



UČNI NAČRT PREDMETA / COURSE SYLLABUS	
Predmet:	Farmakologija s toksikologijo
Course title:	Pharmacology with Toxicology

Študijski program in stopnja Study programme and cycle	Študijska smer Study option	Letnik Year of study	Semester Semester
Dentalna medicina/Dental Medicine 2. stopnja/2nd cycle		2	4.

Vrsta predmeta / Course type

Obvezni/Compulsory

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
40	40	10			90	6

Nosilec predmeta / Lecturer:

Izr. prof. dr. Uroš Maver

Jeziki /

Predavanja / Lectures:

Slovenščina/Slovene

Languages:

Vaje / Tutorial:

Slovenščina/Slovene

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

Prerequisites:

Ni posebnih pogojev za vključitev.

There are no special conditions for inclusion.

Vsebina:

Content (Syllabus outline):

Osnove splošne farmakologije in toksikologije:

- farmakodinamika/toksikodinamika
- farmakokinetika/toksikokinetika
- področja farmakologije in toksikologije s poudarkom na uporabi v dentalni medicini

Principles in general pharmacology and toxicology

- pharmacodynamics/toxicodynamics
- pharmacokinetics/toxicokinetics
- areas in pharmacology and toxicology with emphasis on use in dental medicine

Kemijski mediatorji

Chemical mediators

Specialna farmakologija:

Special pharmacology of:

- srce in žilje
- ledvice
- kri in krvotvorni organi
- prebavila
- dihalo
- periferni živčni sistem
- osrednji živčni sistem
- zdravila, ki uravnavajo nivo glukoze v krvi
- zdravila z vplivom na hemostazo in trombozo
- zdravila z vplivom na nivo lipidov v krvi
- farmakološko zdravljenje debelosti, farmakologija hipofize, nadledvičnice, ščitnice, reproduktivnega sistema, kosti, endokrinopatij
- protivnetne učinkovine in imunomodulatorji
- osnovni principi kemoterapije, zdravila v terapiji rakavih obolenj

- cardiovascular system
- kidneys
- blood and haematopoiesis
- gastrointestinal system
- respiratory system
- peripheral nervous system
- central nervous system
- drugs influencing blood glucose levels
- drugs affecting haemostasis and thrombosis
- drugs affecting blood lipid levels
- pharmacological treatment of obesity, pharmacology of pituitary, adrenal glands, thyroid, reproductive system, bones, endocrinopathies
- antiinflammatory drugs and immunomodulators
- basic principles of chemotherapy, anticancer drugs
- antimicrobial agents: antibacterial, antiviral, antifungal, antiprotozoal and antihelminthic drugs

– protimikrobno zdravljenje: protibakterijska zdravila, protivirusna zdravila, antimikotiki, antiprotozoiki, antihelmintiki – antiseptiki, dezinficijensi, insekticidi – zlorabe zdravil, odvisnost od zdravil – osnove toksikologije s poudarkom na toksičnih snovi v zobozdravstvu Zdravilne učinkovine v dentalni medicini – Farmakoepidemiološki podatki o predpisovanju zdravil in medicinskih pripomočkov v Sloveniji	– antiseptic, disinfective and insecticide agents – drug abuse, drug dependence – basics of toxicology with emphasis of toxins used in dental medicine – Pharmacoepidemiological data on prescribing drugs and medical devices in Slovenia
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Temeljni literatura in viri / Readings:**Temeljna literatura:**

1. Rang HP, Dale M, Ritter JM, Flower RJ, Henderson G. Pharmacology. 8th ed. Churchill Livingstone; 2016. (or the latest edition)
2. Goodman LS, Gilman AG, Limbird LE, Hardman JG, Goodman Gilman A. The pharmacological basis of therapeutics. 12th ed. New York: McGraw-Hill; 2011. (or the latest edition)

Dopolnilna literatura:

