

UČNI NAČRT PREDMETA / COURSE SYLLABUS								
<b>Ime predmeta:</b>		<b>Biokemija</b>						
<b>Course title:</b>		<b>Biochemistry</b>						
<b>Študijski program in stopnja</b> <b>Study programme and cycle</b>		<b>Študijska smer</b> <b>Study option</b>		<b>Letnik</b> <b>Year of study</b>		<b>Semester</b> <b>Semester</b>		
Biomedicinska tehnologija/3. stopnja				1		1 ali 2		
Biomedical Technology/3rd Degree								
<b>Vrsta predmeta (obvezni ali izbirni) /</b> <b>Course type (compulsory or elective)</b>				Temeljni				
				Basic				
<b>Univerzitetna koda predmeta / University course code:</b>								
<b>Predavanja</b> <b>Lectures</b>	<b>Seminar</b> <b>Seminar</b>	<b>Vaje</b> <b>Tutorial</b>			<b>Klinične vaje</b> <b>Clinical training</b>	<b>Druge oblike študija</b> <b>Other forms of study</b>	<b>Samost. delo</b> <b>Individual work</b>	<b>ECTS</b>
20	40	15					195	9
		AV	LV	RV				
<b>Nosilec predmeta / Course coordinator:</b>		Prof. dr. Uroš Potočnik						
<b>Jeziki /Languages:</b>		<b>Predavanja / Lectures:</b>		slovenščina / slovenian				
		<b>Vaje / Tutorial:</b>		Slovenščina / slovenian				
<b>Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:</b>				<b>Prerequisites for enrolling in the course or for performing study obligations:</b>				
<b>Vsebina (kratek pregled učnega načrta):</b>				<b>Content (syllabus outline):</b>				
<p>Biomolekule.</p> <p>Metode izolacije in kvantitativnega ter kvalitativnega določanja strukture in funkcije beljakovin: elektroforeza, kromatografske metode, pl, spektrofotometrija, FTIR, MALDI-MS, proteomika in metabolomika, biološki modeli.</p> <p>Imunocito(histo)kemijske metode: temeljni principi in aplikacije.</p> <p>Napake v strukturi beljakovin in z njimi povezane bolezni.</p> <p>Encimi: Regulacija in klinična aplikacija: plazemski intracelularni encimi, merjenje encimske aktivnosti, serumski markerji pri poškodbah tkiva, encimi kot analitični in terapevtski reagenti.</p> <p>Heteropolisaharidi: glikoproteini in glikolipidi, proteoglikani in peptidoglikani, oligosaharidi in občutljivost gostitelja.</p>				<p>Biomolecules.</p> <p>Methods of isolation and determination of proteins: electrophoresis, chromatography, pl, spectrophotometry, FTIR, MALDI-MS, proteomics and metabolomics, biological models.</p> <p>Imunocyto(histo)chemistry: principles and applications.</p> <p>Protein folding and associated diseases.</p> <p>Enzymes: Regulation and clinical applications: intracellular enzymes from plasma, measurements of enzyme activity, serum markers in the diagnosis of tissue damage, enzymes as analytical reagents and therapeutic agents.</p> <p>Heteropolysaccharides: glycoproteins and glycolipids, proteglycans and peptidoglycans.</p> <p>Analytical methods in glycobiochemistry. Lectins.</p>				

<p>Metode določanja ogljikovih hidratov. Lektini. Transdukcija. Gastrointestinalna digestija in absorpcija, gastrointestinalni hormoni, termični učinek hrane. Izbrane vsebine iz metabolizma ogljikovih hidratov. Lipidi: fosfolipidi in glikosfingolipidi v klinični medicini, holesterol in žolčne kisline, plazemski lipoproteini in z njimi povezane napake v organizmu. Metabolna homeostaza: metabolična vloga organov, homeostaza ogljikovih hidratov, homeostaza lipidov. Homeostaza beljakovin. Nepravilnosti v metabolni homeostazi. Endokrini metabolizem- primeri organskih sistemov. Molekularna imunologija: molekule in kemijski procesi v imunskem sistemu, protitelesa, interferoni in citokini. Biokemija raka. Metode pridobivanja protiteles in njihova analitska vrednost. Cepiva. Biokemija hemostaze: interakcije med metabolizmom lipidov in hemostazo. Izbrane vsebine iz metabolizma vitaminov in njihovih nadomestkov. Keto-nukleozidi. Toksini in droge, doping. Principi in aplikacije.