



RaMES

APPLIED PETROLOGY

Raw Materials Exploration and Sustainability

CONTACT INFORMATION

Instructor: Alberto Vitale Brovarone

Institution: University of Bologna

E-mail Address: alberto.vitaleb@unibo.it

COURSE CONTENT AND INTENDED LEARNING OUTCOMES (ILOs):

Definition of the most important petrologic pathways of global volatile recycling as drivers for element mobility/deposition and ore formation. Summary of key igneous and metamorphic rocks and their role in global volatile cycling. Description and interpretation of fluid-rock interaction processes through theory, field, and microstructural features. Analytical techniques in petrology.

At the end of the course, students will be able to:

- Describe the functioning of global volatile cycling and how it participates in element mobility and/or deposition
- Characterize and classify the most common igneous and metamorphic rocks
- Use and describe methods for geochemical analysis of fluid-rock interactions
- Acquire and interpret fundamental field, microstructural and geochemical data related to fluid-rock interactions
- Present, argue and draw conclusions, by written reports and oral communication, on the results of their individual/team work

Aligning with the EIT OLOs:

EIT OLO 1 - Making value judgments and sustainability competencies

2= highly relevant to the course content: Throughout the entire course the students will be confronted with different rock types with different fabric and mineralogy, and alteration style. Thus, several value judgements need to be made regarding host rock classification and interpretation.

EIT OLO 2 - Entrepreneurship skills and competencies

1 = marginally relevant to the course content: Entrepreneurship skills are not explicitly trained during this course. However, student-staff interaction during the poster session will train the student ability to argue for her/his interpretations.

EIT OLO 3 & 4 - Creativity skills and competencies; Innovation skills and competencies

2= highly relevant to the course content: The students are encouraged to engage into discussions and make suggestions how the procedure they learn may be improved. The course will train students ability to think out of the box.



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EIT OLO 5 - Research skills and competencies

2=highly relevant to the course content: Students are instructed during the course how to improve their research skills and competencies in technical writing.

EIT OLO 6 - Intellectual transforming skills and competencies

2=highly relevant to the course content: One aim of the field work output (poster presentation) is to transform the technical observations on host rocks into sound interpretations accessible to people with diverse technical and scientific background.

EIT OLO 7 - Leadership skills and competencies

2= highly relevant to the course content: Decision-making ability is essential to the resource geologist, who often deals with elusive fabric and mineralogy, and scarcity of data, making host rock reconnaissance difficult. Student's ability to use basic knowledge and observations skills to adopt the right classification procedure are encouraged.

ASSESSMENT METHODS AND GRADING SYSTEM

Lectures, hands-on practices to gain experience on global petrological processes controlling element recycling in the lithosphere, from the field to the microscale, including optical and electron microscopy. Individual work and reporting on different types of assignments, for example managing geochemical dataset. Learning activities may be delivered also in instructed team sessions, to enhance group discussion, or in flipped class to increase student engagement and learning.

The individual performances are evaluated through the participation in class activities, and through the final written and oral exam. Class participation includes student engagement during lectures and practical work. The field work activities relate to the EIT OLO 7 learning outcome. In particular, the field work output will consist in public presentation of field work observations and interpretations. Each student is expected to deliver a professional-style presentation of her/his work during a collective public oral session. Interaction with other components of the teaching panel and the Department staff will be encouraged. This assignment is also instrumental to evaluate the EIT OLO 6 learning outcome. The final written exam is a written report dealing with an individual research project. The oral exam is aimed at discussing the individual reports and testing the contents of the course.

The grades in the Italian university system are expressed out of thirty. The passing grade is 18/30. In case of full grade (30/30) the Professor(s) may also decide to award honours (lode).

You can find below the breakdown of the final grade:

ASSESSMENT METHOD	WEIGHT ON FINAL GRADE
Class participation	20%
Oral presentation (field work output)	20%
Written exam	40%
Oral	20%



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