FACULTY OF ENGINEERING
STUDY COURSE DESCRIPTION

Course title:	**Construction Products and Eco-building Materials II**					
Course code (LAIS):	*The course will be registered in the study administration system after accreditation*					
Study programme:	**Construction of sustainable buildings**					
Level of the study programme:	☒	1st level professional higher education				
	☐	Professional Bachelor				
	☐	Professional Master				
	☐	Academic Master				
	☐	PhD level				
Type of the study programme:	☐	Mandatory course (Part A)				
	☒	Professional specialization courses (Part B, mandatory)				
	☐	Professional specialization limited elective courses (Part B, limited elective)				
	☐	Elective courses (Part C)				
Course workload:	**Credits**		**ECTS**	**Academic hours**	**Contact hours**	**Independent work hours**
	2		3	80	32	48
Lecturer:	**Dace Krutova,**					
	Lecturer, Mg.sc.ing,					
	dace.krutova@va.lv;					
	Consultations: according to the consultation schedule for each semester					
Study form:	Full time studies					
Study year, semester:	1st year, 2nd semester					
Language of tuition:	Latvian					
Prerequisites for the course: *(if any)*	Construction Products and Eco-building Materials I					
Course summary:	The course provides information of various building materials, their properties and applications and gives insight into the impact of chemical processes on different groups of building materials. The course will allow to find out the chemical properties of various building materials and construction chemicals, as well as their impact on building structures, construction technological processes, environment and health. The course covers such topics as durability and strength increase in mortars and concrete, properties of binders. Effects of chemical additives on workability and change in setting time. Possibilities of waterproof mortar and concrete production. Prevention of metal corrosion, protective paintings.					
Methods of the study course:	Lectures, laboratory demonstrations, tests, reports, independent work.					
Form of the final examination:	Examination					
Requirements for obtaining credits and criteria for learning outcome evaluation:	Requirements: • Laboratory demonstrations and tests, reports 60 %; • Examination 40 %. The examination, laboratory demonstrations, tests and reports will be evaluated using a 10-grade scale Attending lectures is preferred but not mandatory. In order to successfully complete the course, the student must meet the following requirements: 1) all tests and practicals must be successfully completed; 2) all homework must be completed and 3) the exam must be passed successfully. A student who has not successfully passed all tests and practical tasks, as well as homework, is not allowed to take the exam.					
Learning outcomes and evaluation methods:	**Learning outcomes**				**Evaluation methods of learning outcomes**	
	Knowledge					
	Students know the types of construction products and their applications.				Tests, laboratory demonstrations, examination	
	Students know the methods of examination of the conformity of the construction product				Tests, laboratory demonstrations, examination	

