

UČNI NAČRT PREDMETA / COURSE SYLLABUS								
Ime predmeta:		Eksperimentalna kirurgija						
Course title:		Experimental Surgery						
Študijski program in stopnja Study programme and cycle		Študijska smer Study option		Letnik Year of study		Semester Semester		
Biomedicinska tehnologija/3. stopnja				2		3 ali 4		
Biomedical Technology/3rd Degree								
Vrsta predmeta (obvezni ali izbirni) / Course type (compulsory or elective)				Izbirni				
				Elective				
Univerzitetna koda predmeta / University course code:								
Predavanja Lectures	Seminar Seminar	Vaje Tutorial			Klinične vaje Clinical training	Druge oblike študija Other forms of study	Samost. delo Individual work	ECTS
15	30	AV	LV	RV			135	6
Nosilec predmeta / Course coordinator:		Prof. dr. Vojko Flis						
Jeziki /Languages:		Predavanja / Lectures:		Slovenščina/Slovene				
		Vaje / Tutorial:		-				
Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:					Prerequisites for enrolling in the course or for performing study obligations:			
Vsebina (kratek pregled učnega načrta):					Content (syllabus outline):			
<ul style="list-style-type: none"> • Temeljni koncepti • Etični vidiki • Deontološki koncepti in protokoli • Regulacijska in državna telesa • Skrb za živali/protokoli • Zgodovinski pregled uporabe živali v biomedicinskih raziskavah • Preprečevanje bolečine in stresa v biomedicinskih raziskavah na živalih • Alternative biomedicinskim raziskavam na živalih • In vivo biološki modeli v kirurškem raziskovanju • Primerjalna biologija živali in človeka v kirurškem raziskovanju • Anestezija in analgezija v veterini • Celjenje ran • Izvirne celice in in vivo biološki modeli • Eksperimentalna gastroenterologija 					<ul style="list-style-type: none"> • BASIC CONCEPTS • ETHICS AND HUMANE CONSIDERATIONS • POLICIES/PROCEDURES • REGULATIONS AND GOVERNING BODIES • ANIMAL CARE SERVICES/POLICIES • HISTORICAL PERSPECTIVES ON ANIMALS AND THEIR USE IN RESEARCH • MINIMIZING PAIN AND DISTRESS IN ANIMAL RESEARCH • ALTERNATIVES TO ANIMAL EXPERIMENTATION • ANIMAL MODELLING IN SURGICAL RESEARCH • COMPARTIVE BIOLOGY OF ANIMAL AND MAN IN SURGICAL RESEARCH • ANESTHESIA, PAIN CONTROL AND ANALGESIA IN SURGICAL RESEARCH • WOUND HEALING • STEM CELLS AND ANIMAL MODELLING 			

<ul style="list-style-type: none"> • Eksperimentalna žilna kirurgija • Eksperimentalni modeli kancerogeneze • Eksperimentalna endokrinologija • Kirurške tehnike v biologiji presajanja • In vivo model prekrvljenih možganov 	<ul style="list-style-type: none"> • EXPERIMENTAL GASTROENTEROLOGY • EXPERIMENTAL VASCULAR SURGERY • EXPERIMENTAL CANCER RESEARCH • EXPERIMENTAL ENDOCRINOLOGY • SURGICAL TECHNIQUES IN TRANSPLANTATION BIOLOGY • VASCULARLY ISOLATED BRAIN IN ANIMALS
Temeljni literatura in viri / Reading materials:	
Obvezni: <ul style="list-style-type: none"> • Witchel HJ, Lee MW. Technologies in biomedical and life sciences education: approaches and evidence o efficacy of learning. Springer 2022. • Chen H, Martins PN eds. Advances in experimental surgery. Volume 2. Nova publish. 2018. • Comprehensive physiology. American Physiological Society: elektronski dostop. • Krinke GJ, Bullock GR, Bunton T. The Laboratory Rat (Handbook of Experimental Animals). Academic Press; 1st edition, 2000. • Jeppson B eds. Animal Modelling in Surgical Research. Taylor & Francis, 1 edition,1997. • Kaliste E. The Welfare of Laboratory Animals (Animal Welfare). Springer; 2007. • Haves WA. Principles and Methods of Toxicology. CRC; 7 edition, 2023. Dodatni: <ul style="list-style-type: none"> • Ettinger JS, Feldman CE Textbook of Veterinary Internal Medicine, Vol.,Saunders (W.B.) Co Ltd; 9th edition,2024. • Tumbleson M. Swine in Biomedical Research. Springer; 1 edition,1986. • Swindle M. Surgery, Anesthesia and Experimental Techniques in Swine. CRC press. 2016. • Waynforth HB, Flecknell PA. Experimental and Surgical Techniques in the Rat. Academic Press; 2nd edition, 1992. • Walker FW, Hombergen DG. Anatomy and Dissection of the Rat (Freeman Laboratory Separates in Biology) . W. H. Freeman; 3 edition, 1997. • Park JB, Bronzino JD. Biomaterials. Principles and applications. CRC Press. Boca Raton 2003. 	
Cilji in kompetence:	Objectives and competences:
<ul style="list-style-type: none"> • Osvojitev temeljnih metodoloških in teoretičnih konceptov na področju eksperimentalne kirurgije • Poznavanje in razumevanje temeljnih konceptov modeliranja in vivo bioloških sistemov • Seznanitev z metodami, uporabljanimi v sodobni eksperimentalni kirurgiji 	<ul style="list-style-type: none"> • Mastering the basic methodological and theoretical concepts in the field of experimental surgery • Gaining and understanding the basic concepts animal modelling in medicine • Familiarity with methods used in modern experimental surgery
Predvideni študijski rezultati:	Intended learning outcomes:
Znanje in razumevanje: Praktično in teoretično znanje za samostojno raziskovalno delo.	Knowledge and understanding: Practical knowledge needed for independent research work.
Prenosljive/ključne spretnosti in drugi atributi: Praktično znanje za vodenje raziskav. Študent bo osvojil temeljne metodološke in teoretične koncepte na področju eksperimentalne kirurgije, poznal in razumel bo temeljne koncepte modeliranja in vivo bioloških sistemov ter znal primerjati in izbrati metode uporabljane v sodobni eksperimentalni kirurgiji.	Transferable/key competences and other abilities: Practical knowledge needed to organize research projects. The student will know the basic methodological and theoretical concepts in the field of experimental surgery, will understand and argue the basic concepts animal modelling in medicine and will be able to compare and choose methods used in modern experimental surgery.