3. Katzung BG, Masters SB, Trevor AJ. Basic and clinical pharmacology. 11th ed. New York: McGraw-Hill; 2009. (or the latest edition)
4. Klaassen CD. Casarett & Doull's toxicology: The basic science of poisons. 7th ed. New York: McGraw-Hill; 2008. (or the latest edition)
5. Centralna baza zdravil: <http://www.cbz.si>
6. Javna agencija RS za zdravila in medicinske pripomočke: <http://www.jazmp.si/>
7. Evropska agencija za zdravila (EMA): <http://www.ema.europa.eu/ema/>
8. Ferk P, Lipnik-Štangelj M. Navodila za vaje iz farmakologije in toksikologije. Spremenjena in dopolnjena izd. Maribor: Medicinska fakulteta; 2010. (ali kasnejša izdaja)
9. Milojević M, Maver T, Madorran E, Schmidt J, Bevc S, Maver U. Izbrana poglavja iz splošne farmakologije in toksikologije – Navodila za vaje študijskega programa Dentalna medicina (e-gradivo), VAJA 3: Toksikologija, 2023
10. Vajda J, Bevc S., Maver U., Maver T. Izbrana poglavja iz splošne farmakologije in toksikologije – Navodila za vaje študijskega programa Dentalna medicina (e-gradivo), VAJA 2: Farmakodinamika, 2024

Cilji in kompetence:

- spoznati osnovne mehanizme delovanja zdravil, vpliv zdravil na organizem in vpliv organizma na zdravila
- pridobiti pregledno znanje o zdravilih po osnovnih farmakodinamičnih skupinah
- pridobivanje sposobnosti za povezovanje pričakovanih učinkov, koristnih in škodljivih
- spoznati osnove toksikologije, pridobiti pregledno znanje o prepoznavanju in ukrepanju pri zastrupitvah z zdravili

Objectives and competences:

- to acquire knowledge on basic mechanisms of drug actions and the fate of drugs in the human body
- to get an overview of the most important pharmacodynamic groups of drugs
- to gain the ability for linking the expected effects, useful and harmful
- to acquire knowledge on general principles in toxicology as well as on recognizing and acting in drug poisoning

Predvideni študijski rezultati:**Znanje in razumevanje:**

- razumeti osnovne mehanizme delovanja zdravil, vpliv zdravil na organizem in vpliv organizma na zdravila
- poznavanje zdravil po osnovnih farmakodinamičnih skupinah
- sposobnost za povezovanje pričakovanih učinkov, koristnih in škodljivih
- razumevanje interakcij med zdravili in zdravil s hrano
- poznavanje osnov toksikologije, primerno znanje o prepoznavanju in ukrepanju pri zastrupitvah z zdravili

Intended learning outcomes:**Knowledge and understanding:**

- understanding basic mechanisms of drug actions and the fate of drugs in the human body
- knowledge on major pharmacodynamic groups of drugs
- the ability for linking the expected effects, useful and harmful
- understanding drug-drug and drug-food interactions
- understanding general principles in toxicology, appropriate knowledge on recognizing and acting in drug poisoning
- the ability of critical usage of relevant literature sources in the field of pharmacology and toxicology

– sposobnost kritično uporabljati relevantne literaturne vire na področju farmakologije in toksikologije	
Metode poučevanja in učenja: Predavanja Seminarji Vaje	Learning and teaching methods: Lectures Seminars Tutorial

Assessment:

Način (pisni izpit, ustno izpraševanje, naloge, projekt) Pogoj za pristop k izpitu so uspešno opravljene vaje in seminarji ter pridobljena pozitivna ocena iz seminarjev. - seminar, seminarski kolokvij in oblike sprotnega preverjanja znanja (testi, aktivno sodelovanje, domače naloge) - izpit pisni - izpit ustni ŠTUDIJSKE OBVEZNOSTI ŠTUDENTOV - obvezna prisotnost na vajah in seminarjih - opravljene vaje in seminarji - kolokviji iz vaj - kolokviji iz seminarjev - izpit pisni - izpit ustni - samostojno delo POGOJI ZA PRISTOP K POSAMEZNEMU PREVERJANJU ZNANJA Opravljene vaje in seminarji ter opravljeni kolokviji iz vaj in seminarjev so pogoj za pristop k pisnemu izpitu. Pozitivno opravljen pisni izpit je pogoj za pristop k ustnemu izpitu.	Weight (in %) 20 % 40 % 40 %	Type (examination, oral, coursework, project): Successfully completed practical work and seminars including positive assessment of the final seminar test are necessary to approach the exam. - seminar, seminar test and real-time examinations (tests, active cooperation, homework's) - written examination; - oral examination. ACADEMIC OBLIGATIONS OF STUDENTS: - obligatory attendance at laboratory work and coursework - completed laboratory work and coursework - partial exams in laboratory work - partial exams in coursework - written exam - oral exam - independent work REQUIREMENTS FOR ACCESS TO INDIVIDUAL KNOWLEDGE CHECKING: Completed laboratory work, coursework and partial exams in laboratory work and coursework are required for access to the written exam. Positively marked written exam is a requirement for access to the oral exam.
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SABOTI, Denis, MAVER, Uroš, CHAN, Hak-Kim, PLANINŠEK, Odon. Novel budesonide particles for dry powder inhalation (DPI) prepared using a microfluidic reactor coupled with ultrasonic spray freeze drying. Journal of pharmaceutical sciences, ISSN 1520-6017, str. 1-8.

