MG1200
Civil Engineering

Professor: Patrick Chassagnette

Language of instruction: French – **Number of hours**: 36 – **ECTS**: 3

Prerequisites: Basic knowledge in Strength of Materials and Static Mechanics

Period:	S6	Elective 01	February to March	IN16DE1, SEP6DE1
	S7	Elective 02	September to January	IN27DE2, FEP7DE2
	S8	Elective 08	February to March	IN28IE1, SEP8IE1

Course Objectives

- Introduction to Civil Engineering (geotechnics, materials, building methods), general technical culture.
- Practical use of scientific tools already known (mathematics, physics, basics in mechanics and strength of materials) to solve various problems by simplifying them enough, through practical applications.
- Acquisition of simple logical reasoning and awareness of the importance of correct appreciation of orders of magnitude.
- Consideration of uncertainties on all assumptions used for building design, and specific study of seismic protection
- Building/environment interactions. Design and sustainable development. Method selection and consequences.

On completion of the course, students should be able to

Basic knowledge of Civil Engineering activities (design, construction methods, ...).

Appreciation of orders of magnitude (calculation sheets).

Basic knowledge of Sustainability applied on Civil Engineering.

Course Contents

- General framework: Civil engineering jobs; process from the need to the building execution works through design and markets devolution phases.
- Reminders of basics of Strength of Materials.
- Elementary soil mechanics, geotechnical reconnaissance; superficial and deep foundations; improvement or reinforcement of soil.
- Metallic framework; wood framework.
- Concrete material; reinforced concrete; prestressed concrete; elementary concepts and calculations.
- Materials sustainability.
- Earlier methods and limit states method.
- Bridges, viaducts; transversal and longitudinal structures; construction processes.
- Dams: technologies; construction methods; drainage and watertightness; flood management; monitoring.
- Marine constructions (sea walls, piers, dry docks). Design. Building methods.
- Embankments, technologies, design methods, building methods, application to cofferdams.
- Frame of buildings, bracing, loads roadmap.
- High-rise buildings (towers)
- Basics of seismic protection.

Course Organization

Lectures or Tutorials according to the subject dealt with.

Teaching Material and Textbooks

Course (in French).

PowerPoint used during Tutorials.

Resources

Teachers : Engineers and experts belonging to major French companies of Civil Engineering (design, construction, ...).

Evaluation

Two steps evaluation :

1 - (40%) : Written control of Strength of Materials (paper documents and simple calculator allowed)

2 - (60%) : Oral presentation (45-60 min) of a construction study performed by groups of 4-6 students.