

GEOL 201 - Mineralogy & Optical Crystallography

Instructor - F. Zeb Page
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Office Hours - M 1-2
T 9-10
F 1-2
also drop in & by appointment

Text - Introduction to Mineralogy by William D. Nesse (Oxford Univ. Press, 2000)

Recommended text - An Introduction to the Rock-Forming Minerals by Deer, Howie & Zussman (Pearson, 1992)

Lecture TR 9:35 - 10:50, Carnegie 412
Lab T 1:30 - 4:20, Carnegie 412

Course Goals - The solid part of our planet is composed almost entirely of minerals. The physical and chemical properties of these minerals play major roles in shaping Earth's processes from the very small to the very large scales. In this course we will study the major mineral groups that make up our planet (and much of the solar system) from both physical and chemical perspectives. In particular, we will discuss crystal symmetry and structure as well as stoichiometry and the chemistry and thermodynamics of minerals. Finally, we will learn about and use analytical methods used to study and characterize minerals from polarized-light optical microscopy to methods that make use of X-ray and electron beams.

Evaluation - Your grade will be based on the following components:

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|---------------------------------|-----|
| Labs and homework | 35% |
| Mineral Drawer Project | 30% |
| Independent Data Analyses (IDA) | 35% |

Assignments - Please complete the reading assignments before the class in which we discuss them. Labs are due at the following lab period, homework assignments may vary in length. Failure to turn work in on time puts you at risk of losing points...asking for an extension before the due date can protect you from this.

IDAs - The closest thing to a test we will have in this class are Independent Data Analysis (IDA) exercises. IDAs are meant to be both an evaluation and a learning experience as well as a simulation of typical scientific tasks. Generally they will involve you generating a written or drawn product from a dataset that I will provide over a 3-5 day period.

Mineral Drawer - Not many geologists go on to be mineralogists or petrologists, but virtually all need to know how to identify common and scientifically interesting minerals, as well as how to go about identifying a mineral and constraining its chemical composition. You will learn how to do these things in lecture and lab, and you will practice these skills on a suite of minerals throughout the semester. Working

independently or in small groups you will collect data on the minerals in the drawer, and at the end of the semester we will have a one-on-one conversation about your findings.

Honor Code - Oberlin students are bound by the honor code, details of which can be found at <http://www.oberlin.edu/students/links-life/honorcode.html>. For the purposes of this class, IDAs should be completed individually unless otherwise indicated at the time. I encourage you to collaborate with your colleagues on lab and homework assignments as well as the mineral drawer project as long as each one of you works on all aspects of the assignment and your answers are in your own words. Please write and sign the honor pledge on each assignment turned in for evaluation.

Lab Fees - The Geology Department requests, nay, requires each student in lab courses to pay a fee of \$10 to help defray lab costs. Please pay Retha Ball (Carnegie 417) by cash or check.

Services for students with disabilities - If you have a documented disability and will require accommodations in this course, please see me or Jane Boomer (Services for Students with Disabilities, Peters Hall G27, x5-8467) in the first two weeks of the semester to develop a plan to address your needs.

Field Trip - Field geology can only be learned in the field, and we live in a region with a relatively limited number of minerals, so we will have to travel to get the job done. We will be taking a 4 day field trip to the Adirondack Mountains of New York Sat-Tue 10.9-10.12. These trips are a lot of fun and are very important in your development as geologists.