</p>	<p>Transduction. Gastrointestinal digestion and absorption, gastrointestinal hormones, thermic effect of food. Selected topics in carbohydrate metabolism. Lipids: phospholipids and glycolipids in clinical medicine, cholesterol and bile acids, plasma lipoprotein associated disorders. Metabolic homeostasis: organs, carbohydrate and lipid homeostasis. Protein homeostasis. Abnormalities in homeostasis. Endocrine metabolism – organic systems. Molecular immunology: molecules and chemical processes in immune system, antibodies, interferons and cytokines. Biochemistry of cancer. Production of antibodies and their applications. Vaccines. Biochemistry of hemostasis: interactions between lipid metabolism and hemostasis. Selected topics from vitamin metabolism. Keto-nucleosides. Toxins, drugs, doping. Principles and applications</p>
<p><b>Temeljna literatura in viri / Reading materials:</b></p>	
<p>Modern experimental biochemistry/edited by Rodyner Boyer, 2002, ISBN: 0-8053-3111-5  Medical Biochemistry, Bhagavan, N.V. 2002, ISBN: 0-12-095440-0  Textbook of Biochemistry with clinical correlations, Devlin, T.M. (Ed.) 1993, ISBN: 0-471-51348-2  The essentials of glycobiology / edited by Ajit Varki ... et al.], 1999, ISBN 0-87969-560-9  Reviews of Physiology Biochemistry and Pharmacology, 1994, ISBN: 3540575367  Reviews of Physiology, Biochemistry and Pharmacology/Special Issue on Signal Transduction III, 1994, ISBN: 3540575871  Molecular and genetic interactions involving phytochemicals, Kreft, I. and Škrabanja, V. (Ed.) 2001, ISBN: 961-6379-02-X  Molecular interactions between microorganisms and cells, Hacker, J. and Heesemann, J. (Ed.)2002, ISBN: 0-471-17846-2  Mad Cow Disease and Related Spongiform Encephalopathies Series : Current Topics in Microbiology and Immunology , Vol. 284 Harris, D.A. (Ed.)2004, ISBN: 3-540-20107-6  Drug Discovery and Evaluation, Pharmacological Assays, Vogel, Hans G. (Ed.)2nd, completely revised, updated, and enlarged ed., 2002, ISBN: 3-540-42396-6</p>	
<p><b>Cilji in kompetence:</b></p>	<p><b>Objectives and competences:</b></p>
<p>Spoznati poglobljene vsebine iz strukture in funkcije biomolekul. Povezati strukturo in funkcijo biomolekul v biokemičnih procesih človeškega telesa ter povezati</p>	<p>To get familiar in depth with interactions between structure and function of biomolecules. To achieve a synthesis of structure and function of biochemical processes in a human body, as well as</p>

napake v strukturi in funkciji s pojavom bolezenskih stanj. Spoznati moderne metode eksperimentalne biokemije in njihovo uporabo.		correlate disorders in structure and function with the clinical medicine. To get familiar with modern principles of experimental biochemistry and its applications.
<b>Predvideni študijski rezultati:</b>		<b>Intended learning outcomes:</b>
<b>Znanje in razumevanje:</b> Poglobljeno temeljno teoretično in praktično znanje na področju moderne eksperimentalne biokemije.		<b>Knowledge and understanding:</b> In-depth knowledge of fundamental theoretical and practical principles of modern experimental biochemistry.
<b>Prenosljive/ključne spretnosti in drugi atributi:</b> teoretično in praktično znanje kot osnova za specializirane predmete (predmete izbirnih vsebin) ter za doktorsko disertacijo.		<b>Transferable/key competences and other abilities:</b> Theoretical and practical knowledge as well as skills in the use and interpretation of modern experimental methods as a basis of specialized subjects (chosen subjects) and for a doctoral thesis.
