

UE Soil dynamics and nonlinear site response analysis

 ECTS
3 crédits



Composante
UFR Physique,
Ingénierie,
Terre,
Environnement,
Mécanique
(PhITEM)



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

Diplômes intégrant cet élément

- Master Génie civil

- **Langue(s) d'enseignement:** Anglais
- **Ouvert aux étudiants en échange:** Oui
- **Code d'export Apogée:** PAX9CEAP

Présentation

Description

Fundamentals: Soil behaviour under earthquake loading: Fundamentals of soil behaviour under cyclic and dynamic loading. Basic mechanical models. Non-linear stiffness, damping, cyclic strength, liquefaction.

Geotechnical characterisatio: Techniques and examples of characterization of layered soils by in situ tests: borehole and surface methods. Techniques and examples of results of laboratory tests: cyclic triaxial, simple shear, torsional shear, resonant column. Factors influencing stiffness and damping. Linear equivalent models for dynamic analyses.

Liquefaction: Case histories of liquefaction worldwide; Evaluation of liquefaction potential by empirical to analytical methods. Zonation for liquefaction.

Slope stability: Case histories of slope failures worldwide; Analysis: pseudo-static methods, displacement analysis, advanced analyses. Examples of seismic analysis of natural slopes, earth dams and embankments. Zonation of slope stability.

Tutorials (with laptop): 1D site response analysis and assessment of liquefaction potential. Slope displacements by simplified dynamic analysis

Heures d'enseignement

CM	CM	20h
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Période : Semestre 9

Infos pratiques

Lieu(x) ville

➤ Grenoble

Campus

➤ Grenoble - Domaine universitaire