
Introduction to Tectonics - SIO 160

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

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

Prerequisite: Earth10 (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, Hubbs 4500

class@ucsd.edu

SYLLABUS

Date	Topic	Reading/Homework	Lecturer
31 MAR	Historical Perspective	Read: KK&V, Ch. 1, 3; Class notes	YF
02 APR	Deformation in the Crust and Mantle	Read: KK&V, Ch. 2.10 Class notes	YF
07 APR	Magnetic Anomalies and Seafloor Spreading	Read: KK&V, Ch. 4.1 Pacific-Antarctic movies Class notes	YF
09 APR	Earthquakes and focal mechanisms	Homework 1 Read: KK&V, Ch. 2.1, 2.10.1-2.10.3 Class notes	YF
14 APR	Plate tectonics on a plane	Read: KK&V, Ch. 5.10; Cox and Hart, Chapter 2 (Electronic reserves) Tanya Atwater's movies Class notes Homework 2	YF
16 APR	Plate tectonics on a sphere	Read: KK&V, Ch. 5.1-5.4, 5.8-5.9; Cox and Hart, Ch. 4 (Electronic reserves) Southwest Pacific Movie Class notes	YF
21	Internal Structure of	Read: KK&V, Ch. 2.3, 2.8, 2.9, 2.12	YF

APR	the Earth	Class notes	
23 APR	Seismo-Tectonics	Read: Class notes	YF
28 APR	Mid-Ocean Ridges	Homework 3 Read: KK&V, Ch. 6 Animation of a propagating ridge Class notes	YF
30 APR	Transform faults	Read: KK&V, Ch. 6 Animation of a propagating ridge Class notes	YF
05 MAY	Convergent margins	Read: KK&V, Ch. 9.8-9.10; 10.1-10.2 Class notes	YF
07 MAY	Mid-term exam		YF
12 MAY	Orogeny	Read: KK&V, Ch. 10.4; Twiss and Moores, Ch. 20.12 Class notes	YF
14 MAY	Appalachians	Read: KK&V, Ch. 2.13, 12 Class notes	YF
19 MAY	Tectonics in your backyard	local field trip	YF
21 MAY	Mantle Convection and Plate Driving Forces	Read: KK&V, Ch. 2.13, 12 Class notes	YF
26 MAY	Volcanism	Read: KK&V, Ch. 5.4-5.7 Class notes	YF
28 MAY	Gravity, Isostasy, and Flexure	Homework 4 Read: KK&V, Ch. 2.11 Class notes	YF
02 JUN	Tectonic geodesy	Read: KK&V, Ch. 5.8 Class notes	YF
04 JUN	Tectonics and environment	Read: KK&V, Ch. 13.1-13.2 Class notes	YF
09 JUN 3-6 pm	Final exam	Read:	

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.

Mantle Dynamics: Dynamic Earth: Plates, Plumes and Mantle Convection, Davies, G. F., Cambridge University Press, 1999.

Getting started with Matlab, R. Pratap

Computer Homework:

Computer homework can be done most easily by using *MATLAB* which runs on most machines. If you do not have a computer account we will set you up.

[Back to Top](#)

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