

**TRIAL COURSE OR NEW COURSE PROPOSAL**  
*(Attach copy of syllabus)*

**Department**

Geosciences

**College/School**

Natural Science & Mathematics  
(CNSM)

**Proposed**

7 1 14

**Phone**

454 2000

9. CONTACT HOURS PER WEEK:

2

LECTURE  
hours/weeks

3

LAB  
hours /week

PRACTICUM  
hours /week

Note: # of credits are based on contact hours. 800 minutes of lectures=1 credit. 2400 minutes

of lab in a science course=1 credit. 1600 minutes in non-science lab=1 credit. 2400-4800  
minutes of practicum=1 credit. 2400-8000 minutes of internship=1 credit. This must match with  
the syllabus. See <http://www.usf.edu/faculty/roberta/courses/courses-procedures>

OTHER HOURS (specify  
type)

10. COMPLETE CATALOG DESCRIPTION including dept. number, title, credits, credit

**RESTRICTIONS ON ENROLLMENT (if any)**

**14. PREREQUISITES**

Graduate standing; OR permission from instructor

**16. PROPOSED COURSE FEES**

\$ N/A



## Deformation and Metamorphism of Crystalline Rocks (GEOS F694)

Prerequisites: Graduate standing; OR permission of instructor.

Location: 237 Reichardt

Meeting Time: TBA

Office: 308a Reichardt

Office Hours: Monday 10-12 am; Wednesday 2-4 pm

Telephone: 474-7809

Email: [jemezger@alaska.edu](mailto:jemezger@alaska.edu)

Required textbook:

- Passchier & Trouw (2005): *Microtectonics* (2<sup>nd</sup> edition, Springer) - available as download from Springer through UAF Rasmuson Library. (P&T)

Required supplementary reading:

- Vernon (2004): *A practical guide to Rock Microstructure* (Cambridge University Press). Hard copy available at UAF Rasmuson Library in UAF - Level 5 (V)
- Vernon & Clarke (2008): *Principles of Metamorphic Petrology* (Cambridge University Press). Hard copy available at the GI-IARC Library. (V&C)

Recommended supplementary reading:

- Yardley, MacKenzie & Guilford (1990): *Atlas of metamorphic rocks and their textures* (Longman). Hard copy available at the GI-IARC Library.

### Course Description

A variety of crystalline rocks, schists, ortho- and paragneisses, igneous rocks, are studied in thin sections and hand samples, with respect to their metamorphism and deformation. Different microstructures, fabrics of rocks and individual minerals are observed and described, their

plutonic rocks experience; crucial for the development of tectonic models. Laboratory  
experiments include studies of rock thin sections with optical microscopes and hand

## Instructional Methods

The course is designed in such a way that the laboratory sections are commensurate with the practical

application of the theory covered in the lectures. The lectures may include some experiments and presentations with a microscope. Questions are welcome at all time. Ask if you don't understand. The labs predominantly feature working with optical microscopes. Most of the study material (thin sections, hand samples) is from my own collection, however, students are welcome and encouraged to bring their own thin sections/samples along to every lab. The more we see (including myself), the more we learn. There is no such thing as a geologist who knows it all! Throughout the lab you are encouraged to discuss what you see with fellow students. You will use sketches of rocks and thin sections to concentrate on the crucial microstructures that tell the

story of that sample. Case studies discussed in lectures and labs will give you an idea how integrated deformation-metamorphism studies are used to solve problems in tectonics, plate

- 10-15 min oral presentation of final project (10%) given in the last lab session

- Written presentation of final project (20%), due at the scheduled time of final exam.

The final grade will be based on the percentage of the total points from the weekly assignments and the final project (written and presentation) according to the following scale:

100-99% = A+	87-82% = B	71-70% = C-
98-92% = A	81-80% = B-	69-68% = D+
91-90% = A-	79-78% = C+	67-62% = D
89-88% = B+	77-72% = C	61-60% = D-, <60% = F.

### **Support Services**

Optical microscopes are set up and available in the Petrography Lab (REIC 311) for use outside the regular lab hours. Time permitting, I am available for consultation of thin sections and rock samples.

### **Disabilities Services**

The Office of Disability Services implements the Americans with Disabilities Act (ADA) and ensures that UAF students have equal access to the campus and course materials. I will work with the Office of Disability Services (208 Whitaker Bldg., 474-5655) to provide reasonable accommodations to students with disabilities. Please let me know at the beginning of the course if



Week	Lecture	Lab	Reading
1	Refresher: - Types of metamorphism, metamorphic facies - Types of deformation; flow and deformation	Introduction to using an optical microscope; Review of rock forming minerals: quartz, feldspars, micas	V&C 1.1, 1.8 P&T 2
2	Formation and characteristics of major metamorphic minerals	Petrography of aluminosilicates, garnet, staurolite, cordierite and other common metamorphic phases	