



Univerza v Mariboru

Medicinska fakulteta

## UČNI NAČRT PREDMETA / COURSE SYLLABUS

Ime predmeta:	Klinična farmakokinetika
Course title:	Clinical Pharmacokinetics

Študijski program in stopnja Study programme and cycle	Študijska smer Study option	Letnik Year of study	Semester Semester
Biomedicinska tehnologija/3. stopnja		2	3 ali 4
Biomedical Technology/3rd Degree			

Vrsta predmeta (obvezni ali izbirni) / Course type (compulsory or elective)	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
15	30	AV	LV	RV			135	6

Nosilec predmeta / Course coordinator:   
doc. dr. Tina Maver

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):	Content (syllabus outline):
Zdravilna učinkovina, formulacije in dostavni sistemi (zdravila), farmakokinetika (LADME), farmakodinamika, terapevtski učinki zdravil. Sistemska in lokalna dostava zdravilnih učinkovin. Modeli vrednotenja biološke uporabnosti in bioekvivalence zdravil. Prostorski in fiziološki modeli vrednotenja farmakokinetike in farmakodinamike. Vplivi na variabilnost kliničnih učinkov zdravil in njihovo individualno odmerjanje. Odmerjanje zdravil glede na starost, težo, bolezensko stanje, hkratno uživanje hrane in druge posebne lastnosti bolnika. Vpliv genetskega polimorfizma na odmerjanje zdravil (farmakokinetični in farmakodinamski vidiki). Mehanizmi součinkovanja med zdravili.	Drug, drug formulation and delivery systems (medicines), pharmacokinetics (LADME), pharmacodynamics, the therapeutic drug effects. Systemic and local delivery of drugs. Models for bioavailability and bioequivalence evaluation. Spatial and physiological pharmacokinetic and pharmacodynamics models. Variation in clinical drug effects and the according drug dosage adjustment. Drug dosing based on age, weight, medical condition, concomitant food intake and other specific patient characteristics. The influence of genetic polymorphisms on drug dosing (pharmacokinetic and pharmacodynamics aspects). Mechanisms of drug interactions.

Individualna in populacijska farmakokinetika.	Individual and population pharmacokinetics.
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**Temeljni literatura in viri / Reading materials:**

M. Rowland, T. N. Tozer, *Clinical Pharmacokinetics and Pharmacodynamics: Concepts and Applications*, Fourth Edition, Lippincot Williams & Wilkins, Philadelphia, 2010.  
 L. A. Bauer, *Applied Clinical Pharmacokinetics*, 3rd edition, McGraw-Hill, New York, 2014.  
 I. Shargel, A. H. Mutnick, P. F. Souney, L. N. Swanson, *Comprehensive Pharmacy Review*, Lippincot Williams & Wilkins, Philadelphia, Seventh edition, 2009.  
 I. Shargel, A. H. Mutnick, P. F. Souney, L. N. Swanson, *Comprehensive Pharmacy Review, Practice Exams*, Lippincot Williams & Wilkins, Philadelphia, Seventh edition, 2008.  
 Tekoča periodika: *Clinical Pharmacokinetics* (<https://link.springer.com/journal/40262>)

**Cilji in kompetence:**

Vplivi procesov sproščanja, absorpcije, distribucije, metabolizma in eliminacije učinkovin na učinkovitost in varnost zdravil v različnih fizioloških in patoloških stanjih.  
 Na osnovi spremljanja koncentracij učinkovin v plazmi zagotavljati optimizacijo načrtovanja režimov odmerjanja zdravil (izbor farmacevtske oblike/ načina dajanja, odmerka, intervala odmerjanja).

**Objectives and competences:**

Influence of release, absorption, distribution, metabolism and elimination of drugs on their efficacy and safety in different physiologic and pathologic conditions.  
 On the basis of therapeutic drug monitoring, optimizing drug dosage regimen design (selection of drug formulation/mode of administration, dose and dosage interval).

**Predvideni študijski rezultati:**

**Intended learning outcomes:**

**Znanje in razumevanje:**

Študent osvoji znanje in razumevanje za napovedovanje in interpretacijo kliničnih učinkov zdravil v realnih kliničnih situacijah.

**Prenosljive/ključne spretnosti in drugi atributi:**

Odmerjanja zdravil v povezavi s klinično farmakokinetiko.

**Knowledge and understanding:**

Student gains knowledge and understanding for prediction and interpretation of drug responses in real clinical settings.

**Transferable/key competences and other abilities:**

Student gains comprehensive knowledge about drug dosing in relation to clinical pharmacokinetics aspects.

**Metode poučevanja in učenja:**

**Learning and teaching methods:**

Predavanja  
 Seminarji  
 Samostojno delo

Lectures  
 Seminars  
 Individual work

**Načini ocenjevanja:**

**Delež (v %) / Assessment methods:  
 Share (in %)**

Način (pisni izpit, ustno izpraševanje, naloge, projekt)		Method (written or oral exam, coursework, project):
pisni izpit,	60 %	written examination,
seminarska naloga (pisna in predstavitev)	40 %	seminars (written and presented)

**Reference nosilca / Course coordinator's references:**

**Prof. dr. Sebastjan Bevc:**

LEŠNIK, Amadeus, PIKO, Nejc, ŽELEZNIK, Danica, BEVC, Sebastjan. Dehydration of older patients in institutional care and the home environment. *Research in gerontological nursing*, ISSN 1938-2464, 2017, vol. 10, issue 6, str. 260-266.  
[https://m1.healio.com/~media/journals/rgn/2017/11\\_november/10\\_3928\\_19404921\\_20171013\\_03/10\\_3928\\_19404921\\_20171013\\_03.pdf](https://m1.healio.com/~media/journals/rgn/2017/11_november/10_3928_19404921_20171013_03/10_3928_19404921_20171013_03.pdf), doi: [10.3928/19404921-20171013-03](https://doi.org/10.3928/19404921-20171013-03). [COBISS.SI-ID [6190911](https://www.cobiss.si/id/6190911)]

BEVC, Sebastjan, 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*, ISSN 1473-0790, 2019, vol. 22, no. 1, str. 62-67.

