

Water Engineering

Teaching method: Face-to-face

Study cycle: First cycle studies

Study field group: Engineering

Study field: Environmental Engineering

Qualification awarded: Bachelor's Degree in Engineering Sciences

Study form and time: 4 Academic years

Study language: English

Description

The Aim of the Study Program "Water Engineering" is to Prepare Specialists of Broad Erudition and Highly Qualified Environmental Engineering, Who are Versed in Modern Theories, Methods and the Most Advanced Technologies of Water Engineering Science, Who Are Able to Analyse the Phenomena Occurring in Living Nature, Assess the State of the Quality of the Surrounding Environment, Holistically Solve the Problems of Sustainable use of Water Resources and Environmental Protection, Creatively Realize Innovative Technical and Technological Solutions in Various Areas of Water Resource Management.

Learning outcomes

- To Describe the Basic Theories of Nature and Mathematics, the Principles Necessary for Understanding the Fundamental Foundations of the Field of Study of Environmental Engineering.
- To Understand the Interdirectional Context of Environmental Engineering, to be Able to Apply the Methods and Processes of Other Scientific Directions in Solving the Problems of Sustainable use of Water Resources.
- To identify, formulate and holistically solve the problems of environmental engineering by selecting appropriate analytical and modelling methods, measurement and production.
- Be Able to Find the Necessary Scientific and Professional Information Using Databases and Other Sources of Information and to Properly Systematize it, Interpret it and Apply it to Solve Various Environmental Engineering Problems.
- Be Able to Design and Improve the Engineering Systems of Installations or Their Elements Intended to Improve The Quality of the Environment, to Model the Processes Occurring in them in Accordance With the Established Technical, Economic and Environmental Requirements Using Environmental Engineering Methodologies and Special Computer Programs.
- To Plan and use Modern Laboratory and Field Research Equipment to Conduct Experiments, to Process and Evaluate Their Data and to Draw Conclusions.
- Be Able to Creatively Select and Apply Appropriate Methods, Tools and Equipment for the Implementation of Environmental Engineering Solutions.
- To Understand and Assess the Current Environmental Situation, to Predict the Likelihood and Extent of Impact on the Environment, its Components and People, the Ethical, Environmental and Commercial Circumstances of Engineering Activities, the Requirements of the Sustainability Concept, to Select or Model Environmental Control and Pollution Prevention Measures.
- Holistically Understand the Impact of Environmental Engineering Decisions on Society and the Environment, adhere to the Norms of Professional Ethics and Engineering Activities, Understand Responsibility for Engineering Activities, be Able to Communicate with the Engineering Community and the General Public.
- To Understand the Importance of Individual Lifelong Learning in the Field of Environmental Engineering, to Prepare for it and to be Able to Work Effectively Independently and in a Team,

to Know the Aspects of Project Management and Business, to Understand the Relationships of Technological Solutions with their Socio-Economic Consequences and Responsibility for the Consequences of Engineering Activities, to Constantly Deepen Knowledge of Environmental Engineering, Applying Innovations in this Field in Their Activities, Taking Responsibility for Taking Care of Water Resources, Their Rational use and Protection.

STUDY PLAN

I semester	Study courses	ECTS	
	<i>General university study courses</i>		
	A and B groups courses	12	
	<i>Study courses of Environmental Engineering study field</i>		
	Basics of Environmental Engineering	4	
	<i>Study courses of other study fields</i>		
	Computer Engineering Graphics	4	
	Mathematics -1	6	
	Physics	4	
Totally in the semester		30	

II semester	Study courses	ECTS	
	<i>General university study courses</i>		
	A and B groups courses	10	
	<i>Study courses of Environmental Engineering study field</i>		
	Environmental Chemistry	5	
	<i>Study courses of other study fields</i>		
	Engineering Design	5	
	Fundamentals of Python Programming	4	
	Mathematics – 2	6	
Totally in the semester		30	

III semester	Study courses	ECTS	
	<i>General university study courses</i>		
	A and B groups courses	8	
	<i>Study courses of Environmental Engineering study field</i>		
	Hydraulics	4	
	GIS and Remote Sensing Techniques	4	
	Geomatics	4	
	<i>Study courses of other study fields</i>		
	Data Science and Artificial Intelligence	6	
Theoretical and Strength of Materials	4		
Totally in the semester		30	

IV semester	Study courses	ECTS	
	<i>General university study courses</i>		
	A group course	4	
	<i>Study courses of Environmental Engineering study field</i>		
	Hydrology and Hydrogeology	6	
	Aquatic Ecosystems	4	
	Investment Strategy and Project Management	5	
	Fieldworks for Water Engineers	8	
	<i>Study courses of other study fields</i>		
	Professional Language of Environmental Engineering Sciences	3	
Totally in the semester		30	

V semester	Study courses	ECTS	
	<i>General university study courses</i>		
	A or B group course	6	
	<i>Study courses of Environmental Engineering study field</i>		
	Drinking Water Treatment and Design of Water Supply Systems	5	
	Regulation of the Soil Moisture Regime	5	
	Water Management Structures, Materials and Safety	6	
	Research of Lakes and Fundamentals of Oceanology	4	
	<i>Study courses of other study fields</i>		
	Soil Science	4	
Totally in the semester		30	

VI semester	Study courses	ECTS	
	<i>Study courses of Environmental Engineering study field</i>		
	Sewerage and Wastewater Treatment	5	
	Environmental and Construction Law	5	
	Geotechnics in Water Management	4	
	Practice of Professional Activity	7	
	<i>Study courses of other study fields</i>		
	Sustainable Fishery and Aquaculture Biotechnology	6	
	Optimization	3	
	Totally in the semester		30

	Study courses	ECTS	
VII semester	<i>Study courses of Environmental Engineering study field</i>		
	Aquatic Ecology	4	
	Management of Water Resources and floods	6	
	Rehabilitation of Water Resources and Water Bodies	4	
	Economics of Water Engineering	6	
	Robotics, Robots, And Aircrafts in Water Engineering	4	
	<i>Elected courses (elected two courses group from 3, totally 6 ECTS)</i>		
	Climate Change and Its Impact on Water Management	3	
	Sustainable Development of Water Management	3	
	Spatial Planning	3	
	Totally in the semester		30

	Study courses	ECTS
VIII semester	<i>Study courses of Environmental Engineering study field</i>	
	Smart Water Engineering Structures and their Design	4
	Building Information Modeling	6
	Final Work of Environmental Engineering	15
	<i>Study courses of other study fields</i>	
	Internet of Things Applications	5
	Totally in the semester	
Total ECTS:		240