

NAME OF THE COURSE		Model organisms and research methods in biology				
Code	PMB529	Year of study	1.			
Course teacher	Ivica Šamanić, PhD, Assistant professor	Credits (ECTS)	5			
	Antonela Paladin, PhD, Assistant professor					
Associate teachers	Sanja Puljas, PhD, Assistant professor	Type of instruction (number of hours)	L	S	E	F
			30	15	30	
Status of the course	Elective	Percentage of application of e-learning				
COURSE DESCRIPTION						
Course objectives	Introduce students to model organisms and learn the basic principles of working with model organisms, reasons for using model organisms, legislation, instrumental methods, most of which will be applied when working in lab during further study.					
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>By the end of this course students will be able to:</p> <ul style="list-style-type: none"> - Select an appropriate model organism in a particular biological study. - Get acquainted with the legal framework for the use and keeping of experimental animals. - Understand ethics in working with laboratory animals. - Understand the biology of individual model organisms. - Argue alternative approaches to the use of laboratory animals. - Perform field collection of model organisms. - Understand legal acts related to obtaining sampling permits model organisms. - Develop a laboratory diary and field sampling form. - Use various devices, measuring instruments and optical aids in methods research in biology in designing and performing routine analyzes, experiments, research and project. - Describe, connect and critically analyze the basic principles of work most often instrumental methods used. 					
Course content broken down in detail by weekly class schedule (syllabus)	<p>Lectures:</p> <ul style="list-style-type: none"> - Fundamentals of instrumental methods in biology: microscopy, centrifugation, pH measurement. - Features of model organisms in biology. - Significant discoveries on some model organisms: Escherichia coli, Dictyostelium, Saccharomyces cerevisiae, Chaenorhabditis elegans, Drosophila melanogaster, Danio rerio, Mus musculus, Arabidopsis thaliana, Daphnia spp., Mytilus galloprovincialis. - Extrapolation of knowledge to other organisms. - Introduction to laboratory animal science. - Comparative biology. - Biology and management of laboratory animals. - Protection of laboratory animals: ethical aspects and legislation. 					

	<ul style="list-style-type: none"> - Handling of laboratory animals: health hazards, safe behavior and procedures in animal housing, welfare of laboratory animals, alternative approaches. - Plant and animal cell culture: basic medium composition and cell culture conditions. - Bioassays: definition of laboratory toxicity tests, review and method of performance biotests, division of biotests by organisms, division of biotests by mechanism toxic effect. - Field collection of model organisms. - Obtaining permits for field collection of model organisms. - Production of laboratory diaries and field forms. - Laboratory professional practice. 					
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 type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			
Student responsibilities						
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		Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests		Oral exam		(Other)	
	Written exam	0,5	Project	1	(Other)	
Grading and evaluating student work in class and at the final exam	The written part and presentation of the seminar paper and the written exam are evaluated.					
Required literature (available in the library and via other media)	Title				Number of copies in the library	Availability via other media
	Metode u molekularnoj biologiji, 2007. Andreja Abramovič Ristov (ur). Institut Ruđer Bošković.				3	
	Metodologija uzorkovanja, laboratorijskih analiza i određivanja omjera ekološke kakvoće bioloških elemenata kakvoće, Hrvatske vode, ožujak 2016.					web
	Guide for the Care and Use of Laboratory Animals. National Research Council (US); Committee for the Update of the Guide for the Care and Use of Laboratory Animals. Washington (DC): National Academies Press (US); 2011.					web
	Robert L. Jarret_ Kevin McCluskey - The Biological Resources of Model Organisms-CRC Press (2020)				1	
Optional literature (at the time of submission of study programme proposal)	Relevant scientific articles					

Quality assurance methods that ensure the acquisition of exit competences	
Other (as the proposer wishes to add)	