

GEOLOGY 304 - IGNEOUS AND METAMORPHIC PETROLOGY

FALL 2008 – Tuesday & Thursday 9:35 to 10:50 am – Room 327

INSTRUCTOR: Will Lamb

OFFICE: 306, M. T. Halbouty Geosciences Building

Office Hours: M @ 10:00 am, F @ 3:00 pm, by appointment or just stop by my office
email: lamb@geo.tamu.edu

TEXT: An Introduction to Igneous and Metamorphic Petrology – John D. Winter

Metamorphic Phase Equilibria and P-T-t Paths – Frank S. Spear

Lab Manual: Minerals in Thin Section - Perkins and Henke

LAB (required): Room 1: M @ 3:00, T @ 2:20, and R @ 2:20

GRADING: Test I - 18%, Test II - 18%, Final - 25%, Lab 26%, Homework - 13%.

DATE	TOPIC	READING (Spear)
Aug 26	Introduction to the class. Review; the Earth; Plate tectonics	Ch. 1 – (Winter)
<u>METAMORPHIC PETROLOGY</u>		
Aug. 28	Intro. to Metamorphism: T (geotherms), P _L , P _F	Ch. 1 (Spear) Ch. 3 – pp. 25-56 (skim equations)
SEPT.		
2 & 4	Intro. to Metamorphism (continued) Classification: Metamorphic facies and zones	Ch. 2
9	Intro. to Thermodynamics	Ch. 6
11	P-T diagrams (e.g., Al ₂ SiO ₅)	
16	Pelites	Ch. 10
18	Marbles/Marls (T-X diagrams)	Ch. 12
23	Greenschist and Amphibolite Facies Low P Meta. vs. Barrovian	Ch. 11
25	Granulite Facies The fluid controversy.	Ch. 18
30	Blueschist/Eclogite/UHP Subduction Zone Metamorphism	Pages 506-508 (review)
October		
2	Catch-Up	
7	EXAM 1	
<u>“TECHNIQUES”</u>		
9	Radiogenic Isotopes	Ch. 9 Winter (pp. 167-180)

IGNEOUS PETROLOGY

READING (Winter)

14	Introduction/Classification	Ch. 2
16	Chemical Petrology	Ch. 8
21	Description/Textures/Structures	Ch. 3
23	Properties of Magmas (P-T-X- ρ - η) Extrusive & Intrusive Processes	
28	Melting & Crystallization Phase Diagrams, Volatiles	Ch. 5, 6, and 7
30	Magma Genesis & Evolution	Ch. 10

November

4	Magma Evolution (continued)	Ch. 11
	Peridotites & Ophilites	Ch.13
6	Gabbroic Layered Intrusions	
11	Basalts	Ch. 14
13	More Basalts	Ch. 15
18	Andesites etc.	Ch. 16 & 17
20	Granites	Ch. 18
25	Exam 2	
27	Thanksgiving	

December

2	Alkaline / Carbonatites / Kimberlites (Dead Day - Attend Thursday Classes)	Ch. 11 & 12
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Final Exam – Friday, 5 December at 12:30 pm

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