

COURSE DESCRIPTION (SYLLABUS)

1.	Course: Cell Culture Techniques
2.	Language of instruction: English
3.	Faculty: Faculty of Biotechnology
4.	Course/module code: 29-BT-S1-E6-EnCCTc
5.	Course/module type (<i>mandatory or elective</i>): mandatory
6.	Programme: Biotechnology
7.	Study cycle (<i>1st/2nd</i>): 1st cycle
8.	Year: 3rd
9.	Semester (<i>autumn or spring</i>): spring
10.	Form of tuition and number of hours: Laboratory: 30 h
11.	Coordinator(s): Aleksandra Simiczjew, PhD
12.	Initial requirements (<i>knowledge, skills, social competences</i>): Basic knowledge of biology and biochemistry at the level of first year undergraduate studies.
13.	Objectives: Students are going to gain basic knowledge about culturing animal cells. They will get elementary skills how to culture animal cells derived from normal tissues and cancer cell lines. General ken concerning fluorescence/confocal microscopy and its applications will be passed to the students. Students are also going to gain knowledge about quantitative methods used in the study of animal cells on the example of the assessment of the cell viability and cell cycle distribution under drug treatment.
14.	Content: Attending the module will give the students an opportunity to get familiar with speciality of working in the laboratory where animal cells are cultured. During the practical course students will learn how to isolate primary cells from chicken embryos

	<p>and how to culture primary cells and tumour cell lines, how to examine cell viability, how to count cells and passage them. Students will gain also skills how to prepare slides with fixed and stained cells and how to analyse cells morphology and distribution of selected actin cytoskeleton proteins within a cell with the help of inverted light microscope and confocal microscope, respectively. Some quantitative analysis like estimating cell viability and cell cycle distribution in tested cells are also done.</p>	
15.	<p>Learning outcomes:</p> <p>Knowledge:</p> <ul style="list-style-type: none"> • Student has knowledge about basic techniques and research tools used in biochemistry, molecular biology and cell biology. • Student knows the basic principles of safety rules and occupational health and ergonomics in the laboratory; student knows the rules of work in cell culture laboratory. <p>Skills:</p> <ul style="list-style-type: none"> • Student applies basic physicochemical and biochemical techniques necessary for studying biological processes (including processes taking place in cultured cells). • Student has the skills in culturing cells of higher organisms • Student carries out simple experiments under the guidance of a tutor in the field of animal cell biology, describes the results and present them to the tutor and other students. • Student uses appropriate scientific terminology in discussions with cell biology specialists. • Student knows how to work as a part of team, work together to solve problems and perform scientific experiments. <p>Social competence:</p> <ul style="list-style-type: none"> • Student understand the need for continuing education throughout the whole life, including broadening knowledge in cell biology. • Student understands the need for accurate planning of tasks and scientific experiments. 	<p>Outcome symbols:</p> <p>K1_W08</p> <p>K1_W10</p> <p>K1_U01</p> <p>K1_U02</p> <p>K1_U05</p> <p>K1_U09</p> <p>K1_U013</p> <p>K1_K01</p> <p>K1_K03</p>
16.	<p>Recommended literature:</p> <ul style="list-style-type: none"> • <i>Culture of Animal cells - a manual of basic techniques and specialized applications</i>, R.I. Freshney, Willey-Blackwell, 7th edition, 2016. 	

17.	Methods of verification of the assumed learning outcomes:	
	<ul style="list-style-type: none"> • written test 	
18.	Conditions of earning credits:	
	<ul style="list-style-type: none"> • active participation in laboratory classes • passing the written test 	
19.	Student's workload:	
	Activity	Number of hours for the activity
	Hours of instruction (as stipulated in study programme):	
	<ul style="list-style-type: none"> • Lab.: 30 h 	30 h
	Student's own work:	
	<ul style="list-style-type: none"> • preparation before classes: 5 h • preparation for the test and final exam: 10 h 	15 h
	Total number of hours:	45 h
	Number of ECTS:	2 ECTS