

Physics 586 Syllabus

This course covers the physics of radiation detection. A brief list of topics is given below. Some topics may be added or deleted depending on student interest.

Topic	Material
Radiation	Radioactivity; sources; units; exposure and dose; dosimetry
Particle Interactions	Interaction of heavy charged particles, electrons, photons, and neutrons with matter; range; multiple scattering
Particle Detection	Scintillation counters; ionization detectors; proportional detectors; calorimeters; semiconductor detectors; particle identification detectors
Accelerators	X-ray sources; linear accelerators; synchrotrons; luminosity monitors
Statistics	Probability distributions; error propagation; correlations; Bayesian and frequentist confidence intervals
Simulation	Introduction to GEANT4
Topics in Particle Physics	Selected topics from particle physics and astrophysics
Topics in Radiological Physics	Selected topics from radiological physics