



## RĪGAS TEHNISKĀ UNIVERSITĀTE

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28.03.2024 22:16

### Study programme "Environmental Engineering"

#### Main attributes

Title	Environmental Engineering
Identification code	EBI0
Education classification code	43529
Level and type	Academic Bachelor (First Cycle) Studies
Higher education study field	Environmental Protection
Head of the study field	Dagnija Blumberga
Department responsible	Faculty Of Natural Sciences And Tehnology
Head of the study programme	Jūlija Gušča
Professional classification code	–
The type of study programme	Full time
Language	Latvian, English
Accreditation	30.03.2022 - 31.03.2028; Accreditation certificate No 2022/15
Volume (credit points)	120.0
Duration of studies (years)	Full time studies - 3,0
Degree or/and qualification to be obtained	Bachelor degree of Engineering Science in Environmental Engineering
Qualification level to be obtained	The 6th level of European Qualifications Framework (EQF) and Latvian Qualifications Framework (LQF)
Programme prerequisites	General or vocational secondary education

#### Description

Abstract	The study programme focuses on the preparation of environmental specialists with extensive competence in engineering matters for work in private companies and public bodies. The cross-sectoral approach applied to the implementation of the study programme allows students to make practical use of the knowledge acquired in the theoretical part of the training to analyse and address the current problems of the undertakings/institutions in question, which allows students to integrate into the real working environment as far as possible. The implementation of the study programme focuses on the use of innovative pollution prevention technologies and their comprehensive assessment of sustainable economic development. The learning of skills and knowledge under the study programme is provided by academic and scientific staff at European level (EU experts in the fields of environmental engineering and energy, sustainable management of resources, environmental management), who are involved in the delivery of civil engineering solutions at national and European level on a daily basis.
Aim	The study programme aims to prepare high-profile and high-quality professionals with integrated academic education with systemic thinking and understanding, who are able to follow the development of environmental technologies and participate successfully in the implementation of environmental and climate technologies.
Tasks	Tasks of the study programme: <ul style="list-style-type: none"><li>• ensure continuous improvement of the quality of environmental education by training highly educated professionals for the private and public sector in the field of environmental engineering;</li><li>• developing the ability of students to carry out research on climate and environmental technologies as a basis for reviewing the regulatory framework for the environment and introducing new requirements;</li><li>• developing the capacity to adapt technologies and systems developed abroad to local conditions through pilot projects;</li><li>• developing learners' capacity to develop innovative projects aimed at sustainable resource use and reducing environmental pollution;</li><li>• promoting interaction between students and academic staff in the development of scientific works and demonstrating best practices for the practical implementation of the results obtained in environmental engineering companies, as well as publishing the results obtained;</li><li>• encourage the interest of students and graduates in higher-level study programmes, lifelong learning and academic and scientific excellence.</li></ul>
Learning outcomes	As a result of the acquisition of the study programme, the graduates (expected results): <ul style="list-style-type: none"><li>• are capable to demonstrate specialised knowledge of environmental protection systems, the nature of their elements, and the relationship between factors affecting the quality of the environment;</li><li>• are able to apply theoretical knowledge and acquired skills is capable of analytical explanation of the relationship and reasoned debate on environmental challenges and offer environmental pollution prevention solutions, integrating modern environmental and climate technologies and assessing them in the engineering, economic, environmental, climate change and social aspects;</li><li>• are able to independently acquire, select and analyse information, including scientific knowledge, on environmental and climate technologies, sustainable management of resources, energy production, energy efficiency, etc. in the fields of environmental engineering, and to use a scientific approach in decision-making, problem-solving and the development of economic projects;</li><li>• are able to organise their own professional development in environmental engineering and related interdisciplinary areas, take responsibility and initiative in the implementation of environmental projects individually or within the team.</li></ul>

Final/state examination procedure, assessment	<p>The final examination procedure is Bachelor thesis, which needs to be designed in environmental engineering field. The defense of the Bachelor thesis takes place at an open meeting of the commission of final examinations in which the student defends his or her work and answers the questions raised by the members of the Commission, the Supervisor, the reviewers and other attendees. The result of the Bachelor Thesis defense is assessed on a grades scale from 1-10.</p> <p>The Bachelor Thesis assessment consists of:</p> <ol style="list-style-type: none"> <li>1. Individual assessment of the Bachelor Thesis provided by the evaluation committee members (incl. assessment of a supervisor as a member of the committee) of the work's content, its relevance and oral presentation.</li> <li>2. The Bachelor Thesis assessment provided by a reviewer.</li> <li>3. Grade characterizing the progress of development the Thesis during the semesters.</li> </ol> <p>The thesis final rating calculation algorithm is as follows:  <math>A = 0.6 \times (\sum A_i/i) + 0.25 \times A_r + 0.15 \times A_p</math>  where  A – Bachelor Thesis's final grade;  A<sub>i</sub> – individual grade from each committee member;  i - number of committee members;  A<sub>r</sub> – reviewer's grade;  A<sub>p</sub> – grade characterizing the progress of development the Bachelor Thesis during the semesters.</p>
Description of the future employment	<p>Graduates of the study programme with acquired cross-disciplinary knowledge in the field of environmental engineering will be able to work in the fields of environmental protection, energy (thermal energy and smart energy), energy efficiency, resource management and related industries, be able to integrate and evaluate innovative environmental and climate technology companies, be able to work in public authorities on the development and implementation of environmental legislation, and participate in the development of the field of environmental engineering at municipal level. Graduates of the programme will also be able to carry out research in the environmental engineering and energy sector, as well as to develop and implement environmental engineering projects.</p>
Special enrollment requirements	The English language proficiency assessment.
Opportunity to continue studies	<p>After obtaining a bachelor's degree, students have the possibility to continue their education in academic master level study programmes (e.g. the RTU academic master's study programme “Environmental engineering”) or professional master level study programmes.</p>

