

ERTH 2102 Mineralogy to Petrology - Syllabus

Course description

ERTH 2102 Mineralogy to Petrology [0.5 credit]

Chemical, optical and crystallographic properties of common rock-forming minerals, with introduction to common mineral assemblages of igneous, sedimentary, and metamorphic rocks.

Lectures two hours a week and laboratory three hours a week.

Precludes additional credit for ERTH 3202.

Prerequisite(s): ERTH 1001 (no longer offered) or ERTH 1006 and (ERTH 1009 or GEOG 2013) and CHEM 1002 or CHEM 1006.

Learning outcomes

1. Introduce crystallography, crystal chemistry, and systematic mineralogy.
2. Relate the physical properties of minerals to their crystal structures.
3. Introduce analytical methods used in modern mineralogy and petrology, especially polarized light microscopy and X-ray fluorescence analysis.
4. Learn how minerals and rocks are classified and named.
5. Identify minerals and rocks in hand specimen and thin section.
6. Appreciate the influence of crystal chemistry on mineral assemblages in rocks and mineral weathering.
7. Develop the ability to research and learn mineralogical and petrological topics individually and in groups.

Times and locations

All lectures will be held in-person (Herzberg Labs, room 3120 HP) each Monday from 2:35 - 4:25 pm, and the lab sessions will be held in-person (Herzberg Labs, room 2120 HP) Thursdays and Fridays from 2:35 pm - 5:25 pm, depending on the lab section. Students cannot attend a different lab time/day/section but must attend the section that they have registered in. All students must follow lab protocols.

Teaching team

Instructor: Fred Gaidies

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Teaching assistant: Thereza Yogi

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Teaching assistant: Abdul Karim El Ghawi

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Textbooks

Dyar MD, Gunter M, Tasa D (2019, or the 2008 B&W version). Mineralogy and optical mineralogy. Mineralogical Society of America, Chantilly, VA. This text has an excellent coverage of mineralogical topics, and together with its superb Mineral Database serves as a **required reference** for this course. We will use the text and the database extensively - it can be obtained here: <http://www.minsocam.org/msa/DGTxt/>.

Nesse W (2012) Introduction to optical mineralogy. Oxford University Press. This is an excellent text on the optical properties of minerals. It is a **recommended reference** for this course.

Online resources

This document is available on Brightspace as are many others relevant to the course. Frequently, visit the homepage of this course for updates with respect to the course plan. The course plan contains information on lecture and laboratory topics, reading assignments, homework, and pre-lecture as well as pre-lab preparations. Note that this course plan may be altered during the term.

The course website contains most of the laboratory assignments and homework, and you will have to read them carefully before the respective labs and lectures. Lecture notes will be made available after each lecture.

Course requirements

You are expected to attend all lectures and laboratories. Arriving late to class is distracting to students, professor, and teaching assistants.

The lab component of the course must be passed in order to pass the course. All labs must be completed and handed in at the end of each respective lab session (unless exceptions are announced by the teaching team).

Reading assignments, homework, pre-lecture and pre-lab preparations are mandatory. It is the student's responsibility to come to lectures and labs prepared.

There will be three examinations during the course: (1) A combined lecture and laboratory midterm exam (two hours, likely during lab sections) that will cover everything up to and including Lecture #6 and Lab #5; (2) A final lab exam (two hours, likely during lab sections) to test your understanding of fundamental concepts of crystal chemistry, crystallography, optical mineralogy, and petrography; (3) A final exam during the official examination period (to be scheduled by the registrar, two hours) that will primarily focus on lecture material.

Grading

15% Laboratory exercises
15% Midterm exam
30% Laboratory exam
40% Final exam

Academic Accommodations, Regulations, Plagiarism, Etc.

Carleton University is committed to providing access to the educational experience in order to promote academic accessibility for all individuals. Academic accommodation refers to educational practices, systems and support mechanisms designed to accommodate diversity and difference.

