

RESEARCH METHODS IN THE PHYSIOLOGY OF MICROCIRCULATION	
GENERAL INFORMATION	
Course coordinator	Professor Ines Drenjančević, MD, PhD
Assistant/Associate	Assoc. Prof. Ana Stupin, MD, PhD Asst. Prof. Ivana Jukić, MD, PhD Asst. Prof. Zrinka Mihaljević, PhD
Study Programme	Integrated undergraduate and graduate university study of Medicine
Status of the course	Elective
Year of study, semester	6th year, 11th semester
ECTS	2
Workload (hours)	Lectures (5); Seminars (20)
Expected number of students	25
COURSE DESCRIPTION	
Course objectives	
Introduce students to research methods in circulatory physiology with the aim of an experimental approach in animal models. Demonstrate work with experimental animals and state-of-the-art methods for isolated blood vessels. Present and critically evaluate the plan and design of studies in the field of microcirculation.	
Enrolment requirements and entry competencies	
Passed exams from last years, passed physiology exam	
Learning outcomes at the Programme level	
1.1., 2.1, 3.5, 4.2	
Learning outcomes (5-10)	
<ol style="list-style-type: none"> 1. Present and classify the structural and functional properties of microcirculation in relation to tissue flow control mechanisms. 2. Critically evaluate the different methods used in the study of microcirculation in animal models 3. Compare different animal models. 4. Design a protocol for research in microcirculation. 5. Evaluate scientific literature in the field of microcirculation 	
Course content	
Lectures Microcirculation, structure and function. Acute and chronic mechanisms of tissue flow regulation. Seminars: Research methods in microcirculation. Problem approach and study design. Preparation and anesthesia of laboratory animals.. Preparation of solutions and experimental solution. Isolated cannulated compressed veins. Hyperbaric chamber. Western blot.	
Mode of teaching	
Lectures; Seminars	
Student obligations	
Attendance at all forms of classes is mandatory, and the student must access all knowledge tests. A student may justifiably miss 30% of each form of instruction. Unfinished exercise must be colloquial.	
Monitoring student work (alignment of learning outcomes, teaching methods and grading)	

Teaching activity	ECTS	Learning outcome	Student activity	Assessment methods	Grade points	
					Min.	Max.
Class attendance	0,5	1-5	Class attendance	Attendance list	5	20
Seminars	0,5	1-5	Attendance and active participation	Presentation od seminar work	15	30
Final exam	1,0	1-5	Literature search and preparation	Assay writing	30	50
Total	2				50	100

Calculation of final grade:

To students who achieved 30 or more points in the final exam points earned during the course are added.

Since the study program schedule descriptive assessment of elective courses, the course leader awards the grade "passed" to a student who achieves 50 or more grade points in the course.

Required reading (available in the library and through other media)

Title	Number of copies in the library	Availability through other media
1. Guyton i Hall, Medicinska fiziologija, Medicinska naklada, 13.izdanje, 2017.	10	

Additional reading

1. Drenjancevic-Peric I, Phillips SA, Falck JR, Lombard JH. Restoration of normal vascular relaxation mechanisms in cerebral arteries by chromosomal substitution in consomic SS.13BN rats. *Am J Physiol Heart Circ Physiol.* 2005 Jul;289(1):H188-95.
2. Drenjancevic-Peric I, Greene AS, Kunert MP, Lombard JH. Arteriolar responses to vasodilator stimuli and elevated P(O₂) in renin congenic and Dahl salt-sensitive rats. *Microcirculation.* 2004 Dec;11(8):669-77.
3. Mihaljević Z, Matić A, Stupin A, Frkanec R, Tavčar B, Kelava V, Tartaro Bujak I, Kolobarić N, Kibel A, Drenjančević I. [Int Arachidonic Acid Metabolites of CYP450 Enzymes and HIF-1alpha Modulate Endothelium-Dependent Vasorelaxation in Sprague-Dawley Rats under Acute and Intermittent Hyperbaric Oxygenation.](#) *J Mol Sci.* 2020 Sep 1;21(17):6353. doi: 10.3390/ijms21176353.

Course evaluation procedures

Anonymous, quantitative, standardized student survey on the subject and work of teachers conducted by the Office for Quality of the Medical Faculty Osijek.

Note /Other

E-learning is not included in the norm of subject hours, but it is used in teaching and contains links to various pages, video and audio materials available on the website.