UE Behavior of geotechnical structures

ECTS
3 crédits

Composante
UFR PhITEM (physique, ingénierie, terre, environnement, mécanique)

Période de l'année
Automne (sept. à dec./janv.)

- **Langue(s) d'enseignement:** Anglais
- **Ouvert aux étudiants en échange:** Oui
- **Code d'export Apogée:** PAX9GIAJ

Présentation

Description

The first part of the course is devoted to the study of geotechnical structures such as retaining structures, shallow and deep foundations. The aim of this course is to show how the behaviour of geotechnical structures can be explained from the fundamental mechanisms governing the elemental behaviour of soils and soil#structure interfaces. A special attention is given to the effects of non linearities, stress level and dilatancy. The fundaments of the behaviour of these structures are first presented through the results of experiments performed in Laboratory, with specific similitude conditions (Physical modelling), and large scale field tests or case studies. Classical analytical design methods (bearing capacity, settlements) or using the results of field testing are presented and justified by the mechanisms of soil#structure interaction. The numerical approach using the Finite Element Method (FEM) is presented, with emphasis on the role of the constitutive model used in the code on the results.A personal project involving the analysis of a case study has to be presented by the students.

The second part is concerned by the behaviour and design of geotechnical structures under earthquake loading: Elements of Engineering seismology, dynamic behaviour of soils, seismic liquefaction of soils and prediction methods, simplified approach of the seismic design of retaining walls, shallow and deep foundations, seismic calculation of embankment dams elements of dynamic soil#structure interaction, this second part will be evaluated by a written exam.

Heures d'enseignement

UE Behavior of geotechnical structures - CM	CM	20h

Période : Semestre 9

Infos pratiques

Lieu(x) ville

- Grenoble

Campus

- Grenoble - Domaine universitaire