Metode poučevanja in učenja:		Learning and teaching methods:
Predavanja/konzultacije Seminar Samostojno delo		Lectures/consultations Seminar Individual work
Načini ocenjevanja:	Delež (v %) / Share (in %)	Assessment methods:
Način (pisni izpit, ustno izpraševanje, naloge, projekt)		Method (written or oral exam, coursework, project):
Projekt	50 %	Project
Seminarska naloga	50 %	Seminar paper
Reference nosilca / Course coordinator's references:		
<p>"FLIS, Vojko, MRĐJA, Božidar, ŠTIRN, Barbara, MILOTIČ, Franko, KOBILICA, Nina, BERGAUER, Andrej. Revascularization of the superior mesenteric artery alone for treatment of chronic mesenteric ischemia. Wiener Klinische Wochenschrift, ISSN 0043-5325, 2016, jg. 128, hft. 3/4, str. 109-113, ilustr. http://rd.springer.com/article/10.1007/s00508-015-0897-1, doi: 10.1007/s00508-015-0897-1. [COBISS.SI-ID 5590335], [JCR, SNIP, WoS do 26. 3. 2016: št. citatov (TC): 0, čistih citatov (CI): 0, čistih citatov na avtorja (CIAu): 0, Scopus do 29. 11. 2017: št. citatov (TC): 1, čistih citatov (CI): 1, čistih citatov na avtorja (CIAu): 0.17] kategorija: 1A3 (Z); uvrstitev: SCI, Scopus, MBP; tip dela je verificiral OSICM točke: 11.67, št. avtorjev: 6"</p> <p>"TASKOVSKA, Dragana, FLIS, Vojko. Incidence of surgical site infections in a tertiary hospital in Slovenia = Pogostnost pojavljanja okužb kirurške rane v terciarni bolnišnici v Sloveniji. Acta medico-biotechnica : AMB, ISSN 1855-5640. [Tiskana izd.], 2015, vol. 8, [no.] 1, str. 27-34, ilustr. http://actamedbio.mf.um.si/03_amb_118_14.pdf. [COBISS.SI-ID 5431103] kategorija: 1D (Z); uvrstitev: druge revije; tip dela je verificiral OSICM točke: 10, št. avtorjev: 2"</p> <p>FLIS, Vojko. Zdravljenje ekstrakranialnih anevrizem notranje karotidne arterije = Treatment of extracranial aneurysms of internal carotid artery. V: ŽVAN, Bojana (ur.), ZALETEL, Marjan (ur.). Akutna možganska kap IX : učbenik za zdravnike in zdravstvene delavce. Ljubljana: Društvo za preprečevanje možganskih in žilnih bolezni. 2014, str. 177-183. [COBISS.SI-ID 4989503]</p>		