<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. [COBISS.SI-ID 6434879], [JCR, SNIP, WoS do 1. 2. 2019: št. citatov (TC): 0, čistih citatov (CI): 0, čistih citatov na avtorja (CIAu): 0, Scopus do 30. 11. 2018: št. citatov (TC): 1, čistih citatov (CI): 1, čistih citatov na avtorja (CIAu): 0.20] kategorija: 1A2 (Z, A1/2); uvrstitev: SCI, Scopus, MBP; tip dela je verificiral OSICM točke: 18.09, št. avtorjev: 5

PETRESKI, Tadej, EKART, Robert, HOJS, Radovan, BEVC, Sebastjan. Hyperuricemia, the heart, and the kidneys : to treat or not to treat?. *Renal failure*, ISSN 1525-6049, 2020, vol. 42, issue 1, str. 978-986.

<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. [COBISS.SI-ID 30199299], [JCR, SNIP, WoS do 9. 10. 2020: št. citatov (TC): 0, čistih citatov (CI): 0, čistih citatov na avtorja (CIAu): 0, Scopus do 12. 10. 2020: št. citatov (TC): 0, čistih citatov (CI): 0, čistih citatov na avtorja (CIAu): 0] kategorija: 1A3 (Z); uvrstitev: SCI, Scopus, MBP; tip dela je verificiral OSICM točke: 19.13, št. avtorjev: 4

**Doc. dr. Tina Maver:**

MILOJEVIĆ, Marko, HARIH, Gregor, VIHAR, Boštjan, VAJDA, Jernej, GRADIŠNIK, Lidija, ZIDARIČ, Tanja, STANA-KLEINSCHKEK, Karin, MAVER, Uroš, MAVER, Tina. Hybrid 3D printing of advanced hydrogel-based wound dressings with tailorable properties. *Pharmaceutics*. [Online ed.]. 2021, vol. 13, iss. 4, str. 1-24, ilustr. ISSN 1999-4923. <https://www.mdpi.com/1999-4923/13/4/564>, DOI: 10.3390/pharmaceutics13040564.

[COBISS.SI-ID 60048899], [JCR, SNIP, WoS do 9. 8. 2021: št. citatov (TC): 1, čistih citatov (CI): 1, čistih citatov na avtorja (CIAu): 0,11] kategorija: 1A1 (Z, A', A1/2); uvrstitev: SCI, Scopus, MBP; tip dela je verificiral OSICN točke: 13.3, št. avtorjev: 9

MAVER, Tina, SMRKE, Dragica, KUREČIČ, Manja, GRADIŠNIK, Lidija, MAVER, Uroš, STANA-KLEINSCHKEK, Karin. Combining 3D printing and electrospinning for preparation of pain-relieving wound-dressing materials.

*Journal of sol-gel science and technology*, ISSN 0928-0707, First Online: 20 March 2018, str. 1-16. <https://link.springer.com/article/10.1007/s10971-018-4630-1>, doi: 10.1007/s10971-018-4630-1. [COBISS.SI-ID 21262870], [JCR, SNIP, WoS do 20. 9. 2021: št. citatov (TC): 24, čistih citatov (CI): 17, čistih citatov na avtorja (CIAu): 2.83, Scopus do 22. 9. 2021: št. citatov (TC): 31, čistih citatov (CI): 20, čistih citatov na avtorja (CIAu): 3.33] kategorija: 1A1 (Z, A', A1/2); uvrstitev: SCI, Scopus, MBP; tip dela še ni verificiran točke: 16.67, št. avtorjev: 6

MAVER, Tina, KUREČIČ, Manja, PIVEC, Tanja, MAVER, Uroš, GRADIŠNIK, Lidija, GAŠPARIČ, Petra, KAKER, Barbara, BRATUŠA, Ana, HRIBERNIK, Silvo, STANA-KLEINSCHKEK, Karin. Needleless electrospun carboxymethyl cellulose/polyethylene oxide mats with medicinal plant extracts for advanced wound care applications. *Cellulose*, ISSN 0969-0239, 2020, vol. 27, str. 4487-4508, doi: 10.1007/s10570-020-03079-9.

[COBISS.SI-ID 23049494], [JCR, SNIP, WoS do 30. 9. 2021: št. citatov (TC): 12, čistih citatov (CI): 10, čistih citatov na avtorja (CIAu): 1.00, Scopus do 26. 9. 2021: št. citatov (TC): 14, čistih citatov (CI): 12, čistih citatov na avtorja (CIAu): 1.20] kategorija: 1A1 (Z, A'', A', A1/2); uvrstitev: SCI, Scopus, MBP; tip dela je verificiral OSICT točke: 17, št. avtorjev: 10