



Medicinska fakulteta

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

Kemijski mediatorji

Specialna farmakologija:

- srce in žilje
- ledvice
- kri in krvotvorni organi
- prebavila
- dihala
- 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

Principles in general pharmacology and toxicology

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

Chemical mediators

Special pharmacology of:

- 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
- antiseptic, dezinfective and insecticide agents

- 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

- 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

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)

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
- sposobnost kritično uporabljati relevantne literaturne vire na področju farmakologije in toksikologije

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

Metode poučevanja in učenja:**Learning and teaching methods:**

2022/23

Predavanja Seminarji Vaje	Lectures Seminars Tutorial
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Načini ocenjevanja:**Delež (v %) /
Weight (in %)****Assessment:**

<p>Način (pisni izpit, ustno izpraševanje, naloge, projekt)</p> <p>Pogoj za pristop k izpitu so uspešno opravljene vaje in seminarji ter pridobljena pozitivna ocena iz seminarjev.</p> <ul style="list-style-type: none"> – seminar, seminarski kolokvij in oblike sprotnega preverjanja znanja (testi, aktivno sodelovanje, domače naloge) – izpit pisni – izpit ustni <p>ŠTUDIJSKE OBVEZNOSTI ŠTUDENTOV</p> <ul style="list-style-type: none"> – obvezna prisotnost na vajah in seminarjih – opravljene vaje in seminarji – kolokviji iz vaj – kolokviji iz seminarjev – izpit pisni – izpit ustni – samostojno delo <p>POGOJI ZA PRISTOP K POSAMEZNEMU PREVERJANJU ZNANJA</p> <p>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.</p>	<p>20 %</p> <p>40 %</p> <p>40 %</p>	<p>Type (examination, oral, coursework, project):</p> <p>Successfully completed practical work and seminars including positive assessment of the final seminar test are necessary to approach the exam.</p> <ul style="list-style-type: none"> – seminar, seminar test and real-time examinations (tests, active cooperation, homework's) – written examination; – oral examination. <p>ACADEMIC OBLIGATIONS OF STUDENTS:</p> <ul style="list-style-type: none"> – 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 <p>REQUIREMENTS FOR ACCESS TO INDIVIDUAL KNOWLEDGE CHECKING:</p> <p>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.</p>
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Reference nosilca / Lecturer's references: UROŠ MAVER

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-KLEINSCHEK, 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-UZUNALIĆ, 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-KLEINSCHEK, 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-KLEINSCHEK, 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, PERIĆ, 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.