	performance and storage conditions.	
	Skills	
	Students know the basic properties of building materials, the range and systems of existing building materials.	Tests, laboratory demonstrations, examination
	Students will be able to compare building materials and determine which one would be the best solution for a particular task.	Tests, laboratory demonstrations, examination
	Students can analyse practical work performed, draw conclusions and present it in accordance with the requirements.	Laboratory demonstrations
	Students can understand interconnections: substance structure – material structure – material properties – material application.	Tests, laboratory demonstrations, examination
	Competence	
	Ability to use appropriate construction products in the technological processes of construction work and assess in a responsible manner construction products intended for the construction project and, if necessary, to make proposals for their replacement.	Tests, laboratory demonstrations, examination
	Ability to make records of the built-in construction products in accordance with the requirements of the regulatory enactments.	Tests, examination
	Ability to assess in a responsible manner construction products intended for the construction project and, if necessary, to make proposals for their replacement.	Tests, examination
	Ability to make records of the built-in construction products in accordance with the requirements of the regulatory enactments.	Tests, examination
Mandatory literature:	1. A.Domkins "Koks tavās mājās. Praktiski padomi.", Jumava, 2017. 2. A.Blumberga, D.Blumberga, u.c. "Ēku energoefektivitāte: vakar, šodien un rīt." Zinātniskā monogrāfija. Rīga, RTU Izdevniecība, 2017. 3. V.Bokalders., M.Bloka. "Ekoloģiskās būvniecības rokasgrāmata", Biedrība "Domas spēks", 2013. 4. L.Kops "Būvniekiem. Praktiskie padomi un skaidrojumi.",Rīga, 2008. 5. D. Bajāre. Lekciju konspekts "Būvķīmija" RTU, Materiālu un Konstrukciju institūts, Rīga, 2005. 6. D. Bajāre. Lekciju konspekts "Būvmateriāli" RTU, Materiālu un Konstrukciju institūts, Rīga, 2009. 7. P. Kara. Lekciju konspekts "Būvmateriāli, pamatkurss" RTU, Materiālu un Konstrukciju institūts, Rīga, 2012. 8. V.Bokalders., M.Bloka. "Ekoloģiskās būvniecības rokasgrāmata", Biedrība "Domas spēks", 2013. 9. L.Ozola., V.Skrupskis., A.Pavītols., u.c. "Koks būvniecībā" LLU,STILUS, 2007. 10. M. Kalniņš "Praktiskās būvaizsardzības ķīmija, fizika, tehnika" 1977. 11. L. Kops "Būvkoks" 1998. 12. Autorenkollektiv EU Kommision "Schadensatlas", Fraunhofer IRB Verlag, 1998. 13. Folienserie "Holzschutz" , CD –ROM–Version 14. Technical descriptions of products of leading Latvian and foreign construction chemistry companies. 15. Latvian Building Code, Cabinet Regulations, LVS EN and LVS ISO standards regulating the use of building materials and construction chemistry.	
Supplementary literature:	1. Michael S.Mamlouk, John P.Zaniewski Materials for Civil and Construction Engineers. Third Edition. PEARSON, 2011. 2. I.Doršs Materiālu izlietojums celtniecības un remonta darbos. LPA LiePA, 2007. 3. Švinka R., Švinka V. Silikātu materiālu ķīmija un tehnoloģija. R. 1997. 4. Kuršs V., Stinkule A. Latvijas derīgie izrakteņi. R. 1997. 5. Попов К.Н., Каддо М.Б., Кульков Д.В. Оценка качества строительных материалов. М. 1999. 6. Авлустиник А.И. Керамика. М. Стройиздат, 1985. 7. Волженский А. В., Буров Ю.С., Колоколников В.С. Минеральные вязиющие вещества. М. Стройиздат, 1983. 8. Sedmalis U., Šperberga I., Sedmale G. Latvijas minerālās izejvielas un to	

	izmantošana. R. 2002.
Date of approval of the course description:	10.02.2022
Date of updating the course description:	24.02.2023

Study course plan:

Date	Topic	Number of academic hours		Study form
		Contact hours	**Independent work hours**	
The date is specified before the course is taught	Thermal insulation materials: mineral, organic, natural and artificial. Their production process. Acoustic materials, their properties. Laboratory demonstration.	4	6	Lectures, test, independent work, laboratory demonstration
	Metal materials and products, structures, their properties. Corrosion of metals, protective painting.	2	4	Lectures, test, independent work
	Reinforced concrete, technological processes of its production, properties and application.	4	4	Lectures, test, independent work
	Wood and wood containing construction products, properties and applications. Wood constructions.	4	4	Lectures, test, independent work, report
	Roof construction materials. Roof structures.	2	4	Lectures, test, independent work, report
	Plastic products, properties. Polymer-based materials, composite materials in construction. Varnishes used in construction, paint coatings. Laboratory demonstration: testing of a construction composite, measuring of forces and deformation.	4	6	Lectures, test, independent work, laboratory demonstration
	Organic binders, properties. Asphalt concrete. Bitumen.	2	2	Lectures, test, independent work
	Constructive building materials. Large span constructions, specific facilities.	2	4	Lectures, test, independent work, report
	Dry mixes and construction chemical products, construction safety.	2	2	Lectures, test, independent work, laboratory demonstration
	Finishing materials. Eco-building materials, environmentally friendly buildings.	2	4	Lectures, test, independent work
	Making entries in the BIS Construction Log. Documents certifying conformity of construction materials and construction products.	2	2	Lectures, test, independent work
	Final examination	2	6	Examination
	Total number of hours:	***32***	***48***	