusion and fission ("superheavy" nuclei and "islands of stability")
- Limits of stability (astrophysics along the neutron and proton "driplines")
- Accelerators (radioactive beams)
- Beta-decay (properties of the neutrino, two-neutrino and zero- neutrino double beta decay)
- Applications ("homeland security", medical physics, industrial applications, etc.)

Level:

- First-year graduate students

Counts as:

- For graduate students: A one-credit course that counts towards the breadth requirement.

Offered: Every spring.