

NAME OF THE COURSE		Animal Cell Culture				
Code	PMB728	Year of study	1			
Course teacher	Željana Fredotović, PhD Assistant Professor Matilda Šprung, PhD, Assistant Professor	Credits (ECTS)	3,0			
Associate teachers		Type of instruction (number of hours)	L	S	E	F
			15		30	
Status of the course	elective	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	Students will gain experience working in sterile cell culture conditions. Students will be able to independently take care of cell culture, know how to freeze and defrost cells, seed, passage and count them. They will be able to create their own experiment on different cell lines. They will understand the safety procedures need for cell culture and will be able to recognize potential contamination in cell culture.					
Course enrolment requirements and entry competences required for the course	None.					
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<p>Students will be able to:</p> <ul style="list-style-type: none"> • Describe the animal cell culture • Use theoretical and practical knowledge of culturing and sub-culturing established cell lines • Perform basic techniques in animal cell culture • Recognize a potential contamination in cell culture • Create the experiment on different cell lines 					
Course content broken down in detail by weekly class schedule (syllabus)	<p>Lectures:</p> <ol style="list-style-type: none"> 1) Introduction to cell biology and cell cultures 2) Cell culture methods 3) The importance of and the progress in animal cell culture technology 4) Cell signalling 5) Cell membranes and transport 6) Basic techniques in animal cell cultures (culture aseptic work in the BSC, cell culture passaging and counting) 7) Methods of animal cell transfection 8) Cytotoxicity and viability assays <p>Laboratory exercises:</p> <ol style="list-style-type: none"> 1) Introduction (Lab safety, hands washing, cleaning the biosafety cabinet, preparation of liquids, working with inverted microscope) 2) Cell culture cultivation (passaging by split ratio) 3) Suspend cells and prepare replicants for each treatment 4) Incubate replicate cells suspensions with different concentrations of ethanol (0%, 25% and 50%) at 37°C for 30 minutes <ul style="list-style-type: none"> - Count cells using trypan blue method, data analysis and graph construction - Count cells using flow cytometer 					

	<p>5) Cytotoxicity assay: Incubate cells with different concentration of extracts or chemical compounds - Data analysis and graph construction</p> <p>6) Analysis of GFP fluorescent protein expressing cells using epifluorescence microscope and flow cytometer</p>					
Format of instruction	<input checked="" type="checkbox"/> lectures <input type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work			<input type="checkbox"/> independent assignments <input checked="" type="checkbox"/> multimedia <input checked="" type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)		
Student responsibilities	Students presence in the amount of at least 70% of scheduled lectures. Performed all laboratory exercises.					
Screening student work (<i>name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course</i>)	Class attendance	0,5	Research		Practical training	
	Experimental work	0,5	Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests		Oral exam		(Other)	
	Written exam	2	Project		(Other)	
Grading and evaluating student work in class and at the final exam	Grading will be conducted based on activities in class, practical exercises in the laboratory, and final written exam.					
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media	
	Davis, J. 2011. Animal cell culture : essential methods. Publisher: John Wiley & Sons, Ltd					
Optional literature (at the time of submission of study programme proposal)	- Butler, M. 2004. Animal Cell Culture and Technology (The basics (Garland Science)) Publisher: Taylor & Francis. - Masters J.R.W. 2000. Animal Cell Culture, A Practical Approach. Third Edition, Oxford University Press					
Quality assurance methods that ensure the acquisition of exit competences	Students' evaluation via anonymous questionnaires at the end of the course. The survey is conducted according to the rules of the University of Split.					
Other (as the proposer wishes to add)						