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.

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).

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, 4-5 units
- 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. Tectonophys, 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](http://pangea.stanford.edu/GP) or contact Professor Simon Klemperer (sklemp@stanford.edu) Director of Undergraduate Studies, Mitchell 353