

Study program: Integrated academic studies in medicine			
Type and level of the study program: integrated academic studies			
Course title: Experimental animals and experimental pharmacology in medical research (DII-EXAN)			
Teacher: Isidora N. Samojlik, Momir M. Mikov, Aleksandar L. Rašković, Saša N. Vukmirović, Boris T. Milijašević, Nebojša P. Stilinović, Ivan Đ. Čapo			
Course status: elective (compulsory before writing a student/graduation paper using experimental animals)			
ECTS Credits: 3			
Condition: -			
Course aim To familiarize students with the means, opportunities and working conditions when working with experimental animals in biomedical research.			
Expected outcome of the course: The students will get acquainted with conditions and possibilities of working with experimental animals and particular experimental models of importance for in vivo biomedical research. The students will get informed on legal regulations pertaining to protection of welfare of experimental animals, animal models and species used in particular investigations, the housing and care of experimental animals, application of investigated substances, monitoring the effects of applied substances, euthanasia and safe disposal of residual/waist material. The students will be trained for experimental work with laboratory animals (handling, administration of substances, sampling of biomaterial, anesthesia, monitoring of stress and pain parameters...) as well as for creating relevant documentation aimed to obtain necessary approvals for experimental work with laboratory animals			
Course description <i>Theoretical education:</i> Legislation and welfare of experimental animals in biomedical research. The principles of ethics of working with experimental animals. The rule of "3-R's" and "five freedoms" in working with experimental animals. Categories of invasiveness in animal experiments. Alternative methods for in vivo experiments. Laboratory (experimental) animals - classification and nomenclature, types. Maintenance of experimental animals - accommodation, food and drinking water, hygiene, monitoring health status (stress and pain). Animal models - the model definition, requirements, selection. Basic rules of handling experimental animals - keeping, labeling, application of experimental substances, sampling material for analysis. Experimental models in non-anesthetized animals. Experimental models in anesthetized animals. Euthanasia and risks when working with experimental animals. <i>Practical education: exercises, other forms of education, research related activities:</i> Requests to the Ethics Committees for permission to work with experimental animals, in accordance with law. Practical introduction to the way of maintenance of experimental animals. Practical mastering the skills of handling experimental animals - keeping, labeling, application of experimental substances, sampling material for analysis. Development of an experimental model in accordance with the request to the Ethics Committee (research plan that includes work on experimental animals). Practical mastering of handling animal products (samples, bodies of euthanized animals) , substances and equipment used in the planned experiment.			
Literature <i>Compulsory</i> 1. Animal Welfare Act, Official Gazette of RS, No. 41/09 2. The regulations on conditions for entry into registry of animal experiments, Official Gazette of RS, No. 39/10. 3. Chow P, Ng R, Ogdan B. Using animal models in biomedical research. World Scientific Publishing Co. Pte. Ltd., Singapore 2007. 4. Wahlsten D. Mouse Behavioral Testing. Academic Press, Elsevier, London NW1 7BY, UK, 2011. 5. Hau J, Van Hoosier GL. Handbook Of Laboratory Animal Science, Vol I &II, CRC Press, Boca Raton, Florida 33431, 2003. <i>Additional</i> 1. Kaliste E. The Welfare of Laboratory Animals. Springer, Dordrecht, The Netherlands, 2007.			
Number of active classes			Other:
Lectures: 30	Practice: 15	Other types of teaching:	
			Research related activities:
Teaching methods Theoretical and practical			
Student activity assessment (maximally 100 points)			
Pre-exam activities	points	Final exam	points
Lectures	20	Written	40
Practices	20	Oral	
Colloquium		
Essay	20		