<b>Metode poučevanja in učenja:</b>		<b>Learning and teaching methods:</b>
predavanja, seminarji, vaje		lectures seminars tutorial
<b>Načini ocenjevanja:</b>	<b>Delež (v %) / Share (in %)</b>	<b>Assessment methods:</b>
Način (pisni izpit, ustno izpraševanje, naloge, projekt)		Method (written or oral exam, coursework, project):
Pisni izpit	50 %	Written exam
Ustni izpit	20 %	Oral exam
Seminarska naloga in opravljene laboratorijske vaje	30 %	Project work and accomplished laboratory practical's
<b>Reference nosilca / Course coordinator's references:</b>		
<p>"JEZERNIK, Gregor, POTOČNIK, Uroš. Comprehensive genetic study of fatty acids helps explain the role of noncoding inflammatory bowel disease associated SNPs and fatty acid metabolism in disease pathogenesis. Prostaglandins, leukotrienes, and essential fatty acids, ISSN 1532-2823. [Online ed.], 2018, vol. 130, str. 1-10, ilustr. <a href="http://www.plefa.com/article/S0952-3278(17)30210-7/pdf">http://www.plefa.com/article/S0952-3278(17)30210-7/pdf</a>, <a href="https://doi.org/10.1016/j.plefa.2018.02.002">https://doi.org/10.1016/j.plefa.2018.02.002</a>, doi: 10.1016/j.plefa.2018.02.002. [COBISS.SI-ID 6249791], [JCR, SNIP, WoS do 11. 5. 2018: št. citatov (TC): 0, čistih citatov (CI): 0, čistih citatov na avtorja (CIAu): 0, Scopus do 3. 3. 2018: št. citatov (TC): 0, čistih citatov (CI): 0, čistih citatov na avtorja (CIAu): 0] kategorija: 1A3 (Z); uvrstitev: SCI, Scopus, MBP; tip dela je verificiral OSICM točke: 40, št. avtorjev: 2 "</p> <p>"ČELEŠNIK, Helena Sabina, POTOČNIK, Uroš. Improved locus-specific unmethylated controls for MS-HRM analysis derived from 5-aza-2-deoxycytidine-treated DNA. Biotechniques, ISSN 0736-6205. [Print ed.], March 2019, vol. 66, no. 3, str. 1-4, doi: 10.2144/btn-2018-0161. [COBISS.SI-ID 22141718], [JCR, SNIP, WoS do 29. 3. 2019: št. citatov (TC): 0, čistih citatov (CI): 0, čistih citatov na avtorja (CIAu): 0, Scopus do 1. 4. 2019: št. citatov (TC): 0, čistih citatov (CI): 0, čistih citatov na avtorja (CIAu): 0] kategorija: 1A4 (Z); uvrstitev: SCI, Scopus, MBP; tip dela je verificiral OSICB točke: 29.49, št. avtorjev: 2 "</p> <p>"ČUŠ, Maruška, VLAISAVLJEVIĆ, Veljko, REPNIK, Katja, POTOČNIK, Uroš, KOVAČIČ, Borut. Could polymorphisms of some hormonal receptor genes, involved in folliculogenesis help in predicting patient response to controlled ovarian stimulation?. Journal of assisted reproduction and genetics, ISSN 1573-7330, 2019, vol. 36, iss. 1, str. 47-55. <a href="https://link.springer.com/article/10.1007%2Fs10815-018-1357-4">https://link.springer.com/article/10.1007%2Fs10815-018-1357-4</a>, doi:</p>		

10.1007/s10815-018-1357-4. [COBISS.SI-ID 6500671], [JCR, SNIP, WoS do 8. 2. 2019: št. citatov (TC): 0, čistih citatov (CI): 0, čistih citatov na avtorja (CIAu): 0, Scopus do 17. 11. 2018: št. citatov (TC): 0, čistih citatov (CI): 0, čistih citatov na avtorja (CIAu): 0] kategorija: 1A1 (Z, A', A1/2); uvrstitev: SCI, Scopus, MBP; tip dela je verificiral OSICM točke: 20.45, št. avtorjev: 5 "