GEOS7AF SOILS AND SUBSURFACE FORMATIONS

GEOS7AF **Soils and subsurface formations**	**ECTS Credits : 2** **Duration: 21 hours**	**Semester : S7**

Person(s) in charge :

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Keywords : Geotechnic, Water, Collapse, Soil Résistance, rock slope stability

Prerequisites : Courses SGEOS7AC and SGEOS7AD, or equivalent coursework

Objective :

This course deals with the fundamentals of Geotechnics. This field studies the characteristics as well as the mechanical and hydromechanical behaviour of poorly consolidated land surface ("soils") used as material or weight-bearing support in construction. The main points covered in this course focus on the role of water in soil (the phenomena of settlement and swelling) and the resistance properties of soil when submitted to natural or man-made loads. The genesis of soils (and more generally, surficial geologic deposits) will also be presented.
At the end of the course, students will be able to perform simple calculations for settlement, stability and the pre-dimensioning of surface or sub-surface structures, such as cut and fill earthworks. Such calculations apply to civil engineering (public works), extractive industries (mining, petroleum, quarrying, etc.) and natural hazards (landslides).

Program and content:

• Water in geomaterials
• Surficial geologic deposits in France
• Identification and classification of soils – clay minerals and their properties - Compaction
• Settlement and swelling
• Shear resistance of soils
• Stability of slopes

Abilities :

Levels	Description and operationnal verbs
Know	Methods used to characterize the mechanical behaviour of soils
understand	The fundamental role of water in soils
Apply	the knowledge to the quantification of soil and to the analysis of rock slope stability in case of unconsolidated terranes (landslides).
Analyse	The specificities of the hydro-mechanical behaviour of soils versus fractured rock masses
Summarise	
Assess	

Évaluations :

☑ Written test	☐ Continuous control	☐ Oral report	☐ Project	☑ Written report