Description of study programme

Title of study programme	Water and land Engineering	
Code of study programme	6121EX031	
Area of studies	Engineering Sciences	
Field of studies	Environmental Engineering	
Specializations of study programme	Aquaculture Engineering,	
	Water Resources Engineering,	
	Land Use Planning	
Cycle or type of studies	First cycle	
Mode of studies and duration (in years)	Full time (4 years)	
Volume of study programme in credits	240	
Degree and (or) professional qualification to be awarded	Bachelor of Engineering Sciences	
Minimum educational background	Secondary	
Study programme languageLithuanian, English		

Annotation

The aim of the study programme "Water and Land Engineering"– to train highly qualified specialists of engineering, who are aware of modern environmental engineering science theories, methods and advanced technologies, to develop abilities to analyse phenomena occurring in living nature, to evaluate the quality of the surrounding environment, to solve the problems of sustainable land and water resources engineering, to realize innovative technical and technological solutions in various fields of cultural landscape formation, land and water management.

Bachelor of Engineering Sciences qualification in Water and Land Engineering is awarded after graduation of studies.

Learning outcomes

Knowledge and abilities

- 1. to know and understand the basics of natural sciences and mathematics required to understand the fundamentals of environmental engineering;
- 2. to know the broader multidisciplinary context of engineering, to be able to apply the methods and processes of other scientific fields in solving the problems of sustainable land use and water resources;
- 3. to know and systematically understand the basic theoretical and applied basics and concepts of environmental engineering, to be able to identify environmental phenomena, international and national environmental and sustainable development problems and their causes, to have coherently related knowledge in the field of environmental engineering;

Engineering analysis

4. to be able to apply knowledge and understanding to identify and solve environmental engineering problems by selecting appropriate analytical and modeling techniques, experimental and production equipment;

Engineering design

5. to be able to apply environmental engineering knowledge, methodologies and special computer programs in designing engineering systems or elements for improvement of environmental quality, to model their processes;

Fundamental and applied research

- 6. to be able to find relevant scientific and professional information by using databases and other sources of information;
- 7. to use modern laboratory and field research equipment to conduct experiments, process and evaluate data and report findings;

Solution of engineering tasks

- 8. to be able to choose and apply appropriate methods, tools and equipment for the implementation of environmental engineering solutions, to know the design, principles, functions and basic skills of the use of engineering equipment;
- 9. to understand the principles of organization of engineering activities, the importance and basic requirements of work and fire safety, the interaction of chains of engineering activities, be able to combine theoretical and applied knowledge in solving engineering problems;
- 10. to understand and assess the current environmental situation, predict the likelihood and magnitude of

environmental impact, its components and humans, ethical, environmental and commercial considerations of engineering, select or model environmental control and pollution prevention measures;

Social and personal abilities

- 11. to holistically understand the impact of engineering decisions on society and the environment, to adhere to the standards of professional ethics and engineering, to understand the responsibility for engineering activities, to be able to communicate with the engineering community and the general public;
- 12. to understand the importance and preparation of individual lifelong learning, be able to work effectively independently and in a team, be aware of project management and business aspects, and understand the links between technological solutions and their economic consequences.

Description of practice

In the second semester, a general practice in Geodesy is taught for all specializations, 4 credits.

The following practices are foreseen in the fourth semester: Aquaculture Engineering Specialization - Aquaculture Practical Training, 6 credits; Water resources engineering specialization - Fieldworks for Water Engineers, 6 credits; Land Use Planning Specialization - Surveying Practical Training, 5 credits. In addition to specific research, these internships also include visits to practical-production companies to get students closer to what they are doing.

In the sixth semester students do Practice of Professional Activity in the company of their choice (Aquaculture Engineering Specialization - 8 credits, Water resources engineering and Land Use Planning Specializations - 6 credits each). During the internship, the student is advised by a supervisor at the institute and a supervisor at the company. In practice, the data collected can be used as a basis for writing a thesis.

