

Geov 242 Magmatisk og metamorf petrologi Syllabus

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Obligatory textbook (pensum): none

Learning Objectives

Igneous rocks have all a story to tell -> In this class you will learn to read this story by interpreting the geologic evolution and petrogenesis of these igneous rocks based on their mineralogy, geochemistry and textures. Lab work is a major component and will include examining thin sections and geochemical modeling. In the lectures, you will be exposed to a variety of tools to enable you to deepen your understanding of igneous processes (variation diagrams, phase diagrams, experimental petrology and reactions). By the end of the semester you should be comfortable identifying igneous rocks and discussing their formation the processes that affected their evolution mean for regional/global geology.

Field trip:

A combined field trip is planned at the end of the course, to study the observed petrological features in-situ in nature.

Some lecture examples:

Lec #	Topic
1	Rock-forming Minerals: ol, spinel, px, fsp, qtz, mica, fsp-oides
2	Classification, Chemical Variations and Graphical Representations
3	Partial melting
4	Mid Ocean Ridge Basalts (oceanic crust) and hydration of oceanic crust
5	Crystallization and Differentiation
6	Rift magmatism
7	Magma Mixing and Crustal Assimilation
8	Volcanic Rifted Margins (rift-to-drift)

9	Crustal Anatexis and high grade metamorphism
10	Felsic Magmas - Granites
11	Volatiles in Melts
12	Subduction Factory and subduction-related metamorphism
13	Ocean Island Basalts OIB (Hawaii)
14	Large Igneous Provinces

Student evaluation and grading:

GEOV242 has two components: lecture and laboratory/seminar. Students are expected to complete the readings (research papers) for each topic before the relevant lecture. In lab assignments, students must identify and discuss thin sections of significant rock samples and model some petrogenetic processes. During seminars student groups will present scientific papers to the class and the whole class should discuss the scientific milestones of these papers in an open discussion.

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