

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	BIOKEMIJA BOLEZNI ČLOVEKA
Course Title:	BIOCHEMISTRY OF HUMAN DISEASES

Študijski program in stopnja Study Programme and Level	Študijska smer Study Field	Letnik Academic Year	Semester Semester
MAG Biokemija, 2. stopnja	/	1.	1.
USP Biochemistry, 2 nd Cycle	/	1 st	1 st

Vrsta predmeta / Course Type: izbirni strokovni / Elective Professional

Univerzitetna koda predmeta / University Course Code: BI2103

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje Work	Druge oblike študija	Samost. delo Individual Work	ECTS
45	15	15 SV	/	/	75	5

Nosilec predmeta / Lecturer: prof. dr. Zoran Grubič / Zoran Grubič, Full Professor, M.D., Ph.D.

Jeziki / Languages:

Predavanja / Lectures:	slovenski / Slovenian
Vaje / Tutorial:	slovenski / Slovenian

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:

Študent oz. kandidat mora imeti predmet opredeljen kot študijsko obveznost.	Prerequisites: The course has to be assigned to the student.
---	--

Vsebina:

Predmet obravnava biokemične temelje naslednjih patoloških stanj:

Stres. Vnetje. Okvare zaradi prostih radikalov. Staranje.

Integracija presnove. Stradanje. Sladkorna bolezen. Hipoglikemija. Debelost. Motnje celičnega dihanja in hipovitaminoze B. Motnje delovanja ščitnice. Dedne bolezni presnove. Konformacijske bolezni.

Bolezni jeter. Jetrni testi. Žolčni kamni. Motnje prebave in absorpcije hranil.

Anemije. Motnje hemostaze. Ateroskleroza. Hiperlipidemije. Spremembe beljakovin v plazmi. Motnje pH krvi.

Content (Syllabus outline):

Biochemical background of the following pathological conditions:

Stress, inflammation, impairments caused by reactive oxygen species (ROS), aging.

Metabolic disorders: starvation, diabetes mellitus, hypoglycemia, obesity, disorders of bioenergetics – B hypovitaminoses, uncoupling and inhibition of electron transport chain, thyroid disorders, hereditary metabolic disorders, conformational diseases.

Liver diseases: tests of liver function, biliary stones. Gastrointestinal disorders: malabsorption disorders.

Blood disorders: anemia, coagulation disorders, atherosclerosis, hyperlipidemias, blood protein disorders, acid-base imbalances.

Motnje živčnomišičnega prenosa.
Shizofrenija. Zasvojenost z drogami.
Zastrupitev z organofosfati.

Motnje dihanja. Motnje presnove kalcija in fosforja. Funkcionalno slikanje z magnetno resonanco.

Neuromuscular junction disorders,
organophosphate poisoning, schizophrenia,
drug addiction

Pulmonary diseases, impairments of calcium
and phosphate metabolism, functional NMR
imaging

Temeljna literatura in viri / Readings:

Patofiziologija s temelji fiziologije, 3. izdaja, Bresjanac M. In Rupnik M. (ur.) , Medicinska fakulteta, Inštitut za patološko fiziologijo; Ljubljana, 2000, 150 strani – v pripravi je 4., predelana izdaja tega učbenika – izšla bo predvidoma v aprilu 2014.

Izbrana poglavja iz učbenikov :

- Seminarji iz patološke fiziologije, 2. izdaja, Ribarič S. (ur.) Medicinska fakulteta, Inštitut za patološko fiziologijo; Ljubljana 2011.

- Temelji patološke fiziologije, 2. Izdaja, Ribarič S. (ur.) Medicinska fakulteta, Inštitut. za patološko fiziologijo; Ljubljana 2012.

Okrog 50 strani iz teh dveh učbenikov

Cilji in kompetence:

1. Študenti pridobijo terminologijo in znanje za razumevanje biokemičnih temeljev in mehanizmov pogostih bolezni in bolezenskih procesov pri človeku.
2. Študent bo usposobljen za kasnejšo poklicno vključitev v strokovno in raziskovalno delo na področju biomedicine (medicina, medicinska biotehnologija, dentalna medicina, laboratorijska medicina, farmacija). Lahko se bo strokovno sporazumeval z drugimi poklicnimi profili, ki delajo v zdravstvu. Pripravljen bo za samostojen študij literature s področja medicine, s čimer mu bo omogočen strokovni in znanstveni razvoj.

Objectives and Competences:

1. Students become familiar with the medical terminology and with the present understanding of the biochemical background and underlying mechanisms of selected, frequently met human diseases.
Students are provided with the knowledge enabling them to become professionally and scientifically involved in various fields of biomedicine (medicine, medical biotechnology, dental medicine, laboratory medicine, pharmacy..). Students become competent for professional communication with other experts in the field of biomedicine and are able to follow medical literature which is essential for their further professional and scientific progress in this field.

Predvideni študijski rezultati:

Znanje in razumevanje

Poznavanje imen in opredelitev pomembnih patoloških stanj pri človeku. Razumevanje mehanizmov nastanka in razvoja bolezni in načel zdravljenja v povezavi z biokemičnimi procesi v organizmu.

Intended Learning Outcomes:

Knowledge and Comprehension

Getting familiar with the terms and definitions of various pathological conditions.
Understanding the mechanisms of origin and development of various diseases.
Understanding the therapy of these diseases on the basis of the targeted biochemical processes in the human organism.

<u>Uporaba</u> Temeljna informacija o bolezenskih procesih potrebna za delo v biomedicini	<u>Application</u> Basic knowledge of the pathological processes necessary for working in the field of biomedicine.
<u>Refleksija</u> Zavedanje, da mnogi patološki procesi temeljijo na motnjah biokemičnih procesov v telesu.	<u>Analysis</u> To be aware that many pathological processes are based on the disorders or impairments of the biochemical processes in the human organism.
<u>Prenosljive spretnosti</u> Večja sposobnost za timsko delo z različnimi zdravstvenimi delavci. Sposobnost branja medicinske literature.	<u>Skill-transference Ability</u> Increased capability for joining the professional teams of experts working in medicine. Aptitude in following medical literature.

Metode poučevanja in učenja:

Predavanja, seminarji, na problemih (papirnati pacienti) temelječ pouk pri seminarskih vajah

Learning and Teaching Methods:

Lectures, seminars, problem based learning using "paper" patients at seminary discussions

Načini ocenjevanja:

Pisni izpit
Ocene: 6-10 (pozitivno), 1-5 (negativno).

Delež (v %) /
Weight (in %)

Assessment:

Written exam
Grades: 6-10 (positive), 1-5 (negative)

Reference nosilca / Lecturer's references:

- Pirkmajer S., Filipovic D., Mars T., Mis K., and **Grubic Z.** (2010). HIF-1 α response to hypoxia is functionally separated from the glucocorticoid stress response in the in vitro regenerating human skeletal muscle. *Am. J. Physiol. Integr. Comp. Physiol.*, 299: R1693 – R1700.
- Miš K, Matkovič U, Pirkmajer S, Sciancalepore M, Lorenzon P, Marš T, **Grubič Z.** (2013). Acetylcholinesterase and agrin : different functions, similar expression patterns, multiple roles. *Chem.-biol. interact.*, 2013: 297-301.
- Marš T, Mis K, Pirkmajer S, and **Grubic Z** (2009) The effects of organophosphates in the early stages of human muscle regeneration. In: Gupta RC, ed. *Handbook of Toxicology of Chemical Warfare Agents*; Elsevier, Amsterdam, Boston, Heidelberg 2009, 683-690 (2nd edition of the book is in preparation)