ESS 439 LABORATORY - PETROGRAPHY OF IGNEOUS ROCKS

Autumn Quarter 2009 - MW 2:30-4:20

Instructor: I. S. McCallum
Phone: 543-9494

Office: 436 Johnson Hall
e-mail: mccallum@u.washington.edu

Lab Materials: Laboratory notebook, hand lens, and a copy of “Introduction to Optical Mineralogy” by W. D. Nesse, or “Introduction to Mineralogy” by W.D. Nesse, or “An Introduction to the Rock Forming Minerals” by Deer, Howie, and Zussman.

Grading: Your lab grade accounts for 50 % of your total grade for the course. It is based on the following graded assignments:

- Weekly assignments (+ notebook) 25 %
- Lab Final 25 %

In addition, you will be expected to keep an organized lab notebook which contains the following:
1. For each common rock-forming minerals, a one page summary of its occurrences, optical properties, distinguishing characteristics, etc., and
2. A brief description of each section you examine. Although this notebook will not be graded, I will inspect it from time to time and it will be very useful to you during the final lab exam, which, of course, will be an open book exam. The Fish Canyon Tuff homework problem involves a petrographic description of the FCT thin sections--this will be due during the last week of labs.

During several lab periods I will set up my reflected light microscope (we only have one good one in the department) in the lab and we will examine polished sections in reflected light. For each of the weekly rock descriptions I have prepared a polished thin section. This is the only way to distinguish among the many minerals which are opaque in transmitted light and it is important that you gain some experience with this type of microscopy.

LABORATORY SYLLABUS

Week 1: Introduction to the principles of optical mineralogy and the petrographic microscope
Week 2: Isotropic and uniaxial minerals
Week 3: Biaxial minerals
Week 4a: Review of the common minerals (Felsic)
Week 4b: Review of the common minerals (Mafic)
Week 5: Ultramafic rocks
Week 6: Mafic volcanic rocks
Week 7: Mafic plutonic rocks, Skaergaard Suite, Stillwater Suite
Week 8: Intermediate and Felsic volcanic rocks
Week 9: Intermediate and Felsic plutonic rocks
Week 10: Review and Final lab exam

Other useful publications: