Module Nr.	Credits	Workload	Semester	Frequency	Duration
SE-CO-1	6 CP	180 h	3	Yearly (WS)	1 Semester

Courses	Contact time	Self-study	Group size
a) Design, engineering and technologies in Foundation Engineering b) Design, engineering and technologies in Utility Pipe Construction	a) 2 h/week b) 2 h/week	a) 60 h b) 60 h	25 Students

Foundation Engineering and Utility P

ipe Construction: Design – Engineering – Technologies

Learning outcomes

The module intends to provide students with a comprehensive understanding of the field of design, engineering and technology regarding Foundation Engineering and Utility Pipe construction. They will acquire in-depth knowledge for special areas of foundation engineering for the accomplishment of engineering tasks on areas planning, construction and operation. Foundation engineering is the field of civil engineering, which deals with the design and construction of subsurface structures which typically are built in open excavation pits. The students will learn to work on tasks from these areas and to develop an understanding of the methods. They will be enabled to independently solve the common problems of foundation engineering and utility pipe construction. Connections of this field with other areas of the building industry as interdisciplinary task are recognized and integrated into the solutions of project processing. The students acquire knowledge that is necessary for the preparation and processing of construction projects in construction management. The methods commonly used in practice shall be applied.

Content

The lecture deals with the extended basic knowledge of construction process engineering.

a) Design, engineering and technologies in Foundation Engineering

- Dewatering / Water management
- Construction pit system (Girder System, Diaphragm Wall, Bored Pile Wall, etc.)
- Caisson systems
- Grout injection techniques (low and high pressure methods, etc.)
- Injected piles
- Underpinning
- Curt and Cover method
- Conventional sealing methods (waterproofing)
- Construction of jointing
- Open trench methods in Pipeline Construction

b) Design, engineering and technologies in Utility Pipe Construction

- Technical principals of unmanned techniques – steerable
- Technical principals of unmanned techniques – non-steerable
- HDD Horizontal Directional Drilling, Direct Pipe

Teaching Methods / Language a) Lectures (2 h/week), b) practical Exercises (2 h/week) / English
Modes of assessment Module examination: 120 min
Requirements for the award of credit points Passed module examination
Module applicability (in other study programs) Master Geosciences
Weight of the mark for the final score 5 %
Module coordinator and lecturer(s) Prof. Dr. M. Thewes (coordinator), Dr.-Ing. Britta Schoesser
Other information Recommended prior knowledge: Knowledge of construction operations and construction process engineering Bachelor-level knowledge of soil mechanics