

Geophysics Undergraduate Annual Progress Report



Students should meet annually with the Director of Undergraduate Studies in Geophysics to review progress towards the degree and to update this list of classes taken and to be taken for the major. Waivers or alternates must be signed by the Director of Undergraduate Studies and on file with the Student Services Officer. Students are expected to satisfy the major requirements in force on the date they declared the major; or, if they so declare in writing, revised major requirements in force on the date of that declaration. Majors are reminded to consult our web-page “BS Milestones and Deadlines” for further guidance.

Student _____ Signature _____ Date _____
 Advisor _____ Signature _____ Date _____

In the list below and overleaf: for classes already taken: enter grade received.

For classes not yet taken: enter Quarter/Year (i.e. F or W or S and year to be taken e.g. 15-16).

Students must earn a C or better in classes intended to fulfill a requirement, and must take them for a letter grade if so offered.

Classes other than “Supporting Mathematics and Science” may not normally be counted towards other majors or minors.

** denotes class taught alternate years ** has additional prerequisites outside the Geophysics major*

GEOPHYSICS CORE COURSES (24-35 units) Students must take all of the following:

- _____/_____ GEOPHYS 110. Earth on the Edge: Introduction to Geophysics, 3 units
- _____/_____ GEOPHYS 120. Ice, Water, Fire, 3 units
- _____/_____ *GEOPHYS 130. Introductory Seismology, 3 units
- _____/_____ *GEOPHYS 150. Geodynamics: Our Dynamic Earth, 3 units
- _____/_____ GEOPHYS 162. Laboratory Methods in Geophysics *or* Physics 67, *Intro to Laboratory Physics*, 2-3 units
- _____/_____ *GEOPHYS 190. Near-Surface Geophysics, 3 units
- _____/_____ GEOPHYS 196. Undergraduate Research, 5 units *or approved research internship*,
- _____/_____ GEOPHYS 197/198, 3 units. *Either* Geophys197 Senior Thesis *or* Geophys198 Honors Thesis; both require a final presentation typically Spring of Senior Quarter
- _____/_____ GEOPHYS 199. Senior Seminar: Issues in Earth Sciences (WIM), 3 units. (Fall quarter, Senior year).
- _____/_____ GEOPHYS 201. Frontiers of Geophysical Research, 1 unit

SUPPORTING MATHEMATICS COURSES (15-19 units) Students must take all of the following:

- _____/_____ CME 100. Vector Calculus for Engineers, 5 units
- _____/_____ CME 102. Ordinary Differential Equations for Engineers, 5 units
- _____/_____ CME 104. Linear Algebra and Partial Differential Equations for Engineers, 5 units
 - MATH 51 (better: 51M), 52, and 53, plus *either* GEOPHYS 112 *or* CME 192 may substitute for the CME series
 - _____/_____ (indicate which class from above choices, if 50-series option is selected)

SUPPORTING SCIENCE COURSES (8-25 units) Students must take all of the following:

- _____/_____ GES 1A, B, or C Introduction to Geology, 4-5units
- _____/_____ CHEM 31A,B Chemical Principles I & II 8 *or* CHEM 31X Chemical Principles, 4 units *or a score of 4-5 on the Chemistry AP exam*
- _____/_____ PHYSICS 41 (or 61). Mechanics, 4 units *or a score of 4-5 on the Physics C Mechanics AP Exam*
- _____/_____ PHYSICS 43 (or 63). Electricity & Magnetism, 4 units *or score 4-5 on the Physics C E & M AP Exam*
- _____/_____ PHYSICS 45 (or 65). Light and Heat, 4 units

GEOPHYSICS BREADTH COURSES (18-29 units) Choose six upper-level courses, one from each of the following six areas (but an additional approved Geophysics class may substitute for either the Physics or for the Geology breadth areas). Students are reminded that the following classes are pre-approved as meeting these breadth areas:

1. Whole-earth Geophysics

- _____/_____*GEOPHYS 132. What makes a Habitable Planet? 3 units
 _____/_____*GEOPHYS 141. Remote Sensing of the Oceans, 3-4 units
 _____/_____*GEOPHYS 184. Journey to the Center of the Earth, 3 units
 _____/_____*GEOPHYS 186. Tectonophysics, 3 units

2. Resources, hazards, and the environment

- _____/_____*GEOPHYS 160 D^3: Disasters, Decisions, Development, 3 units
 _____/_____*GEOPHYS 182. Reflection Seismology, 3 units
 _____/_____*GEOPHYS 183. Reflection Seismology Interpretation, 3 units
 _____/_____*GEOPHYS 185. Rock Physics for Reservoir Characterization, 3 units
 _____/_____*ENERGY 120. Fundamentals of Petroleum Engineering, 3 units
 _____/_____*GES 130. Soil Physics and Hydrogeology, 3 units
 _____/_____*GES 131. Hydrologically-Driven Landscape Evolution, 3 units

3. Numerical and computational methods

- _____/_____*GEOPHYS 211. Environmental Soundings Image Estimation, 3 units
 _____/_____*GEOPHYS 281. Geophysical Inverse Problems, 3 units
 _____/_____*EARTHSCI 211. C++ for Earth Scientists and Engineers, 3 units
 _____/____>**ENERGY 160. Modeling Uncertainty, 3 units
 _____/_____*EE 102A. Signal Processing and Linear Systems I, 4 units
 _____/_____*CME 108. Introduction to Scientific Computing, 3-4 units
 _____/_____*CS 106A & 106B. Programming Abstractions & Programming Methodology, 6-10 units
 _____/____>**PHYSICS 113. Computational Physics, 4 units

4. Geophysical fluid dynamics

- _____/_____*GEOPHYS 146A. Atmospheric Circulation, 3 units
 _____/_____*GEOPHYS 146B. Ocean Circulation, 3 units
 _____/_____*GEOPHYS 181. Fluids and Flow, 3 units
 _____/_____*EESS 220. Physical Hydrogeology, 4 units
 _____/_____*ENERGY 121. Fundamentals of Multiphase Flow, 3 units
 _____/_____*CEE 164. Introduction to Physical Oceanography, 4 units

5. Physics

- _____/____>**EE141 or **EE142. Engineering Electromagnetics, 4 units
 _____/____>**ME80. Mechanics of Materials, 4 units
 _____/____>**PHYSICS 110. Advanced Mechanics, 4 units
 _____/____>**PHYSICS 120. Intermediate Electricity & Magnetism I, 4 units

6. Geology

- _____/_____*GES 102. Earth Materials: Introduction to Mineralogy, 3 units
 _____/_____*GES 110. Structural Geology and Tectonics, 5 units
 _____/_____*GES 111. Fundamentals of Structural Geology, 3 units
 _____/____>**/** GES 151. Sedimentary Geology and Petrography: Depositional Systems, 4 units

For more information: visit <http://pangea.stanford.edu/GP>
 or contact **Professor Simon Klempner** (sklemp@stanford.edu) Director of Undergraduate Studies, Mitchell 353