

# GEOSCIENCES 262: ROCKS AND MINERALS

## FALL 2012

**INSTRUCTOR:** Mary Keskinen

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**TEACHING ASSISTANT:** Amy Tuzzolino Reich 312 X7585 altuzzolino@alaska.edu

**TIME:** LECTURES - MW 10:30-11:30 a.m.

LAB - Th 2:00-5:00 p.m.

**PLACE:** Reichardt 237

**CLASS DESCRIPTION:** An overview of mineral & rocks - their identification, classification, mode of formation, & economic applications.

**CLASS FORMAT:** Lectures twice a week, one of which may be a discussion/group learning exercise. Reading assignments are to be read before the class for which they are assigned. The once-a-week Lab will emphasize practical techniques for mineral and rock identification such as physical properties, X-ray diffraction, and optical characteristics. A few videos and very short field trips will be included. GUEST LECTURES ARE POSSIBLE.

**READING ASSIGNMENTS** will be from the textbook, Earth Materials, K. Hefferan and J. O'Brien, Wiley-Blackwell, 2010.

<u>date</u>	<u>lecture topic</u>	<u>reading</u>
9/5	introduction to minerals & rocks	pp. 1-2; skim pp. 19-45.
9/10	mineral properties and classification	pp. 111-128
9/12	non-silicate minerals 1	pp. 140-144.
9/17	non-silicate minerals 2	additional handout
9/19	silicate minerals 1	pp. 128-140.
9/24	silicate minerals 2	
9/26	crystallography in one easy lesson	pp. 75-89.
10/1	exam 1 (minerals)	
10/3	rock classification	pp. 3-18.
10/8	igneous rocks	pp. 182-211.
10/10	occurrence of intrusive igneous rocks	pp. 212-234.
10/15	volcano videos	pp. 234-263.
10/17	occurrence of volcanic igneous rocks	pp. 264-294.
10/22	sedimentary rocks	pp. 295-327.
10/24	sedimentary processes	pp. 365-398.
10/29	sedimentary environments	pp. 399-437.
10/31	diagenesis, weathering, and soils	pp. 328-364.
11/5	metamorphic rocks	pp. 438-454.
11/7	occurrence of metamorphic rocks	pp. 481-540.
11/12	exam 2 (igneous and sedimentary rocks)	

11/14	structure and properties of metamorphic rocks	
11/19	metamorphic rocks in the field	
11/21	types and settings of ore deposits	pp. 541-565.
11/26	optical mineralogy in one easy lesson	skim pp. 145-163.
11/28	economic uses of rocks and minerals	pp. 565-579.
12/3	rock properties and engineering	additional handout
12/5	review session, special topics	
12/10	exam 3 (Comprehensive)	

<u>date</u>	<u>LABORATORY TOPICS</u>
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9/6	mineral classification & diagnostic properties
9/13	non-silicate mineral identification
9/20	other mineral properties of interest and more mineral identification
9/27	silicate mineral identification
10/4	plutonic rocks
10/11	* mineral quiz *
10/18	volcanic rocks
10/25	clastic sedimentary rocks
11/1	non-clastic sedimentary rocks
11/8	metamorphic rocks
11/15	rocks in the field
11/29	microscopic examination of rocks
12/6	rock lab quiz

**GRADING:** GRADES WILL BE BASED ON BOTH LAB AND LECTURE PARTICIPATION. LECTURE IS WORTH 2/3 OF THE FINAL GRADE, BASED ON THE 3 EXAMS, OCCASIONAL HOMEWORK ASSIGNMENTS, AND THE ODD POP QUIZ, AS WELL AS ZEAL AND CLASS PARTICIPATION. THE LAB 1/3 WILL BE BASED ON LAB QUIZZES, OCCASIONAL LAB WRITE-UPS, AND ATTENDANCE.

**Disability Services:** The Office of Disability Services implements the Americans with Disabilities Act (ADA) and insures that UAF students have equal access to the campus and course materials. This class will work with the Office of Disabilities Services (203 WHIT, 474-7043) to provide reasonable accommodation to students with disabilities. Make sure to let the instructor know if there are concerns of this type.