

- Faculté des sciences
- www.unine.ch/sciences

Natural and artificial tracers (3GH2210)

Filières concernées	Nombre d'heures	Validation	Crédits ECTS
Master en hydrogéologie et géothermie	Cours: 28 pg	Voir ci-dessous	3

ph=période hebdomadaire, pg=période globale, j=jour, dj=demi-jour, h=heure, min=minute

Période d'enseignement:

- Semestre Printemps

Equipe enseignante

Daniel Hunkeler

Contenu

The course covers the major natural and artificial tracer methods in hydrogeology including:

- fluorescent and salt tracers
- stable water isotopes
- atmospheric tracer constituents and radioisotopes for groundwater dating.

Forme de l'évaluation

Written exam 1h. Aside from a three-page, double-sided, handwritten personal summary, no other documents are permitted. The exam includes several questions on the characteristics and range of application of natural and artificial tracers. The questions cover all tracer methods discussed in the course. Some of the questions include calculations. A calculator can be used.

Modalités de rattrapage

Repeat exam: The exam can be repeated once in subsequent exam session. The repeat exam has the same format as the initial exam (see above).

Documentation

The course document include the PowerPoint presentations and scientific articles about tracer methods.

Forme de l'enseignement

The course include lectures and exercises. During the course students plan several tracer tests and studies. They receive data from past tracer tests for interpretation. Depending on weather conditions, a tracer experiment will be carried out during the course.

Objectifs d'apprentissage

Au terme de la formation l'étudiant-e doit être capable de :

- Design a tracer test using natural and artificial tracer methods
- Evaluate tracer data qualitatively and quantitatively
- Compare different tracer methodologies to gain insight into key hydrological processes

Compétences transférables

- Communicate the added values of a demanding scientific methodology to a non-academic audience