

## COURSE DESCRIPTION CARD

Faculty of Civil Engineering and Environmental Sciences										
Field of study								Degree level and programme type		
Specialization/ diploma path								Study profile	Academic profile	
Course name	Molecular biology							Course code	IS-FCEE-00203S	
								Course type	Erasmus	
Forms and number of hours of tuition	L	C	LC	P	SW	FW	S	Semester	summer	
	15		30					No. of ECTS credits	4	
Entry requirements	Basics of biotechnology, Chemistry, Cell biology, Biochemistry									
Course objectives	Knowledge of the structure and functioning of prokaryotic and eukaryotic genomes and methods of genomic analysis. Knowledge of replication and repair of DNA, transcription and translation, regulation of gene expression and factors affecting gene expression in preparation for scientific research.									
Course content	<p><b>Lecture:</b> Classification and structure of cells. Structure of genes, chromosomes and genomes. The processes of DNA replication, repair and recombination. Expression of genetic information. Transcription and translation. Protein synthesis. Functional genomics and new technologies.</p> <p><b>Laboratory classes:</b> Principles of safety in the laboratory of molecular biology. Isolation of plasmid DNA from bacteria by alkaline lysis method. Isolation of genomic DNA from bacteria. Isolation of RNA from bacteria. Isolation of genomic DNA from plants by the method using CTAB buffer. Quantitative and qualitative analysis of nucleic acids. PCR reaction. Analysis of PCR reaction products.</p>									
Teaching methods	Lecture - multimedia presentation (lectures with the use of Power Point presentation). Laboratory - laboratory classes for individual students or in small groups and preparation of reports.									
Assessment method	Lectures - written credit, Laboratory - assessment of reports, tests of preparation for exercises									
Symbol of learning outcome	Learning outcomes							Reference to the learning outcomes for the field of study		
LO1	Knows in an advanced degree the issues of molecular biology									
LO2	Knows the issues related to the current state and the latest development trends in molecular biology in the country and in the world.									
LO3	Is able to obtain information from literature, databases and									

	other sources; is able to integrate information obtained, interpret it, draw conclusions and formulate and justify opinions.		
<b>L04</b>	Is able to plan and conduct experiments in molecular biology, select methods and measuring devices, interpret the obtained results and draw correct conclusions.		
<b>L05</b>	Can apply basic analytical techniques in molecular biology.		
<b>Symbol of learning outcome</b>	<b>Methods of assessing the learning outcomes</b>	<b>Type of tuition during which the outcome is assessed</b>	
<b>L01</b>	Colloquium from lectures Colloquium from laboratory Drawing up reports on laboratory exercises	L, LC	
<b>L02</b>	Colloquium from lectures Colloquium from laboratory Drawing up reports on laboratory exercises	L, LC	
<b>L03</b>	Colloquium from lectures Colloquium from laboratory Drawing up reports on laboratory exercises	L, LC	
<b>L04</b>	Colloquium from lectures Colloquium from laboratory Drawing up reports on laboratory exercises	L, LC	
<b>L05</b>	Colloquium from lectures Colloquium from laboratory Drawing up reports on laboratory exercises	L, LC	
<b>Student workload (in hours)</b>		<b>No. of hours</b>	
<b>Calculation</b>	Participation in lectures	15	
	Participation in the laboratory	30	
	Preparation for laboratory exercises	10	
	Preparation of laboratory reports	15	
	Participation in consultations related to exercises and preparation for passing the exercises	15	
	Preparation for and attendance at the examination	15	
	<b>TOTAL:</b>	<b>100</b>	
<b>Quantitative indicators</b>		<b>HOURS</b>	<b>No. of ECTS credits</b>
<b>Student workload – activities that require direct teacher participation</b>		52	2,0
<b>Student workload – practical activities</b>		70	2,5
<b>Basic references</b>	Alberts B., Johnson A., Lewis J., Raff M., Roberts K, Walter P.(2002). Molecular Biology of Cell. 4 <sup>th</sup> edition, New York: Garland Science; Brown T.A. Genomes. Oxford: Wiley-Liss		
<b>Supplementary</b>	Twyman R.M. (1998). Advanced Molecular Biology. BIOS Scientific Publishers, Oxford		

<b>references</b>		
<b>Organisational unit conducting the course</b>	<b>Department of Chemistry, Biology and Biotechnology</b>	<b>Date of issuing the programme</b>
<b>Author of the programme</b>	<b>dr Urszula Wydro</b>	<b>27.02.2020</b>

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