



UČNI NAČRT PREDMETA / COURSE SYLLABUS	
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Predmet:	Izbrane vsebine in novosti v farmakologiji in toksikologiji
Course title:	Selected Topics and Novelties in Pharmacology and 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 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
2	40	3			45	3

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:

Vsebina: **Content (Syllabus outline):**

<ul style="list-style-type: none"> – poglobljen študij izbranih farmakodinamičnih skupin zdravil s poudarkom na skupinah zdravil, ki se uporabljajo v zobozdravstvu – novosti na področju farmakološkega zdravljenja izbranih bolezenskih stanj – personalizirana medicina in individualni pristop k farmakološkemu zdravljenju – racionalna raba zdravil – neželeni učinki in toksičnost zdravil, farmakovigilanca – interakcije med zdravili in interakcije zdravil s hrano – učinkovine življenjskega sloga, zlorabe zdravil in drugih učinkovin, učinkovine, ki povzročajo odvisnost, učinkovine v športu, doping – prehranska dopolnila, zdravilne rastline, fitofarmaki – biološka zdravila – elektronske zbirke podatkov o zdravilih – razvoj novega zdravila, regulativa na področju zdravil – raziskovalno delo na področju molekularne farmakologije: aktualno raziskovalno delo, gojenje celičnih kultur oz. celičnih linij, apoptoza, testi viabilnosti, proliferacije, citotoksičnosti, biokompatibilnosti, znotrajcelične signalne poti – raziskovalno delo na področju dentalnih materialov, dostavnih sistemov in tkivnega inženirstva 	<ul style="list-style-type: none"> – detailed study on selected pharmacodynamic groups of drugs with emphasis on drugs used in dental medicine – advances in pharmacological treatment of selected pathological conditions – personalized medicine and individualized pharmacotherapy – rational use of drugs – adverse drug effects and reactions, toxicity, pharmacovigilance – drug-drug and drug-food interactions – lifestyle drugs, the abuse of drugs and other substances, drug dependence, drugs in sport, doping – food supplements, medicinal plants, phytopharmaceuticals – biological drugs – electronic drug databases – development of new drugs, regulatory procedures – research work in molecular pharmacology: current research projects, growing cell cultures/cell lines, apoptosis, viability, proliferation, cytotoxicity, biocompatibility, intracellular signalling pathways – research work in the field of dental materials, drug delivery systems and tissue engineering – translational medicine and pharmacology: implementation of laboratory findings and
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<ul style="list-style-type: none"> – translacijska medicina in farmakologija: prenos laboratorijskih ugotovitev in znanja v klinično prakso, nujnost in smiselnost povezave predklinika-klinika, bazičnih in aplikativnih vidikov znanosti in stroke – terapevtsko spremljanje koncentracij zdravil v plazmi: pomen, metodologija – najpogostejše zastrupitve z zdravili v Sloveniji – toksikologija težkih kovin in druga področja specialne farmakologije 	<p>knowledge into clinical practice, necessity and importance of connecting preclinical and clinical knowledge, basic and applied scientific and professional approaches</p> <ul style="list-style-type: none"> – therapeutic drug monitoring: importance, methodology – the most common drug poisonings in Slovenia – toxicology of heavy metals and other areas of special pharmacology
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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. Periodične publikacije s področja zobozdravstva:
 - a) Peridontology 2000: [http://onlinelibrary.wiley.com/journal/10.1111/\(ISSN\)1600-0757/homepage/ProductInformation.html](http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1600-0757/homepage/ProductInformation.html)
 - b) Journal of dental research: <http://journals.sagepub.com/home/jdr>
 - c) Dental Materials: <https://www.journals.elsevier.com/dental-materials/>
- Clinical Implant Dentistry and Related Research: [http://onlinelibrary.wiley.com/journal/10.1111/\(ISSN\)1708-8208](http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1708-8208)

Cilji in kompetence:

- podrobneje spoznati farmakološke lastnosti izbranih farmakodinamičnih skupin zdravil
- podrobneje spoznati toksikološke lastnosti izbranih snovi
- načrtovati optimalno učinkovito in varno farmakoterapijo, prilagojeno posameznemu pacientu
- slediti novostim na področju farmakologije in toksikologije v relevantnih literarnih virih

Objectives and competences:

- to get detailed knowledge on pharmacology of selected pharmacodynamics groups of drugs
- to get detailed knowledge on toxicology of selected substances
- to plan optimal, effective and safe individualized pharmacotherapy
- to follow novelties in the field of pharmacology and toxicology in relevant literature sources

Predvideni študijski rezultati:

Znanje in razumevanje:

- podrobno poznavanje farmakoloških lastnosti izbranih farmakodinamičnih skupin zdravil
- podrobno poznavanje toksikoloških lastnosti izbranih snovi
- izbrati optimalno, učinkovito in varno farmakoterapijo, prilagojeno posameznemu pacientu
- sledenje novostim na področju farmakologije in toksikologije v relevantnih literarnih virih

Prenosljive/ključne spretnosti in drugi atributi: veščine

- spoznati pomen poznavanja farmakoloških lastnosti zdravil za izbiro optimalne posamezniku prilagojene farmakoterapije

Intended learning outcomes:

Knowledge and understanding:

- detailed knowledge on pharmacology of selected pharmacodynamics groups of drugs
- detailed knowledge on toxicology of selected substances
- select optimal, effective and safe individualized pharmacotherapy
- follow novelties in the field of pharmacology and toxicology in relevant literature sources

Transferable/Key Skills and other attributes: skills

- to realize the importance of understanding pharmacological properties of drugs to select optimal individualized pharmacotherapy

Metode poučevanja in učenja:		Learning and teaching methods:
Predavanja Seminarji Vaje (laboratorijsko raziskovalno delo)		Lectures Seminars Tutorial (laboratory research work)
Načini ocenjevanja:	Delež (v %) / Weight (in %)	Assessment:
<p>Način (pisni izpit, ustno izpraševanje, naloge, projekt)</p> <ul style="list-style-type: none"> – seminarska naloga – ustni izpit <p>ŠTUDIJSKE OBVEZNOSTI ŠTUDENTOV:</p> <ul style="list-style-type: none"> – obvezna prisotnost na seminarjih in pri laboratorijskih vajah – priprava in predstavitev seminarske naloge – ustni izpit <p>POGOJI ZA PRISTOP K POSAMEZNEMU PREVERJANJU ZNANJA: Opravljene laboratorijske vaje, domače naloge in opravljena seminarska naloga so pogoji za pristop k ustnemu izpitu.</p>	<p>30 %</p> <p>50 %</p>	<p>Type (examination, oral, coursework, project):</p> <ul style="list-style-type: none"> – seminar work – oral examination <p>ACADEMIC OBLIGATIONS OF STUDENTS</p> <ul style="list-style-type: none"> – obligatory attendance at coursework and laboratory work – preparation and presentation of coursework assignment – oral exam <p>REQUIREMENTS FOR ACCESS TO INDIVIDUAL KNOWLEDGE CHECKING Completed laboratory work, homework's and completed coursework assignment are requirements for access to the oral exam.</p>

Reference nosilca / Lecturer's references:

1. 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.
2. MAVER, Tina, KUREČIČ, Manja, SMRKE, Dragica, STANA-KLEINSCHKEK, 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.
3. 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.
4. 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.
5. 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.
6. 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.
7. 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].
8. 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.
9. 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.
10. 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

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interconnected porous structure for cartilage regeneration. Scientific reports, ISSN 2045-2322, Published online: 24 June 2016, vol. 6, art. no. 28695, str. 1-11.

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.