Career opportunities

Graduates will be able to work:

design - engineering work

- for water engineering: in the design, construction, maintenance and management of hydraulic structures, in water supply and sewage disposal and waste management institutions
- companies preparing land use planning and land management projects, carrying out cadastral surveys of land and buildings, land mapping, preparation of land plans, landscape architecture, land market research and real estate valuation
- public and private fisheries and aquaculture enterprises,
- environmental management, design and maintenance companies, municipal administrations, regional environmental departments;

consulting work in consulting companies, services, municipal administrations,

studies can be continued in the Master's degree programs in the field of engineering.

	Year I		
Semester	Titles of courses	Codes of courses	Credits
First	Environmental Chemistry	VZI1001	6
	Basics of Environmental Engineering	VŽVIB111	4
	Engineering Graphics	VŽHSB120	4
	Higher Mathematics	MAT1006	6
	A courses		6
	B courses		4
		Totally in semester:	30
Second	Physics	VZI1003	4
	Basics of Geodesy	VŽŽGB092	6
	Practical Training of Basics of Geodesy	VŽŽGB079	4
	Optimization Methods and Basics of Statistics	MAT1027	6
	A courses		6
	B courses		4
		Totally in semester:	30

Curriculum: study plan

Aquaculture Engineering Specialization

Year II					
Semester	Titles of courses	Codes of courses	Credits		
	Geographic Information Systems	VŽŽGB084	6		
	Computer Graphics	VŽHSB121	4		
	Hydraulics	VŽHSB019	6		
Third	Aquatic Organisms and Aquaculture Systems	VŽHSB123	6		
	A courses		4		
	B courses		4		
		Totally in semester:	30		
	Soil Science	AFADB058	4		
	Spatial Planning	VŽŽGB096	6		
	Professional Language of Engineering Sciences	VZI2002	4		
Fourth	Engineering Hydrology and Geohydrology	VŽVIB112	6		
	Aquaculture Practical Training	VŽHSB125	6		
	A courses		4		
		Totally in semester:	30		
	Year III				
Semester	Titles of courses	Codes of courses	Credits		
	Basics of Building Construction	VŽHSB126	4		
	Shellfish and Crustacean Biotechnology	VŽHSB127	4		
	Technologies for Breeding and Rearing of Warmwater		6		
	Fish	VŽHSB128	0		
Fifth	Water Treatment and Supply for Aquaculture	VŽHSB129	4		
	Fishing Technologies	VŽHSB130	4		
	A courses		4		
	B courses		4		
		Totally in semester:	30		
	Environmental and Construction Law	VŽHSB082	4		
	Aquaponics	VŽHSB131	4		
	Technologies for Breeding and Rearing of Coldwater	VŽUODIO	6		
C' (1	FISH	VZHSB132	4		
Sixth	Course Project of Aquatic Animal Breeding and Rearing	VŽUCD122	4		
	Denotion of Denfancional Activity	VZHSB133	0		
		VZHSB134	8		
	A courses	Totolla in som ostore	4		
		Totany in semester:	30		
	Year IV				
Semester	Titles of courses	Codes of courses	Credits		
	Engineering Solutions for Aquaculture	VZHSB147	4		
	Aquaculture Production Technologies	IFEBB146	6		
	Biosafety in Aquaculture	VŽHSB135	6		
Seventh	Marine Aquaculture	VŽHSB136	4		
	Aquaculture Wastewater Treatment	VŻHSB137	6		
	Feed Production and Feeding Technologies	IFEBB147	4		
		Totally in semester:	30		
	Fish Stock Assessment and Restoration	VŻHSB142	6		
Fighth	Complex Project of Aquaculture	VŽHSB143	9		
Lighti	Final Work of Environmental Engineering	VŻBDB009	15		
		Totally in semester:	30		
	Tota	lly in study programme:	240		

