



UČNI NAČRT PREDMETA / COURSE SYLLABUS

Ime predmeta:	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
Splošna medicina, enovit magistrski študijski program		Drugi	4.
General medicine, Uniform master's degree study program		Second	4th

Vrsta predmeta (obvezni ali izbirni) / Course type (compulsory or elective)	izbirni elective
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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	AV	LV	RV			45	3
			3					

Nosilec predmeta / Course coordinator:

Jeziki /Languages: **Predavanja / Lectures:**
Vaje / Tutorial:

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:
Prerequisites for enrolling in the course or for performing study obligations:

Vsebina (kratek pregled učnega načrta):

- poglobljen študij izbranih farmakodinamičnih skupin zdravil
- novosti na področju farmakološkega zdravljenja izbranih bolezenskih stanj (kemoterapija raka ...)
- osebna medicina in osebni pristop k farmakološkemu zdravljenju
- racionalna raba zdravil
- neželeni učinki in toksičnost zdravil, farmakovigilanca
- interakcije med zdravili in interakcije zdravil s hrano

Content (syllabus outline):

- detailed study on selected pharmacodynamic groups of drugs
- advances in pharmacological treatment of selected pathological conditions (cancer chemotherapy ...)
- personalized medicine and individualized pharmacotherapy
- rational use of drugs
- adverse drug effects and reactions, toxicity, pharmacovigilance
- drug-drug and drug-food interactions

<ul style="list-style-type: none"> • 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 • farmakoepidemiološki podatki o predpisovanju zdravil in medicinskih pripomočkov v Sloveniji • 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 farmakogenetike in farmakogenomike • 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 • sodobna farmakoterapija in farmakoterapija prihodnosti (gensko zdravljenje ...) 	<ul style="list-style-type: none"> • 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 • pharmacoepidemiological data on prescribing drugs and medical devices in Slovenia • research work in molecular pharmacology: current research projects, growing cell cultures/cell lines, apoptosis, viability, proliferation, cytotoxicity, biocompatibility, intracellular signaling pathways • research work in pharmacogenetics and pharmacogenomics • translational medicine and pharmacology: implementation of laboratory findings and knowledge into clinical practice, necessity and importance of connecting preclinical and clinical knowledge, basic and applied scientific and professional approaches • therapeutic drug monitoring: importance, methodology • the most common drug poisonings in Slovenia • toxicology of heavy metals and other areas of special pharmacology • up to-date pharmacotherapy and future aspects of pharmacological treatment (gene therapy ...)
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Temeljni literatura in viri / Reading materials:

<p>Temeljna literatura:</p> <ul style="list-style-type: none"> • Rang HP, Dale M, Ritter JM, Flower RJ, Henderson G. Pharmacology. 7th ed. Churchill Livingstone; 2012. (or the latest edition) • Klaassen CD. Casarett & Doull's toxicology: The basic science of poisons. 7th ed. New York: McGraw-Hill; 2008. (or the latest edition) <p>Dodatna literatura:</p> <ul style="list-style-type: none"> • Katzung BG, Masters SB, Trevor AJ. Basic and clinical pharmacology. 11th ed. New York: McGraw-Hill; 2009. (or the latest edition) • Cohen N. Methods in pharmacology and toxicology: Pharmacogenomics and personalized medicine. 1st ed. Totowa: Humana Press; 2008. (or the latest edition) • Goodman LS, Gilman AG, Limbird LE, Hardman JG, Goodman Gilman A. The pharmacological basis of therapeutics. 10th ed. New York: McGraw-Hill; 2001. (or the latest edition) • Centralna baza zdravil: http://www.cbz.si • Javna agencija RS za zdravila in medicinske pripomočke: http://www.jazmp.si/ • Evropska agencija za zdravila (EMA): http://www.ema.europa.eu/ema/ • Štrukelj B, Kos J. Biološka zdravila: od gena do učinkovine. 1. izd. Ljubljana: Slovensko farmacevtsko društvo; 2007. (ali kasnejša izdaja) • <u>Maša Knehtl, Benjamin Dvoršak, Eva Jakopin: Izbrana poglavja iz farmakologije – Imunosupresijsko zdravljenje ledvičnih boleznik (e-gradivo) Medicinska fakulteta; 2023</u>

**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 literaturnih virih

Objectives and competences:

- to get detailed knowledge on pharmacology of selected pharmacodynamic 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 literaturnih virih
- Prenesljive/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 pharmacodynamic 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:

- predavanja
- seminarji
- laboratorijsko raziskovalno delo
- problemsko naravnani pouk
- samostojno delo

Learning and teaching methods:

- lectures
- seminars
- laboratory research work
- problem-based learning
- individual work

Načini ocenjevanja:

- Način (pisni izpit, ustno izpraševanje, naloge, projekt)
- domače naloge, aktivno sodelovanje
 - seminarska naloga
 - ustni izpit

Delež (v %) /
Share (in %)

