

With the subject "Water Extraction", students acquire a comprehensive understanding of the concepts and practices in the field of water extraction, from the geological and hydrological fundamentals to the legal and administrative aspects. The course contents of the individual courses are:

1. Fundamentals of hydrogeology:

Objectives: To provide basic knowledge in hydrogeology and the main components of the water balance.

Contents:

Water balance (occurrence, supply, consumption): Overview of global water resources, available quantities and human consumption.

Groundwater and aquifers: Definition and characterisation of groundwater and the geological formations that store and transport it.

Groundwater flow: Principles of the movement of groundwater through porous media and the factors that influence it.

2. Water extraction:

Objectives: To understand the different methods and techniques used for water extraction.

Contents:

Wells (design, construction, operation, regeneration): Basics of well design, construction methods, operation strategies and maintenance techniques.

Springs: Characterisation of natural water sources and their use.

Riparian filtration: processes and benefits of riparian filtration as a method of water harvesting.

Groundwater recharge: techniques and practices to increase groundwater storage.

Surface water: use of rivers, lakes and reservoirs for water catchment.

3. Water quality:

Objectives: Knowledge of the chemical and physical processes that affect water quality and methods to control and remediate them.

Contents:

Hydrogeochemical processes: Natural chemical reactions in groundwater and their effects on water quality.

Substance inputs (inorganic and organic water constituents): Sources and effects of contaminants in water.

Groundwater remediation: techniques and procedures for the removal or neutralisation of pollutants in groundwater. 4.

4. Water law and water protection:

Objectives: To provide knowledge of the legal framework for water use and extraction and protection procedures.

Contents:

Water Framework Directive, Water Resources Act, Land Water Acts, Drinking Water Ordinance: introduction to the relevant legal regulations in the field of water.

Water rights procedures: Procedures for obtaining water rights and regulating water uses.

Water protection area procedures: Processes and criteria for designating and managing water protection areas.