Water Resources Engineering Specialization

Semester Titles of courses Codes of courses Credits Geographic Information Systems VZI2001 6 Computer Graphics VZHSB121 4 Hydraulics VZHSB124 6 Third Technical Mechanics VZHSB124 6 Recurses VAHSB124 6 B courses Totally in semester: 30 Spatial Planning VZZGB096 6 Professional Language of Engineering Sciences VZI002 4 A courses VZVIB112 6 A courses VZVIB113 6 A courses VZVIB113 6 A courses VZVIB113 6 A courses VZVIB115 4 Course Project of Drainage or Irrigation VZVIB115 4 Geotechnics VZVIB115 4 4 Geotechnics VZVIB116 4 4 A courses VZVIB116 4 4 A courses VZVIB116 4 4 Basics of Deanology	Year II			
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Fifth VzVIB109 4 Basics of Oceanology and Limnology VŽVIB116 4 A courses 4 B courses 4 B courses 4 B courses 4 Environmental and Construction Law VŽHSB082 4 Engineering Structures VŽHSB135 6 Water Supply and Drinking Water Preparation VŽHSB136 4 Course Project of Water Supply and Drinking Water 4 4 Preparation System VŽHSB146 4 Preparation System VŽHSB04 4 A courses VŽHSB04 4 Precisional Activity VŽHSB04 4 A courses VŽHSB04 4 Project of Professional Activity VŽHSB04 4 Veres Year IV Year IV Semester Titles of courses Codes of courses Hydropower VŽHSB138 4 Hydropower VŽHSB139 4 Project of Hydraulic Structures VŽHSB140 4 Flood Risk Management VŽVIB117 6 Renovation of Water Bodies VŽVIB118 6 Technology and Organization of Water Engineering Construction Works VŽHSB122 6 Technolog		Course Project of Drainage or Irrigation System		4
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Water Supply and Drinking Water PreparationVZHSB1364Course Project of Water Supply and Drinking WaterVŽHSB1504Preparation SystemVŽHSB1464Practice of Professional ActivityVŽHSB1464A courses44Totally in semester: 32Year IVSemesterCodes of coursesCreditsHydropowerVŽHSB1384HydropowerVŽHSB1384Hydraulic StructuresVŽHSB1394Project of Hydraulic StructuresVŽHSB1404Offshore and Coastal StructuresVŽHSB1414Flood Risk ManagementVŽVIB1176Renovation of Water BodiesVŽVIB1186Totally in semester: 28Building Information ModelingVŽVIB1195Construction WorksVŽVIB104Project of Technology and Organization of Water Engineering Construction WorksVŽVIB1204Final Work of Environmental Engineering Construction WorksVŽBDB00915Totally in semester:303030Totally in semester: 30		Engineering Structures	VZHSB135	6
SixthCourse Project of Water Supply and Drinking Water Preparation SystemVŽHSB150SewerageVŽHSB1464Practice of Professional ActivityVŽHSB0146A courses4Totally in semester: 32SemesterCodes of coursesCreditsHydropowerVŽHSB1384HydropowerVŽHSB1384HydropowerVŽHSB1394Project of Hydraulic StructuresVŽHSB1394Project of Hydraulic StructuresVŽHSB1404Offshore and Coastal StructuresVŽHSB1414Flood Risk ManagementVŽVIB1176Renovation of Water BodiesVŽVIB1186Totally in semester:28Building Information ModelingVŽHSB1226Technology and Organization of Water Engineering Construction WorksVŽVIB1195EighthProject of Technology and Organization of Water Engineering Construction WorksVŽUB10915Final Work of Environmental Engineering Final Work of Environmental EngineeringVŽBDB00915Totally in semester:Totally in semester:240		Water Supply and Drinking Water Preparation	VZHSB136	4
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Practice of Professional ActivityVZHSB0146A courses4A coursesTotally in semester:32Year IVSemesterTitles of coursesCodes of coursesCreditsHydropowerVŽHSB1384Hydraulic StructuresVŽHSB1394Project of Hydraulic StructuresVŽHSB1404Flood Risk ManagementVŽVIB1176Renovation of Water BodiesVŽVIB1186Totally in semester:28Building Information ModelingVŽVIB1126Technology and Organization of Water Engineering Construction WorksVŽVIB104Project of Technology and Organization of Water Engineering Construction WorksVŽVIB104Final Work of Environmental Engineering Totally in semester:3030Totally in semester:303030		Sewerage	VZHSB146	4
A courses4Totally in semester:32Year IVSemesterTitles of coursesCodes of coursesCreditsSemesterHydropowerVŽHSB1384Hydraulic StructuresVŽHSB1394Project of Hydraulic StructuresVŽHSB1394Project of Hydraulic StructuresVŽHSB1404Offshore and Coastal StructuresVŽHSB1414Flood Risk ManagementVŽVIB1176Renovation of Water BodiesVŽVIB1186Totally in semester:2828Building Information ModelingVŽVIB1195Construction WorksVŽVIB1195Final Work of Environmental Engineering Engineering Construction WorksVŽBDB00915Totally in semester:30Totally in semester:30		Practice of Professional Activity	VZHSB014	6
Totally in semester:32Year IVSemesterTitles of coursesCodes of coursesCreditsHydropowerVŽHSB1384Hydraulic StructuresVŽHSB1394Project of Hydraulic StructuresVŽHSB1404Offshore and Coastal StructuresVŽHSB1414Flood Risk ManagementVŽVIB1176Renovation of Water BodiesVŽVIB1186Totally in semester:28Building Information ModelingVŽHSB1226Technology and Organization of Water Engineering Construction WorksVŽVIB1195Final Work of Environmental Engineering Final Work of Environmental EngineeringVŽBDB00915Totally in semester:30Totally in study programme:240		A courses		4
