SYLLABUS

Isotope Geology 7.5 credits O7025K

Isotopgeologi

Course syllabus admitted: Autumn 2023 Sp 1 - Present

DECISION DATE
2021-02-17

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LULEÅ TEKNISKA UNIVERSITET

Isotope Geology 7.5 credits O7025K

Isotopgeologi

Second cycle, O7025K

Education level	Grade scale	Subject	Subject group (SCB)
Second cycle	G U 3 4 5	Geovetenskap	Earth Science and Physical Geography

Entry requirements

90 credits in geoscience. Good knowledge in English, equivalent to English B/6.

Selection

The selection is based on 30-285 credits

Course Aim

After completing this course, students should be able to:
- describe and explain important radioactive and stable isotope systems, and their applications in geosciences
- describe the principles and techniques of mass spectrometry and its application in isotopic studies
- apply theoretical knowledge of isotopic systems for interpreting geological processes, calculating radiometric ages, and identifying geological sources based on isotopic data
- scientifically communicate interpretation results of isotope studies, in written and oral form

Contents

Fractionation of radioactive and stable isotopes
Principles and specific techniques of mass spectrometry
Radiometric dating methods
Petrogenesis of igneous and sedimentary rocks
Isotope applications in ore geology

Realization

Each course occasion´s language and form is stated and appear on the course page on Luleå University of Technology's website.
The course is given as a series of lectures, in combination with exercises and seminars. The lectures shall provide the principles in isotope geology to give the students a theoretical basis for being able to describe and explain isotope systems, mass spectrometry, as well as applications in geosciences such as the mantle and crustal source reservoirs for the petrogenesis of igneous and sedimentary rocks. The exercises give the students the possibility to practice and implement workflows in isotope data acquisition, processing and interpretation, conducted individually and/or in groups. The students practice scientific communication of isotope study results through written reports, as well as oral presentations during seminars.

Examination

If there is a decision on special educational support, in accordance with the Guideline Student's rights and obligations at Luleå University of Technology, an adapted or alternative form of examination can be provided.
The ability to describe and interpret isotope data are assessed with assignments and a written exam. Pass grades on all mandatory assignments and the exam are necessary to demonstrate the individual achievement of the course aims. The development towards the achievement of these aims is continuously monitored through assignments, such as exercise presentations and reports, throughout the course. Binary grading (pass/fail) is applied for the assignments.

Unauthorized aids during exams and assessments

If a student, by using unauthorized aids, tries to mislead during an exam or when a study performance is to be assessed, disciplinary measures may be taken. The term “unauthorized aids” refers to aids that the teacher has not previously specified as permissible aids and that may assist in solving the examination task. This means that all aids not specified as permissible are prohibited. The Swedish version has interpretative precedence in the event of a conflict.

Course offered by

Department of Civil, Environmental and Natural Resources Engineering

Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0001	Written exam	G U 3 4 5	5.5	Mandatory	A21	
0002	Assignments	U G#	2	Mandatory	A21	

Study guidance

Study guidance for the course is to be found in our learning platform Canvas before the course starts. Students applying for single subject courses get more information in the Welcome letter. You will find the learning platform via My LTU.

Syllabus established

by Assistant Director of Undergraduate Studies Eva Gunneriusson, Department of Civil, Environmental and Natural Resources Engineering 2021-02-17