



RTU Course "Environment and Climate Roadmap"

27301 Vides aizsardzības un siltuma sistēmu katedra

General data

Code	VAS038
Course title	Environment and Climate Roadmap
Course status in the programme	Compulsory/Courses of Limited Choice
Responsible instructor	Andra Blumberga
Academic staff	Dagnija Blumberga Francesco Romagnoli Marika Roša Jūlija Gušča Anna Kubule Kārlis Valters Gatis Žogla Claudio Rochas Gatis Bažbauers Ivars Veidenbergs Jeļena Pubule Vladimirs Kirsanovs Dace Lauka Silvija Nora Kalniņš Aiga Barisa Indra Muižniece Ruta Vanaga Edgars Vīgants Girts Vīgants Āgris Kamenders Uldis Bariss Miķelis Dzikēvičs Dzintars Jaunzems Valdis Vītoliņš Ieva Pakere
Volume of the course: parts and credits points	1 part, 1.0 Credit Points, 1.5 ECTS credits
Language of instruction	LV, EN
Abstract	During the study course, students are introduced to the European Environment and Climate Roadmap for Economic Sustainability to promote resource efficiency through the transition to a clean, circular economy and to reduce climate change, loss of biodiversity and pollution. The study course analyses the role of environmental engineering among other sciences, the focus of the topic today, environmental problems, their impact on future generations and other environmental issues. Within the framework of the study course, opportunities to improve technical production systems from an environmental and sustainability perspective are analysed and evaluated. The study course is implemented as a module. The study course content includes lectures. Lectures are supplemented with practical work. One of the components of the study course is participation in a role play, within which students apply the knowledge and skills acquired in the study course.
Goals and objectives of the course in terms of competences and skills	The goal of the study course is to provide knowledge of the fundamental principles of environmental and climate policy and the objectives set by Europe for a sustainable economy, in particular transport, energy, agriculture, buildings and industry. The tasks of the study course: - to provide knowledge of the challenges of environmental protection and climate change and focus on the causes of pollution and analyse the possibilities for reducing these causes. - to create an understanding of the most pressing environmental challenges and their solutions, as well as how the student's chosen speciality and future professional activity will affect environmental pollution and climate change.
Structure and tasks of independent studies	The practical work included in the study course consists of independent work, in which the student analyses the causes, consequences and solutions of various current environmental problems, identifies environmentally friendly innovations, compares the impact of products and participates in role-play. The obtained results are presented during lectures within the study course.

