

# Introduction to Global Tectonics - SIO 160

<http://igppweb.ucsd.edu/~fialko/sio160.html>

**An introduction to geological and geophysical aspects of forces shaping our planet.**

Prerequisite: EARTH50 (or consent of instructor)

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Lecture course, 4-units, letter grade or S/U grade, homework (20%), midterm exam (30%), final exam (50%).

Time: Tue Thu, 2:00-3:20 PM, IGPP 4301

[class@ucsd.edu](mailto:class@ucsd.edu)

## SYLLABUS

Date	Topic	Reading/Homework	Lecturer
30 MAR	<a href="#">Historical Perspective</a>	Read: KK&V, Ch. 1, 3; <a href="#">Lecture notes</a>	YF
01 APR	Deformation in the Crust and Mantle	Read: KK&V, Ch. 2.10 <a href="#">Lecture notes</a>	YF
06 APR	Magnetic Anomalies and Seafloor Spreading	Read: KK&V, Ch. 4.1 <a href="#">Pacific-Antarctic movies</a> <a href="#">Lecture notes</a>	YF
08 APR	<a href="#">Earthquakes and focal mechanisms</a>	Homework 1 Read: KK&V, Ch. 2.1, 2.10.1-2.10.3 <a href="#">Lecture notes</a>	YF
13 APR	Plate tectonics on a plane	Read: KK&V, Ch. 5.10-5.11; Cox and Hart, Chapter 2 (Electronic reserves) <a href="#">Tanya Atwater's movies</a> <a href="#">Lecture notes</a>	YF
15 APR	Plate tectonics on a sphere	Homework 2 Read: KK&V, Ch. 5.1, 5.3, 5.9; Cox and Hart, Ch. 4 (Electronic reserves) <a href="#">Southwest Pacific Movie</a> <a href="#">Lecture notes</a>	YF
20 APR	Internal Structure of the Earth	Read: KK&V, Ch. 2.3, 2.4, 2.8, 2.9, 2.12 <a href="#">Lecture notes</a>	YF
22 APR	Seismo-Tectonics	Homework 3 Read: KK&V, Ch. 5.2 <a href="#">Lecture notes</a>	YF
27 APR	Convergent margins	Read: KK&V, Ch. 9.1-9.7 <a href="#">Lecture notes</a>	YF
29 APR	Transform faults	Read: KK&V, Ch. 4.2, 8 <a href="#">Lecture notes</a>	YF
04 MAY	Mid-term exam		YF
06 MAY	Mid-Ocean Ridges	Homework 4 Read: KK&V, Ch. 6 <a href="#">Animation of a propagating ridge</a> <a href="#">Lecture notes</a>	YF
11 MAY	Orogeny	Read: KK&V, Ch. 10.1-10.4; Twiss and Moores, Ch. 20.12 <a href="#">Lecture notes</a>	YF
13 MAY	Appalachians	Homework 5 Read: KK&V, Ch. 10.6 <a href="#">Lecture notes</a>	YF
18 MAY	Mantle Convection and Plate Driving Forces	Read: KK&V, Ch. 2.13, 12 <a href="#">Lecture notes</a>	YF
20 MAY	Volcanism	Read: KK&V, Ch. 5.5, 5.7 <a href="#">Lecture notes</a>	YF
25 MAY	Tectonics in your backyard	local field trip	YF
27 MAY	Gravity, Isostasy, and Flexure	Homework 6 Read: KK&V, Ch. 2.11 <a href="#">Lecture notes</a>	YF
01 JUN	Tectonic geodesy	Read: KK&V, Ch. 5.8 <a href="#">Lecture notes</a>	YF
03 JUN	Tectonics and environment	Read: KK&V, Ch. 13.1-13.2 <a href="#">Lecture notes</a>	YF
8 JUN 3-6 pm	Final exam		

SIO 160 SUGGESTED BOOKS (some on reserve at the Geisel Library):

### Textbook:

[\*Global Tectonics, Keary, Klepeis and Vine \(3rd Ed.\), Blackwell, 2008.\*](#)

### Reference Books:

*Plate Tectonics* Cox and Hart, Allen & Unwin, Boston, MA, 1986.

*Structural Geology, 2nd Ed.* Twiss and Moores, Freeman and Co., NY, 2007.

*Principles of structural geology*, J. Suppe, Prentice-Hall, Englewood Cliffs, NJ, 1985.

*Getting started with Matlab*, R. Pratap

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