MAVER, Tina, KUREČIČ, Manja, SMRKE, Dragica, STANA-KLEINSCEK, Karin, MAVER, Uroš. Electrospun nanofibrous CMC/PEO as a part of an effective pain relieving wound dressing. Journal of sol-gel science and technology, ISSN 0928-0707, September 2016, vol. 79, iss. 3, str. 475-486.

FINŠGAR, Matjaž, PERVA-UZUNALIČ, Amra, STERGAR, Janja, GRADIŠNIK, Lidija, MAVER, Uroš. Novel chitosan/diclofenac coatings on medical grade stainless steel for hip replacement applications. Scientific reports, ISSN 2045-2322. Published online:24 May 2016. vol. 6. art. no. 26653. str. 1-17.

- MAVER, Tina, MAVER, Uroš, MOSTEGEL, Florian, GRIEBER, Thomas, SPIRK, Stefan, SMRKE, Dragica, STANA-KLEINSCHKEK, Karin. Cellulose based thin films as a platform for drug release studies to mimick wound dressing materials. Cellulose, ISSN 0969-0239, Feb. 2015, vol. 22, iss. 1, str. 749-761.
- NADRAH, Peter, MAVER, Uroš, JEMEC, Anita, TIŠLER, Tatjana, BELE, Marjan, DRAŽIČ, Goran, BENČINA, Mojca, PINTAR, Albin, PLANINŠEK, Odon, GABERŠČEK, Miran. Hindered disulfide bonds to regulate release rate of model drug from mesoporous silica. ACS applied materials & interfaces, ISSN 1944-8244. [Print ed.], 2013, vol. 5, issue 9, str. 3908-3915.
- DOVNIK, Andraž, MUJEZINOVIĆ, Faris, TREIBER, Milena, PEČOVNIK-BALON, Breda, GORENJAK, Maksimiljan, MAVER, Uroš, TAKAČ, Iztok. Seasonal variations of vitamin D concentrations in pregnant women and neonates in Slovenia. European Journal of Obstetrics, Gynecology and Reproductive Biology, ISSN 0301-2115. [Print ed.], 2014, vol. 181, str. 6-9.
- MAVER, Tina, MAVER, Uroš, STANA-KLEINSCHKEK, Karin, SMRKE, Dragica, KREFT, Samo. A review of herbal medicines in wound healing. International journal of dermatology, ISSN 0011-9059. [Print ed.], Article first published online: 24 Mar. 2015, vol. , iss. , str. [1-12].
- MAVER, Uroš, VELNAR, Tomaž, GABERŠČEK, Miran, PLANINŠEK, Odon, FINŠGAR, Matjaž. Recent progressive use of atomic force microscopy in biomedical applications. TrAC, Trends in analytical chemistry, ISSN 0165-9936, Available online 15 March 2016, vol. , str. 1-4, doi: 10.1016/j.trac.2016.03.014.
- ORTHABER, Kristjan, PRISTOVNIK, Matevž, SKOK, Kristijan, PERIČ, Barbara, MAVER, Uroš. Skin cancer and its treatment : novel treatment approaches with emphasis on nanotechnology. Journal of Nanomaterials, ISSN 1687-4129, 2017, vol. 2017, str. 1-20.
- NARANĐA, Jakob, SUŠEC, Maja, MAVER, Uroš, GRADIŠNIK, Lidija, GORENJAK, Mario, VUKASOVIĆ, Andreja, IVKOVIĆ, Alan, RUPNIK, Marjan, VOGRIN, Matjaž, KRAJNC, Peter. Polyester type polyHIPE scaffolds with an interconnected porous structure for cartilage regeneration. Scientific reports, ISSN 2045-2322, Published online: 24 June 2016, vol. 6, art. no. 28695, str. 1-11.
- NARANĐA, Jakob, GRADIŠNIK Lidija, GORENJAK Mario, VOGRIN Matjaž, MAVER Uroš, Isolation and characterization of human articular chondrocytes from surgical waste after total knee arthroplasty (TKA), PeerJ, 2017.