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Hydraulic StructuresVŽHSB1394Project of Hydraulic StructuresVŽHSB1404Project of Hydraulic StructuresVŽHSB1414Offshore and Coastal StructuresVŽHSB1414Flood Risk ManagementVŽVIB1176Renovation of Water BodiesVŽVIB1186Totally in semester: 28Building Information ModelingVŽHSB1226Technology and Organization of Water Engineering Construction WorksVŽVIB1195EighthProject of Technology and Organization of Water Engineering Construction WorksVŽNB1204Final Work of Environmental Engineering Totally in semester:3030Totally in study programme:		Hydropower	VŽHSB138	4
Project of Hydraulic StructuresVŽHSB1404SeventhOffshore and Coastal StructuresVŽHSB1414Flood Risk ManagementVŽVIB1176Renovation of Water BodiesVŽVIB1186Totally in semester: 28Building Information ModelingVŽHSB1226Technology and Organization of Water Engineering Construction WorksVŽVIB1195EighthProject of Technology and Organization of WaterVŽVIB1204Final Work of Environmental Engineering Final Work of Environmental EngineeringVŽBDB00915Totally in semester: 30Totally in study programme: 240		Hydraulic Structures	VŽHSB139	4
Seventh Offshore and Coastal Structures VŽHSB141 4 Flood Risk Management VŽVIB117 6 Renovation of Water Bodies VŽVIB118 6 Totally in semester: 28 Building Information Modeling VŽHSB122 6 Technology and Organization of Water Engineering Construction Works VŽVIB119 5 Eighth Project of Technology and Organization of Water VŽVIB120 4 Engineering Construction Works VŽBDB009 15 Final Work of Environmental Engineering VŽBDB009 15 Totally in semester: 30 Totally in study programme: 240		Project of Hydraulic Structures	VŽHSB140	4
Flood Risk Management VŽVIB117 6 Renovation of Water Bodies VŽVIB118 6 Totally in semester: 28 Building Information Modeling VŽHSB122 6 Technology and Organization of Water Engineering Construction Works VŽVIB119 5 Project of Technology and Organization of Water Engineering Construction Works VŽVIB120 4 Final Work of Environmental Engineering VŽBDB009 15 Totally in semester: 30	Seventh	Offshore and Coastal Structures	VŽHSB141	4
Renovation of Water Bodies VŽVIB118 6 Totally in semester: 28 Building Information Modeling VŽHSB122 6 Technology and Organization of Water Engineering Construction Works VŽHSB122 6 Project of Technology and Organization of Water Engineering Construction Works VŽVIB119 5 Final Work of Environmental Engineering VŽBDB009 15 Totally in semester: 30 Totally in study programme: 240		Flood Risk Management	VŽVIB117	6
Totally in semester: 28 Building Information Modeling VŽHSB122 6 Technology and Organization of Water Engineering Construction Works VŽVIB119 5 Project of Technology and Organization of Water Engineering Construction Works VŽVIB120 4 Final Work of Environmental Engineering VŽBDB009 15 Totally in semester: 30		Renovation of Water Bodies	VŽVIB118	6
Building Information Modeling VŽHSB122 6 Technology and Organization of Water Engineering Construction Works VŽVIB119 5 Project of Technology and Organization of Water Engineering Construction Works VŽVIB120 4 Final Work of Environmental Engineering VŽBDB009 15 Totally in semester: 30			Totally in semester:	28
Eighth Technology and Organization of Water Engineering Construction Works VŽVIB119 5 Project of Technology and Organization of Water Engineering Construction Works VŽVIB120 4 Final Work of Environmental Engineering VŽBDB009 15 Totally in semester: 30		Building Information Modeling	VŽHSB122	6
Eighth Construction Works VZVIB119 Project of Technology and Organization of Water Engineering Construction Works VŽVIB120 Final Work of Environmental Engineering VŽBDB009 Totally in semester: 30	Eighth	Technology and Organization of Water Engineering	VŽVID110	5
Eighth Project of Technology and Organization of Water Engineering Construction Works VŽVIB120 4 Final Work of Environmental Engineering VŽBDB009 15 Totally in semester: 30 Totally in study programme: 240		Construction Works	VZVIB119	
Engineering Construction Works VZVIB120 Final Work of Environmental Engineering VŽBDB009 15 Totally in semester: 30 Totally in study programme: 240		Project of Technology and Organization of Water		4
Final Work of Environmental Engineering VŽBDB009 15 Totally in semester: 30 Totally in study programme: 240		Engineering Construction Works	VZVIDI2U	
Totally in semester: 30 Totally in study programme: 240		Final Work of Environmental Engineering	VŽBDB009	15
Totally in study programme: 240			Totally in semester:	30
Totaly in Study programme. 210		То	tally in study programme:	240