The purpose of accommodation is to enable students to perform the essential requirements of their academic programs. At no time does academic accommodation undermine or compromise the learning objectives that are established by the academic authorities of the University. More information can be found at: <https://students.carleton.ca/course-outline/>

University rules regarding registration, withdrawal, appealing marks, and most anything else you might need to know can be found on the university's website: <https://calendar.carleton.ca/undergrad/regulations/academicregulationsoftheuniversity/>

Academic Accommodations for Students with Disabilities

If you have a documented disability requiring academic accommodations in this course, please contact the Paul Menton Centre for Students with Disabilities (PMC) at 613-520-6608 or pmc@carleton.ca for a formal evaluation or contact your PMC coordinator to send your instructor your Letter of Accommodation at the beginning of the term. You must also contact the PMC no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with your instructor as soon as possible to ensure accommodation arrangements are made. For more details, visit the [Paul Menton Centre website](#).

Addressing Human Rights Concerns

The University and all members of the University community share responsibility for ensuring that the University's educational, work and living environments are free from discrimination and harassment. Should you have concerns about harassment or discrimination relating to your age, ancestry, citizenship, colour, creed (religion), disability, ethnic origin, family status, gender expression, gender identity, marital status, place of origin, race, sex (including pregnancy), or sexual orientation, please contact the [Department of Equity and Inclusive Communities](#) at equity@carleton.ca.

Religious Obligations

Please contact me with requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, please review the [Student Guide to Academic Accommodation \(PDF, 2.1 MB\)](#).

Survivors of Sexual Violence

As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and where survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit: <https://carleton.ca/sexual-violence-support/>

Accommodations for Missed Work

Carleton recognizes that students may experience unexpected, temporary incapacitation (i.e., illness, injury, or extraordinary circumstances outside of a student's control). As a result, Carleton has put into place a protocol for students to apply for accommodations using a self-declaration form in the event of missed work. The form can be found at: <https://carleton.ca/registrar/wp-content/uploads/self-declaration.pdf>

Note that these forms should be used for short-term concerns related to missed work; if you are experiencing chronic, ongoing challenges which necessitate a broader solution, I recommend reaching out to the Paul Menton Centre and/or the Care Support team.

For Pregnancy

Please contact me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, please review the [Student Guide to Academic Accommodation \(PDF, 2.1 MB\)](#).

Accommodation for Student Activities

Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. Please contact me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, see the [Senate Policy on Accommodation for Student Activities \(PDF, 25KB\)](#).

Academic Integrity

Academic Integrity is upholding the values of honesty, trust, respect, fairness, responsibility, and courage that are fundamental to the educational experience. Carleton University provides supports such as academic integrity workshops to ensure, as far as possible, that all students understand the norms and standards of academic integrity that we expect you to uphold. Your teaching team has a responsibility to ensure that their application of the Academic Integrity Policy upholds the university's collective commitments to fairness, equity, and integrity.

(Adapted from [Carleton University's Academic Integrity Policy](#), 2021).

Examples of actions that do not adhere to Carleton's Academic Integrity Policy include:

- Plagiarism
- Accessing unauthorized sites for assignments or tests
- Unauthorized collaboration on assignment and exams
- Using artificial intelligence tools such as ChatGPT when your assessment instructions say that it is not permitted

Please review the checklist [linked here](#) to ensure you understand your responsibilities as a student with respect to academic integrity and this course.

Sanctions for Not Abiding by Carleton's Academic Integrity Policy

A student who has not upheld their responsibilities under Carleton's Academic Integrity Policy may be subject to one of several sanctions. A list of standard sanctions in science can be found [here](#). Additional details about this process can be found on [the Faculty of Science Academic Integrity website](#). Students are expected to familiarize themselves with and follow the Carleton University [Student Academic Integrity Policy](#). The Policy is strictly enforced and is binding on all students.

Student Rights & Responsibilities

Students are expected to act responsibly and engage respectfully with other students and members of the Carleton and the broader community. See the [7 Rights and Responsibilities Policy](#) for

details regarding the expectations of non-academic behaviour of students. Those who participate with another student in the commission of an infraction of this Policy will also be held liable for their actions.

Student Concerns

If a concern arises regarding this course, **your first point of contact is me**: Email or drop in during student hours and I will do my best to address your concern. **Note**: You can also bring your concerns to [Ombuds services](#).

Assistance for Students

Academic and Career Development Services: <http://carleton.ca/sacds/>

Writing Services: <http://www.carleton.ca/csas/writing-services/>

Peer Assisted Study Sessions (PASS): <https://carleton.ca/csas/group-support/pass/>

Math Tutorial Centre: <https://carleton.ca/math/math-tutorial-centre/>

Science Student Success Centre: <https://sssc.carleton.ca/>

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