COURSE DESCRIPTION CARD

<table>
<tr><td colspan="11">Faculty of Civil Engineering and Environmental Sciences</td></tr>
<tr><td>Field of study</td><td colspan="6"></td><td colspan="2">Degree level and programme type</td><td colspan="2"></td></tr>
<tr><td>Specialization/ diploma path</td><td colspan="6"></td><td colspan="2">Study profile</td><td colspan="2">Academic profile</td></tr>
<tr><td rowspan="2">Course name</td><td colspan="6" rowspan="2">Human cell and tissue culture</td><td colspan="2">Course code</td><td colspan="2">IS-FCEE-00122W</td></tr>
<tr><td colspan="2">Course type</td><td colspan="2">Erasmus</td></tr>
<tr><td rowspan="2">Forms and number of hours of tuition</td><td>L</td><td>C</td><td>LC</td><td>P</td><td>SW</td><td>FW</td><td>S</td><td colspan="2">Semester</td><td colspan="2">winter</td></tr>
<tr><td>15</td><td></td><td>30</td><td></td><td></td><td></td><td></td><td colspan="2">No. of ECTS credits</td><td colspan="2">4</td></tr>
<tr><td>Entry requirements</td><td colspan="10">Biochemistry, Cell biology</td></tr>
<tr><td>Course objectives</td><td colspan="10">Basic equipment in cell culture laboratory. Biosafety levels in cell culture laboratory. Aseptic techniques and types of biological contamination. Characteristic of the cell culture environment with special regards to media, pH, CO2 and temperature. Basic chemical reagents used for cell culture: media and additives to the media. Basic methods in cultured cells maintaining: subculturing adherent and suspension cells, freezing and thawing cells and counting cells in hemocytometer. Selecting an appropriate cell line. Morphological types of cell lines. Cultures and cell line types (primary cultures of cells, the culture of suspension cells, the cell lines, pure cell lines, clonal cell lines, mixed cultures, the culture cells in suspension).</td></tr>
<tr><td>Course content</td><td colspan="10">1.Health and Safety Rules. Introduction to the organization of cell and tissue culture laboratory.
Preparation of the materials and solutions for cell culture. Sterilization. Workplace preparation. Media change in the adherent culture.
2.Subculturing of the MCF-7/fibroblast adherent and MOLT-4 suspension culture.
3.Various methods for cell counting and basic principles for preparing MCF-7 and fibroblasts adherent cells for the experiment.
4.Freezing and thawing of adherent and suspension cells. The creation of cell banks.
5.Various methods in estimation of cells viability. Cytotoxicity tests as a basic tests in preclinical studies.</td></tr>
<tr><td>Teaching methods</td><td colspan="10">Lecture, laboratory classes</td></tr>
<tr><td>Assessment method</td><td colspan="10">Lecture - written exam, laboratory - colloquia, laboratory tests</td></tr>
<tr><td>Symbol of learning outcome</td><td colspan="8">Learning outcomes</td><td colspan="2">Reference to the learning outcomes for the field of study</td></tr>
<tr><td>LO1</td><td colspan="8">Student understands hygiene and safety rules during work</td><td colspan="2">BT1_W02</td></tr>
</table>

	with human cell lines	
LO2	**Student learned the basic cell culture techniques.**	**BT1_W04**
LO3	**Student has the ability to work with an inverted light microscope.**	**BT1_W06**
LO4	**Student knows the use of cells and tissues research methods in modern biology and biotechnology.**	**BT1_U04**
LO5	**Student can carried out simple research experiments and analyses under the supervisor guidance.**	**BT1_U06**
LO6	**Student is able to conduct a proper reasoning according to scientific data.**	**BT1_U07**
Symbol of learning outcome	**Methods of assessing the learning outcomes**	**Type of tuition during which the outcome is assessed**
LO1	Written exam, colloquium	**L, LC**
LO2	Written exam	**L**
LO3	Written exam	**L**
LO4	Written exam, colloquium	**L, LC**
LO5	Colloquium	**LC**
LO6	Written exam	**L**
Student workload (in hours)		**No. of hours**
Calculation	Participation in lectures	**15**
	Participation in laboratory classes	**30**
	Preparation for the written exam in lectures	**30**
	Preparation for laboratory tests	**20**
	Preparation for and attendance at the examination	**20**
	Participation in consultations	**5**
	TOTAL:	**120**
Quantitative indicators	**HOURS**	**No. of ECTS credits**
Student workload – activities that require direct teacher participation	**52**	**2**
Student workload – practical activities	**105**	**4**
Basic references	**1. R. Ian Freshney, Culture of Animal Cells: A Manual of Basic Technique and Specialized Applications, Sixth Edition, 2010 John Wiley & Sons, Inc.** **2. Mather, Jennie P., Roberts, Penelope E., Introduction to Cell and Tissue Culture, Springer US 1998**	
Supplementary references	**1. Cheryl D. Helgason, Cindy L. Miller. Basic cell culture protocols. Methods in Molecular Biology. Humana Press Totowa, New Jersey 2005.**	
Organisational unit conducting the course	**Department of Chemistry, Biology and Biotechnology**	**Date of issuing the programme**
Author of the programme	**Dr Agata Jabłońska-Trypuć**	**05.03.2021**

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