Land Use Planning Specialization

Year II			
Semester	Titles of courses	Codes of courses	Credits
	Geographic Information Systems	VZI2001	6
	Computer Graphics	VŽHSB121	4
	Sustainable Territorial Development	VŽŽGB093	4
	Cartography	VŽŽGB094	4
Inira	Digital Photogrammetry	VŽŽGB095	4
	A courses		4
	B courses		4
		Totally in semester:	30
	Soil Science	AFADB058	4
	Spatial Planning	VŽŽGB096	6
	Professional Language of Engineering Sciences	VZI2002	4
Fourth	Geodetic Measurements	VŽŽGB097	7
	Practical Training of Geodetic Measurements	VŽŽGB089	5
	A courses		4
		Totally in semester:	30
Year III			
Semester	Titles of courses	Codes of courses	Credits
	Basics of Building Construction	VŽHSB126	4
	Land Reclamation and Roads Engineering	VŽVIB060	4
	Real Property Cadastre and Register	VŽŽGB098	8
Fifth	Course Project on Land and Buildings Cadastre	VŽŽGB099	4
1,11111	Basics of Land Use Planning	VŽŽGB100	4
	A courses		4
	B courses		4
	Totally in semester:		32
	Environmental and Construction Law	VŽHSB082	4
	Environmental Planning	VŽŽGB101	6
	Course Project of Environmental Planning	VŽŽGB102	4
Sixth	Landscape Management	VŽŽGB103	4
	Practice of Professional Activity	VŽŽGB026	6
	A courses		4
		Totally in semester:	28
	Year IV		
Semester	Titles of courses	Codes of courses	Credits
	Research Methods of Environmental Engineering	VŽŽGB104	6
	Engineering Geodesy	VŽŽGB085	6
Seventh	Land Law	VŽŽGB018	6
Sevenui	Land Use Planning	VŽŽGB105	8
	Project of Land Use Planning	VŽŽGB106	4
		Totally in semester:	30
	Real Property Valuation	VŽŽGB107	7
Fighth	Organization of Land Management Works	VŽŽGB108	8
Eighti	Final Work of Environmental Engineering	VŽBDB009	15
		Totally in semester:	30
Totally in study programme:		240	