Physics and Geosciences

Directors of undergraduate studies: Simon Mochrie (Physics), 68C SPL, 436-4809, dus.physics@yale.edu; Mary-Louise Timmermans (Geology and Geophysics), 111 KGL, 432-3167, mary-louise.timmermans@yale.edu

The major in Physics and Geosciences applies fundamental physical principles to the study of Earth and other planetary bodies at a level that is more intensive than in the Physics or Geology and Geophysics majors individually. Topics of interest range from atmosphere, ocean, and climate dynamics to physics of the solid Earth or of other planetary bodies.

Prerequisites

The prerequisites for the major include MATH 120 or its equivalent, PHYS 170, 171 or another introductory physics sequence, the associated physics laboratory sequence PHYS 205L, 206L, and a course in ordinary differential equations chosen from ENAS 194, MATH 246, or PHYS 301.

Requirements of the Major

Beyond the prerequisites, the major requires a minimum of twelve term courses, including the senior project. At least four of these courses must be in Physics and at least six must be in Geology and Geophysics. Students complete a two- or three-term advanced physics sequence: either PHYS 401 and 402, or PHYS 410, 420, and 430. They must also take basic quantum mechanics (PHYS 439) and one elective numbered PHYS 320 or above. Required courses in Geology and Geophysics include one introductory course numbered G&G 100–150, with any accompanying laboratory; one elective numbered G&G 200 or above; and four advanced electives from one of two Geology and Geophysics tracks: the Atmosphere, Ocean, and Climate track or the Solid Earth Science track. A list of suggested electives is available from the office of the director of undergraduate studies in Geology and Geophysics or on the G&G departmental website. No elective course may count toward multiple requirements for the major.

Credit/D/Fail

No course taken Credit/D/Fail may be counted toward the Physics and Geosciences major, including prerequisites.

Senior Requirement

Students complete a two-term senior project on a topic that is appropriate for the combined major and acceptable to both the Physics and Geology and Geophysics departments. The project is undertaken in either PHYS 471, 472 or G&G 490, 491. In addition, students must present an oral report on their project to each department.

Advising

Interested students should consult the directors of undergraduate studies in Physics and in Geology and Geophysics.

Requirements of the Major

Prerequisites MATH 120 or equivalent; PHYS 170, 171 or above; PHYS 205L, 206L; ENAS 194, MATH 246, or PHYS 301

Number of courses At least 12 courses beyond prereqs, incl senior req

Specific courses required PHYS 401 and 402, or PHYS 410, 420, and 430; PHYS 439

Distribution of courses 1 elective numbered PHYS 320 or above; 1 intro course in G&G, with lab, as specified; 1 elective course numbered G&G 200 or above; 4 advanced courses in a G&G track, as specified

Senior requirement Senior project in PHYS 471, 472 or G&G 490, 491, on topic acceptable to both depts; oral report on project to both depts or equivalent