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

Systèmes aquifères alluviaux (3GH2208)

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

Clément Roques (UniNE), Flavio Anselmetti (UniBE), Claire Le Bayon (UniNE) and Philip Brunner (UniNE)

Contenu

Quaternary aquifers are commonly used for water supply because of their high storage capacity and permeability. Glacially carved valleys filled with coarse sediment represent excellent preconditions for productive aquifers but often cover only a small area of a region or a country. These zones are therefore under strong anthropogenic stresses including agriculture, urbanization, underground infrastructures (tunnels, subways, conduits and communication networks), gravel exploitation, and contamination. These activities lead to important challenges for the design of land and water management policies.

Therefore, hydrogeologists frequently work on projects where quaternary aquifer systems are involved. A good comprehension of their geological and hydrogeological properties is essential. This course aims at providing an integrated vision of quaternary aquifer systems covering 1) their geological genesis, 2) the methods used to assess their hydrogeological properties, and, 3) the design of management strategies for water supply.

In order to cover the broad range of topics and issues related to quaternary aquifers, several lecturers with complementary expertise are involve. A broad range of teaching methods is used including black-board theoretical lectures, field excursions and hands-on experiments.

Forme de l'évaluation

Contrôle continu et/ou rapports notés

Modalités de rattrapage

Travail écrit complémentaire

Documentation

Polycopier du cours, présentations et descriptifs des travaux pratiques

Pré-requis

n.a.

Forme de l'enseignement

cours-bloc et terrain

Objectifs d'apprentissage

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

- Conceptualise major geological and climatic processes (glacial-interglacial cycles, erosional and depositional processes) that are at the origin of glacial, fluvio-glacial and glacio-lacustrine deposits.
- Explain the sedimentary properties of Quaternary deposits, typical sedimentary sequences, and the stratigraphy and distribution of Quaternary deposits in Switzerland.
- Conceptualise the main processes involved in soil pedogenesis.
- Interpret the role of the vadose zone in the water cycle.
- Examine the complex alluvial aquifer system of the Emme river.
- Develop to what extent current water management strategies in the area may impact groundwater-surface water interactions and water resources availability.

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

Systèmes aquifères alluviaux (3GH2208)

Compétences transférables

- Evaluate the availability/vulnerability of groundwater resources in alluvial aquifer systems.
- Recommend investigation measures adapted to alluvial aquifer systems.