Hydrogeological Methods

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Module number	Credits	Workload	Semester[s]	Duration	Group size
SE-CO-15	8 CP	240 h	2. Sem.	1 week Semester[s]	40

Courses	Contact hours	Self-study	Frequency
a) Tracers in Hydrogeology	a) 3 WLH (45 h)	a) 75 h	a) each summer
b) Hydrogeological Field Camp	b) 3 WLH (45 h)	b) 75 h	b) each summer

Module coordinator and lecturer(s)

PD Dr. Thomas Heinze

a) PD Dr. Thomas Heinze

b) Prof. Dr. Stefan Wohnlich

Admission requirements

Recommended previous knowledge:

Passing of the examination for "Groundwater Hydraulics"

Learning outcome, core skills

At the end of the module, participants will

- be able to perform various hydrogeological field experiments and analyze the results,
- understand the concept of applying organic substances as Tracers for groundwater flow,
- plan and execute tracer tests, use field and laboratory equipment for tracer detection, process and analyze the tracer test results,
- write a scientific report,
- communicate with water- and environmental authorities and
- transfer theoretical knowledge to practical applications.

Contents

a)

Basics concepts, terms and methods in tracer hydrology: different kind of tracers, their chemical and hydrodynamical properties, planning and performance of the tracer tests under real world conditions: tracer injection, sampling, analytical detection. Moreover, the hydrogeological interpretation of the results, calculation of hydrodynamic parameters as well as the use of computer programs will be trained and documented by writing a report.

b)

The most important hydrogeological Field methods will be used to evaluate and plan the water supply well: pumping tests, infiltration tests, run of measurements extraction of groundwater and petrochemical sampling determination of petrochemical and physical groundwater parameters, use of hydrochemical analyses in the field, shallow drilling, hydrogeological and engineering geology goal characterization of the soil profile in boreholes, measuring of the groundwater level and plotting of groundwater contour maps. All the data of the performed experiments are documented and interpreted in a written report.

Educational form / Language

a) Block seminar / English / German

b) Tutorial (2 WLH) / Lecture (1 WLH) / German

Examination methods

• Term paper 'Hydrogeological Methods' (10 h., Part of modul grade 100 %)
Requirements for the award of credit points • Pass Written report (part of final mark 100 %) and active participation on the field exercises
Module applicability • M.Sc. Subsurface Engineering • M.Sc. Geosciences
Weight of the mark for the final score Percentage of total grade [%] = 8 * 100 * FAK / DIV FAK: The weighting factors can be taken from the table of contents. DIV: The values can be taken from the table of contents.
Further Information relevant literature and specific study material will be supplied at the beginning of the lectures