Recommended literature	<p>Obligātā/Obligatory:</p> <ol style="list-style-type: none"> 1. Blumberga A., Bažbauers G., Davidsen P., Blumberga D., Grāvelsiņš A., Prodanuks T. Sistēmdinamika biotehonomikas modelēšanai. Rīga: RTU Izdevniecība, 2016, 332 lpp. ISBN 978-9934-10-801-3. 2. Blumberga, D., Barisa, A., Kubule, A., Kļaviņa, K., Lauka, D., Muižniece, I., Blumberga, A., Timma, L. Biotehonomika. Rīga: RTU Izdevniecība, 2016, 338 lpp. ISBN 978-9934-10-789-4. 3. Blumberga, D., Veidenbergs, I., Romagnoli, F., Rochas, C., Žandeckis, A. Bioenerģijas tehnoloģijas. Rīga: RTU Vides aizsardzības un siltuma sistēmu institūts, 2011. 272 lpp. ISBN 9789934819636. 4. Blumberga A. Sistēmiskas domāšanas integrēšana vides politikā. Rīga: RTU Vides aizsardzības un siltuma sistēmu institūts, 2010. 5. Blumberga, A., Blumberga, D., Kļaviņš, M., Roša, M., Valtere, S. Vides tehnoloģijas. Rīga: Latvijas Universitāte, 2010. 212 lpp. ISBN 978-9984-45-274-6. 6. Frederiksen S., Werner S. District Heating and Cooling, Studentlitteratur AB, 2013, 586 lpp. 7. D. Blumberga, I. Dzene, T. Al Sedi, D. Rucs, H. Prasls, M. Ketners, T. Finstervalders, S. Folka, R. Jansens. Biogāze. Rokasgrāmata, 2010. gads, 155 <p>Papildu/Additional:</p> <ol style="list-style-type: none"> 1. Hauschild, Michael, Rosenbaum, Ralph K., Olsen, Stig (Eds.) Life Cycle Assessment. Theory and Practice. Springer International Publishing, 2018, 1216 lpp. 2. Meadows D.H., Meadows D.L., Randers J., Behrens W. Limits to Growth, Potomac Associates – Universe Books, 1972, 205.lpp 3. Wimmer W., Züst R., Lee K. Eco-design Implementation, Springer, 2004. 4. D.H. Cole and E. Ostrom. Property in Land and Other Resources, Lincoln Institute of Land Policy, 2011. 5. Gary C. Young. Municipal Solid Waste to Energy Conversion Processes: Economic, Technical, and Renewable Comparisons, 2010. 6. M. Kļaviņš, D. Blumberga, I. Bruņiniece, A. Briede, G. Grišule, A. Andrušaitis, K. Āboloņa. Klimata mainība un globālā sasilšana. Latvijas Universitātes Akadēmiskais apgāds, 2008 7. M.Kļaviņa un Jāņa Zaļokšņa redakcijā. Klimats un ilgtspējīga attīstība Latvijas Universitātē 2016.- 379
Course prerequisites	Not necessary.
Courses acquired before	

Course contents

Content	Full- and part-time intramural studies		Part time extramural studies	
	Contact Hours	Indep. work	Contact Hours	Indep. work
Course acquisition conditions. Introduction to Environmental Engineering.	1	1	2	2
European Green Deal.	1	1	0	2
Sustainability of energy policy.	1	1	0	2
Systems-thinking. Impact of buildings on climate change.	1	1	0	2
The concept of cleaner production.	1	1	0	2
Climate technology.	1	1	0	2
Alternative energy resources.	1	1	0	2
Environmental technologies and sustainable production.	1	1	0	2
District heating today and in the future.	1	1	0	2
Eco-efficient engineering.	1	1	0	2
Ecodesign.	1	1	0	3
Bioeconomic.	1	1	0	3
Role-play.	4	4	0	4
Test.	4	4	4	4
Total:	20	20	6	34

Learning outcomes and assessment

Learning outcomes	Assessment methods
Can name the main environmental problems and their causes, has knowledge about certain methods of environmental research and management.	Types of examination: practical work, role-game, test. Criteria: the student identifies the most pressing problems, describes the ways of their research and solution.
Can define the main European environmental and climate goals.	Types of examination: practical work, role-game, test. Criteria: the student identifies the main European environmental and climate goals and describes the mechanisms for achieving them.
Can carry out a simplified environmental impact assessment of the selected product, to formulate the main environmental aspects.	Types of examination: practical work, role-game, test. Criteria: the student develops a simplified environmental assessment of a selected product.
Orients in environmental technologies and strategies to solve environmental problems.	Types of examination: practical work, role-game, test. Criteria: student demonstrates ability to define and explain basic concepts of environmental technologies.

When dealing with complex problems, aware of the connection with the environment and is able to consider the concept of sustainable development when solving problems.	Types of examination: practical work, role-game, test. Assessment criteria: the student demonstrates the ability to consider the concept of sustainable economic development in decision making.
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Evaluation criteria of study results

Criterion	%
Practical work	35
Role-game	25
Test	40
Total:	100

Course planning

Part	Semester			CP	ECTS	Hours per Week			Tests		
	Autumn	Spring	Summer			Lectures	Practical	Lab.	Test	Exam	Work
1.	*	*		1.0	1.5	0.5	0.5	0.0	*		