

COURSE DESCRIPTION CARD

Faculty of Civil Engineering and Environmental Sciences									
Field of study								Degree level and programme type	
Specialization / diploma path								Study profile	
Course name	Chemistry							Course code	IS-FF-00001W
								Course type	Erasmus
Forms and number of hours of tuition	L	C	LC	P	SW	FW	S	Semester	winter
	15		30					No. of ECTS credits	4
Entry requirements	-								
Course objectives	The course covers the basics of chemistry, including basic concepts of general, analytical and organic chemistry, including a particular presentation of chemical processes occurring in the natural environment. The student acquires the ability to understand and describe chemical processes occurring in nature.								
Course content	<p>Lecture: Periodic table and the structure of the atom. Types of chemical compounds and their properties. Chemical bonds. Types of chemical reactions. Elements of inorganic and organic chemistry. Elements of thermodynamics and chemical kinetics. Sorption processes. Colloidal systems. Weight and titration analysis.</p> <p>Laboratory classes: Preliminary information. Health and safety regulations. Laboratory equipment. Basics of laboratory work technique. Preparation of solutions with strictly defined concentration. Water in chemical compounds. Compounds of transition metals. Chemical reactions in aqueous electrolyte solutions - acid, base and salt reactions. Chemical reactions in aqueous electrolyte solutions - examination of selected properties of cations and anions and their qualitative analysis. Equilibrium in electrolyte solutions. pH of aqueous electrolyte solutions. Buffer solutions. Chemical properties of metals. Chemical and electrochemical corrosion of metals. The rate of chemical reactions. Titration (volumetric) analysis. Hydrocarbons - characteristics and characteristic reactions. Alcohols and phenols - characteristics and characteristic reactions. Aldehydes and ketones - characteristics and characteristic reactions. Carboxylic acids, esters, amines and amides - characteristic properties and reactions.</p>								
Teaching methods	Information and problem lecture with multimedia presentation, laboratory classes - performing tasks and chemical analyzes individually and in a group.								
Assessment method	Lecture - written exam, Laboratory classes - passing reports on individual laboratory exercises and passing the test.								
Symbol of learning outcome	Learning outcomes							Reference to the learning outcomes for the field of study	
LO1	Student has advanced knowledge in mathematics, physics, chemistry and related sciences necessary to understand phenomena occurring in the forest environment.							L1P_W01	

L02	Student demonstrates knowledge of basic techniques and research tools used in forestry, knows the principles of occupational health and safety and ergonomics in the use of technical equipment.	L1P_W10
L03	Student has the ability to search, analyze and use the necessary information in the field of forest science.	L1P_U01
L04	Student has the ability to independently interpret the obtained empirical data and draw conclusions.	L1P_U05
L05	Student uses experimental, mathematical, statistical and IT methods to describe and analyze phenomena occurring in forests.	L1P_U05
L06	Student is able to work in a team and manage it, understands cultural and human diversity, is able to resolve disputes, shapes social attitudes, is aware of social, ethical and professional responsibility.	L1P_K01
Symbol of learning outcome	Methods of assessing the learning outcomes	Type of tuition during which the outcome is assessed
L01	Written exam	L
L02	Written exam, colloquium	L, LC
L03	Colloquium, evaluation of reports	LC
L04	Colloquium, evaluation of reports	LC
L05	Report assessment	LC
L06	Assessment of reports, observation during laboratory classes.	LC
Student workload (in hours)		No. of hours
Calculation	participation in lectures	15
	participation in the laboratory	30
	consultations	5
	preparation for the laboratory and reports	14
	preparation for the written exam	5
	preparation for the colloquium	5
	Total:	72
Quantitative indicators		Hours
Student workload – activities that require direct teacher participation		50
Student workload – practical activities		22
		No. of ECTS credits
Student workload – activities that require direct teacher participation		2,1
Student workload – practical activities		0,9
Basic references	Bruce Averill General Chemistry: Principles, Patterns, and Applications. Saylor Foundation, ISBN 13: 9781453322307, 2011	
Supplementary references	Jarosław Chojnacki Anna Dołęga; Bogusław Dręczewski. Selected topics in general and inorganic chemistry : (a textbook for chemistry 3.E12), ISBN: 978-83-7348-458-0, 2001 Mariola Saturnus Agnieszka Fornalczyk. Chemistry for every student, ISBN: 978-83-7880-142-9, 2013	
Organisational unit conducting the course	Faculty of Civil Engineering and Environmental Sciences	Date of issuing the programme
Author of the programme	Ewa Zapora, PhD	29.02.2020

L – lecture, C – classes, LC – laboratory classes, P – project, SW – specialization workshop, FW - field work, S – seminar