

G225 - EARTH MATERIALS SYLLABUS - SPRING 2012

**Lecture**

Section 20450 11:15A-12:30P Tuesdays and Thursdays, Room GY 447

**Labs**

Section 20451 1:25P-03:20P Tuesdays, Room GY 245

Section 20452 3:35P-05:30P Tuesdays, Room GY 245

**Instructor:** Dr. Edward M. Ripley

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**Lab Instructor:** Josh Field

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Date	Subject	Reading
1/10	Atomic structure - basic principles	Chapter 1
1/12	The Periodic Table and atomic properties	Chapter 1
	<i>Laboratory: Introduction to Earth Materials</i>	Chapter 2
1/17	Formation of ions; bonding	Chapter 13
1/19	Pauling's Rules	Chapter 13
	<i>Laboratory: Atomic Periodicity and Atomic Structure</i>	Chapter 13
1/24	Coordination polyhedra	Chapter 13
1/26	Mineral compositions - representation	P. 22, 41, 97
	<i>Laboratory: Physical Properties of Minerals</i>	Chapter 3
1/31	<b>Lecture Examination #1</b>	
2/2	Introduction to Geologic Environments	Chapter 2
	<i>Laboratory: Mineral Identification</i>	Chapter 14
2/6	Igneous processes: plate tectonics and magma origin	Chapter 5
2/8	Igneous processes: compositions and compositional variations	Chapter 5
	<i>Laboratory: Mineral Identification</i>	Chapter 14
2/13	Igneous processes: crystallization of magma	Chapter 5
2/15	Igneous processes: numerical simulation of fractional crystallization In-class exercise	Chapter 5
	<i>Laboratory: Mineral Identification</i>	Chapter 14
2/20	Igneous processes: basalts	Chapter 5
2/22	Igneous processes: subduction zones - andesites and granites	Chapter 5

	<i>Laboratory: Igneous Rock Identification</i>	Chapter 5
2/28	Igneous processes: minerals and review	Chapter 5
3/1	<b>Lecture Examination #2</b>	
	<b>Laboratory Examination #1</b>	
3/6	Sedimentary processes: weathering - chemical and biological controls	Chapter 6
3/8	Sedimentary processes: transport and deposition of detrital sediments	Chapter 6
	<i>Laboratory: Sedimentary Minerals and Rocks</i>	Chapter 14
3/10-18	SPRING BREAK	
3/20	Sedimentary processes: Compositional maturity of detrital sediments	Chapter 6
3/22	Sedimentary processes: chemical and biologic controls on rock formation - carbonates, evaporites, banded iron formations	Chapter 6
	<i>Laboratory: Weathering Products</i>	Chapter 6
3/27	Sedimentary processes: In-class exercise	
3/29	Chemical sedimentary rocks	Chapter 6
	<i>Laboratory: Hydrothermal Minerals</i>	Chapter 6
4/3	<b>Lecture Examination #3</b>	
4/5	Metamorphic processes: Causes and types of metamorphism	Chapter 7
	<i>Laboratory: Metamorphic Minerals</i>	Chapter 14
4/10	Metamorphic processes: textures and classification	Chapter 7
4/12	Metamorphic reactions: In-class exercise	Chapter 7
	<i>Laboratory: Metamorphic Rocks</i>	Chapter 7
4/17	Surface processes: factors that control soil formation	website
4/19	Surface processes: identifying soil types and features	website
	<i>Laboratory: Observations of a Local Soil Profile</i>	
4/24	Ore deposits - economic minerals	Chapter 8
4/26	Plate tectonics and the rock cycle	
	<b>Laboratory Examination #2</b>	
5/5	<b>FINAL EXAM Thursday May 3<sup>th</sup> FROM 2:45 P.M. – 4:45 P.M.</b>	