- 20 %
- 30 %
- 50 %

Assessment methods:

- Type (examination, oral, coursework, project):
- homeworks, active cooperation
 - seminar work
 - oral examination

<p>ŠTUDIJSKE OBVEZNOSTI ŠTUDENTOV:</p> <ul style="list-style-type: none"> • obvezna prisotnost na seminarjih in pri laboratorijskih vajah • domače naloge • 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>ACADEMIC OBLIGATIONS OF STUDENTS</p> <ul style="list-style-type: none"> • obligatory attendance at coursework and laboratory work • homeworks • preparation and presentation of coursework assignment • oral exam <p>REQUIREMENTS FOR ACCESS TO INDIVIDUAL KNOWLEDGE CHECKING Completed laboratory work, homeworks and completed coursework assignment are requirements for access to the oral exam.</p>
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Reference nosilca / Course coordinator's references:

BEVC, Sebastjan, VODOŠEK HOJS, Nina, KNEHTL, Maša, EKART, Robert, HOJS, Radovan. Cystatin C as a predictor of mortality in elderly patients with chronic kidney disease. *The aging male*. 2019, vol. 22, no. 1, str. 62-67. ISSN 1473-0790. <https://www.tandfonline.com/doi/abs/10.1080/13685538.2018.1479386?journalCode=itam20>, <https://doi.org/10.1080/13685538.2018.1479386>, DOI: [10.1080/13685538.2018.1479386](https://doi.org/10.1080/13685538.2018.1479386). [COBISS.SI-ID [6434879](https://www.cobiss.si/id/6434879)]

PETRESKI, Tadej, EKART, Robert, HOJS, Radovan, BEVC, Sebastjan. Hyperuricemia, the heart, and the kidneys : to treat or not to treat?. *Renal failure*. 2020, vol. 42, issue 1, str. 978-986. ISSN 1525-6049. <https://www.tandfonline.com/doi/full/10.1080/0886022X.2020.1822185>, <https://doi.org/10.1080/0886022X.2020.1822185>, DOI: [10.1080/0886022X.2020.1822185](https://doi.org/10.1080/0886022X.2020.1822185). [COBISS.SI-ID [30199299](https://www.cobiss.si/id/30199299)]

MIHEVC, Matic, PETRESKI, Tadej, MAVER, Uroš, BEVC, Sebastjan. Renal proximal tubular epithelial cells : review of isolation, characterization, and culturing techniques. *Molecular biology reports*. Dec. 2020, vol. 47, issue 12, str. 9865-9882, ilustr. ISSN 1573-4978. <https://link.springer.com/article/10.1007/s11033-020-05977-4>, <https://doi.org/10.1007/s11033-020-05977-4>, DOI: [10.1007/s11033-020-05977-4](https://doi.org/10.1007/s11033-020-05977-4). [COBISS.SI-ID [37514499](https://www.cobiss.si/id/37514499)]

PETRESKI, Tadej, PIKO, Nejc, EKART, Robert, HOJS, Radovan, BEVC, Sebastjan. Review on inflammation markers in chronic kidney disease. *Biomedicines*. [Online ed.]. 2021, vol. 9, str. [1]-16, ilustr. ISSN 2227-9059. <https://www.mdpi.com/2227-9059/9/2/182>, <https://doi.org/10.3390/biomedicines9020182>, DOI: [10.3390/biomedicines9020182](https://doi.org/10.3390/biomedicines9020182). [COBISS.SI-ID [51369219](https://www.cobiss.si/id/51369219)]

BAKKUM, Michiel J., RICHIR, Milan C., PAPAIOANNIDOU, Paraskevi, LIKIC, Robert, et al., BEVC, Sebastjan (927), KRŽAN, Mojca (927), et al. EurOP [sup]2 E - the European Open Platform for Prescribing Education, a consensus study among clinical pharmacology and therapeutics teachers. *European Journal of Clinical Pharmacology*. 2021, vol. 77, iss. 8, str. 1209-1218, ilustr. ISSN 0031-6970. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8275529/>, DOI: [10.1007/s00228-021-03101-4](https://doi.org/10.1007/s00228-021-03101-4). [COBISS.SI-ID [106371587](https://www.cobiss.si/id/106371587)]

KNEHTL, Maša, PETRESKI, Tadej, PIKO, Nejc, EKART, Robert, BEVC, Sebastjan. Polypharmacy and mental health issues in the senior hemodialysis patient. *Frontiers in psychiatry*. 12 May 2022, str. 1-12, ilustr. ISSN 1664-0640. <https://www.frontiersin.org/articles/10.3389/fpsy.2022.882860/full#ack1>, <https://doi.org/10.3389/fpsy.2022.882860>, DOI: [10.3389/fpsy.2022.882860](https://doi.org/10.3389/fpsy.2022.882860). [COBISS.SI-ID [107792643](https://www.cobiss.si/id/107792643)]