**Courses**

No	Code	Name	Credit points
<b>A</b>		<b>Compulsory Study Courses</b>	<b>70.0</b>
1	<a href="#">DIM708</a>	Environmental Mathematics	11.0
2	<a href="#">DMS212</a>	Probability Theory and Mathematical Statistics	2.0
3	<a href="#">MFT703</a>	Physics	8.0
4	<a href="#">ÇTM101</a>	Environmental Engineering Chemistry and Materials Science	4.0
5	<a href="#">ICA301</a>	Civil Defence	1.0
6	<a href="#">SDD701</a>	Innovative Product Development and Entrepreneurship	4.0
7	<a href="#">EVA703</a>	Introduction to Study Field	2.0
8	<a href="#">VAS003</a>	Introduction to Environmental Research Methods and Theory	4.0
9	<a href="#">VAS005</a>	Introduction to Environmental System Dynamics Modeling	5.0
10	<a href="#">VAS027</a>	Sustainable Development	2.0
11	<a href="#">VAS037</a>	Geographic Information Systems	3.0
12	<a href="#">VAS006</a>	Introduction to Biotechnomy	6.0
13	<a href="#">VAS030</a>	Air Quality Engineering	6.0
14	<a href="#">VAS028</a>	Smart Energy Systems	6.0
15	<a href="#">VAS004</a>	Concepts and Technologies of Waste Management	6.0
<b>B</b>		<b>Compulsory Elective Study Courses</b>	<b>31.0</b>
<b>B1</b>		<b>Field-Specific Study Courses</b>	<b>24.0</b>
1	<a href="#">EVA702</a>	Thermal energy systems. Basic course	6.0
2	<a href="#">VAS007</a>	Combustion Processes	2.0
3	<a href="#">EAS501</a>	Demand Side Management	4.0
4	<a href="#">EAS714</a>	Basics of Systems Simulation	4.0
5	<a href="#">VAS032</a>	Energy Audit	4.0
6	<a href="#">VAS036</a>	Heating and Cooling Supply Systems	4.0
7	<a href="#">EAS756</a>	Practice	4.0
8	<a href="#">VAS034</a>	Raw Materials and Resources	6.0
9	<a href="#">VAS029</a>	Environmental Monitoring	4.0
10	<a href="#">VAS033</a>	Carbon Dioxide Capture, Storage and Utilisation	4.0
11	<a href="#">VAS001</a>	Metrology	4.0
12	<a href="#">EAS705</a>	Theoretical aspects of climate technologies	4.0
13	<a href="#">VAS031</a>	Air Pollution Control	4.0
14	<a href="#">BÜK316</a>	Microbiology of Engineering Systems	2.0
15	<a href="#">BÜK320</a>	Wastewater Treatment	4.0
16	<a href="#">EAS718</a>	Gas and fluid mechanics	4.0
17	<a href="#">BÜK705</a>	Hydrological Processes and Modelling	2.0
18	<a href="#">BÜK713</a>	Artificial Recharge of Groundwater	4.0
19	<a href="#">BÜK706</a>	Risk Analysis of Water Resources	4.0
20	<a href="#">BÜK704</a>	Basics in Biology	2.0
21	<a href="#">BÜK712</a>	Water Treatment Technology	6.0
<b>B2</b>		<b>Humanities and Social Sciences Study Courses</b>	<b>4.0</b>
1	<a href="#">HSP377</a>	General Sociology	2.0
2	<a href="#">HSP375</a>	Sociology of Management	2.0
3	<a href="#">HSP376</a>	Sociology of Personalities and Small Groups	2.0
4	<a href="#">HSP378</a>	Politology	2.0
5	<a href="#">HSP379</a>	Political System of Latvia	2.0
6	<a href="#">HSP380</a>	United Europe and Latvia	2.0
<b>B6</b>		<b>Languages</b>	<b>3.0</b>
1	<a href="#">HVD153</a>	The Terminology Minimum in English	3.0
2	<a href="#">HVD149</a>	The terminology minimum in German	3.0
3	<a href="#">VSL711</a>	Latvian for Foreign Students	1.0
<b>C</b>		<b>Free Elective Study Courses</b>	<b>4.0</b>
<b>E</b>		<b>Final Examination</b>	<b>15.0</b>
1	<a href="#">VAS035</a>	Bachelor Thesis	15.0