ESS 103A: Igneous Petrology
Spring 2006 Syllabus

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Course web page:
http://www2.ess.ucla.edu/~ejohnson/ess103a/ess103a_2006.htm

Schedule:
Classes: MWF, 1-1:50 PM, Geology 4641
Labs: WF, 2-4:50 PM, Geology 4641 (note: W 4-5 is Geocheminar!)

Required field trips:

1. April 22-23: Peninsular Ranges Batholith (Leave Sat. morning; return Sun. evening)
2. May 19-21: Owens Valley and Long Valley (Leave Fri. morning; return Sun. evening)

Course textbooks:
1. "An Introduction to Igneous and Metamorphic Petrology" by John D. Winter (**on reserve** in SEL/Geology library: 4697 Geology Building)

2. "A Colour Atlas of Rocks and Minerals in Thin Section" by W.S. MacKenzie and A.E. Adams (**optional**; look it over before buying; **on reserve** in SEL/Geology library)

3. "Atlas of Igneous Rocks and their Textures" by W.S. MacKenzie et al. (**optional**; look it over before buying! Expensive!)

You may find your Mineralogy textbook to be helpful as well – especially the sections on the optical properties of minerals.

You need a hand lens and a magnet for the lab and field trip portions of this course. Hand lenses should be available for purchase by check in the Geology

Department office.

Grading

The final grade will be (approximately) based on the following:

Lab exercises (45%)
Homework (15%)
Field trips and projects (15%)
Midterm (10%)
Final exams (lab and class) (15%).

Week	Topics	Lab
1	Introduction; structure and heat produciton in Earth	Introduction to igneous rocks
2	Subduction zones; physical properties and composition of melts	Classification of igneous rocks
3	Thermodynamics	Igneous textures
	Field trip: April 22-23 Peninsular Ranges	
4	Thermodynamics and Layered Mafic Intrusions	Mafic and ultramafic intrusive rocks from the Stillwater intrusion
5	Heat transfer and intro to geochemistry	Peninsular ranges projects
6	Midterm; More geochemistry	Volcanic textures
7	Long Valley overview and volcanic structures	Bishop Tuff
	Field trip: May 19-21 Long Valley/Owens Valley	
8	Mantle composition and melting	Mantle xenoliths
9	MORBs and OIBs	Hawaii Islands suite
10	Mantle geochemistry and continental alkaline rocks	Continental alkaline rocks
	Final Exam: June 15	