Univerza v Mariboru
Medicinska fakulteta

UČNI NAČRT PREDMETA / COURSE SYLLABUS			
Ime predmeta:	**Nutracevtiki in tehnologija**		
Course title:	**Nutraceuticals and Technology**		

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**
		10						
15	**20**	**AV**	**LV**	**RV**			**135**	**6**

Nosilec predmeta / Course coordinator:	Prof. dr. Mojca Škerget

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

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):**
Vrste, viri, pridobivanje, lastnosti in delovanje naravnih bioaktivnih komponent z antioksidativnim, antimikrobiološkim in farmakološkim delovanjem za uporabo v prehrambni, kozmetični, predvsem pa v farmacevtski oziroma fitofarmacevtski industriji. Vsebina: - identifikacija spojin z antioksidativnim, antimikotičnim ali farmakološkim učinkom (fenolne spojine, terpenoidi, steroidi, alkaloidi,...). - postopki izolacije in koncentriranja aktivnih učinkovin (ekstrakcija, kromatografija,...) - vpliv (zdravilne) substance na pojav bolezni in možnosti zdravljenja ter vrste testiranj (predklinični klinični testi) - predklinična testiranja: različni testi antioksidativne učinkovitosti npr. Rancimat test,	Type, source, separation methods, properties and activity of natural bioactive compounds with antioxidative, antimicrobiological and pharmacological activity for the use in food, cosmetic and especially in pharmaceutical or phytopharmaceutical industry. Content: - identification of substances with antioxidative, antimicotic or pharmacological activity (phenolic compounds, terpenoids, steroids, alkaloids,...) - influence of health substances on occurrence of sickness and healing possibilities and types of activity tests (pre-clinical and clinical tests). - Pre-clinical tests: various antioxidant activity tests: e.g. Rancimat test, peroxide value, anisidine value, BCB test (□-carotene bleaching test) and DPPH test

peroksidno število, anizidinsko število, BCB test (β-carotene bleaching test), DPPH test (free radical scavening capacity), testiranja antimikrobiološkega delovanja npr. z merjenjem radialne rasti plesni na PDA agarju in z merjenjem optične gostote bakterijskih suspenzij.	(free radical scavenging capacity), antimicrobiological capacity tests: e.g. measuring the radial growth on PDA plates and measuring the optical density of bacterial suspension by densitometry.

Temeljni literatura in viri / Reading materials:

- Dewick, Paul M., Medicinal natural products : a biosynthetic approach, 3rd ed., John Wiley & Sons, cop. , Chichester, 2009
- Pharmacognosy Medicinal Plants, Perveen Shagufta, Al-Taweel, Areej, Editors, IntechOpen, London, 2019.
- K. Kramer, P.-P. Hoppe, L. Packer, eds., Nutraceuticals in Health and Disease Prevention. Marcel Dekker, Inc. New York, 2001.
- E. Cadenas, L. Packer, Handbook of Antioxidants, 2nd ed., Marcel Dekker, Inc. New York, 2002.
- D. Armstrong, ed., Oxidative Stress Biomarkers and Antioxidant Protocols. Humana Press Inc., New Jersey, 2002.

Cilji in kompetence:	**Objectives and competences:**
Integracija načel kemije, biologije, medicine in inženirstva s ciljem spoznati naravne produkte, ki pozitivno vplivajo na človeško zdravje (nutracevtiki), metode njihove izolacije, področja uporabe, kot tudi njihove vplive na zdravje in testne metode.	Integration principles of chemistry, biology, medicine and engineering with the aim to recognize natural products, which have positive influence on human health (nutraceuticals), the isolation methods, possible areas of application, as well as their influence on the health and test methods.
Predvideni študijski rezultati:	**Intended learning outcomes:**
Znanje in razumevanje: Postopki izolacije in koncentriranja aktivnih učinkovin, vpliv zdravilnih substanc na pojav bolezni.	**Knowledge and understanding:** Procedures for the isolation and concentration of active substances, the influence of the active substances on the occurrence of the disease.
Prenosljive/ključne spretnosti in drugi atributi: Študent obvlada predklinična testiranja, npr. BCB test, merjenje optične gostote bakterijskih suspenzij.	**Transferable/key competences and other abilities:** The student mastered preclinical testing, e.g. BCB test, measurement of optical density of bacterial suspensions.
Metode poučevanja in učenja:	**Learning and teaching methods:**
Predavanja Seminarji (študijski primeri v zadnjem času razvitih nutracevtikov) Vaje (laboratorijsko delo v okviru projektne naloge) Samostojno delo	Lectures Seminars (study examples of the recently developed nutraceuticals) Tutorial (laboratory work in the frame of project exercise) Individual work

Načini ocenjevanja:	**Delež (v %) / Share (in %)**	**Assessment methods:**
Način (pisni izpit, ustno izpraševanje, naloge, projekt)		Method (written or oral exam, coursework, project):
Ustni izpit	**50 %**	Oral exam
Projekt	**50 %**	Project

Reference nosilca / Course coordinator's references:

ČOLNIK, Maja, IRGOLIČ, Mihael, PERVA, Amra, ŠKERGET, Mojca. The conversion of pistachio and walnut shell waste into valuable components with subcritical water. Processes. [Online ed.]. 2024, vol. 12, iss. 1, [article no.] 195, 18 str., ilustr. ISSN 2227-9717. DOI: 10.3390/pr12010195. [COBISS.SI-ID 181523459], [JCR, SNIP, WoS, Scopus]

ČOLNIK, Maja, KOTNIK, Petra, KNEZ, Željko, ŠKERGET, Mojca. Chemical recycling of polyolefins waste materials using supercritical water. Polymers. 19 Oct. 2022, vol. 14, iss. 20, 18 str., ilustr. ISSN 2073-4360. https://dk.um.si/IzpisGradiva.php?id=85896, DOI: 10.3390/polym14204415. [COBISS.SI-ID 126526723], [JCR, SNIP, WoS do 7. 4. 2023: št. citatov (TC): 2, čistih citatov (CI): 2, čistih citatov na avtorja (CIAu): 0.50, Scopus do 29. 10. 2023: št. citatov (TC): 5, čistih citatov (CI): 5, čistih citatov na avtorja (CIAu): 1.25], financer: ARRS, Projekt, P2-0421, SI, Sustainable technologies and Circular Economy; ARRS, Projekt, P2-0046, SI, Separation Processes and Production Design; ARRS, Projekt, J7-3149, SI, Design and Management of Sustainable Plastic Value Chains to Support a Circular Economy Transition, kategorija: 1A1 (Z, A', A1/2); uvrstitev: SCIE, Scopus, MBP (COMPENDEX, DOAJ, FSTA, INSPEC, METADEX, PUBMED); tip dela je verificiral OSICT točke: 26.67, št. avtorjev: 4

ČOLNIK, Maja, PEČAR, Darja, KNEZ, Željko, GORŠEK, Andreja, ŠKERGET, Mojca. Kinetics study of hydrothermal degradation of PET waste into useful products. Processes. [Online ed.]. 2022, vol. 10, iss. 1, 12 str., ilustr. ISSN 2227-9717. https://dk.um.si/IzpisGradiva.php?id=85900, DOI: 10.3390/pr10010024. [COBISS.SI-ID 92221955], [JCR, SNIP, WoS do 8. 7. 2023: št. citatov (TC): 2, čistih citatov (CI): 2, čistih citatov na avtorja (CIAu): 0.40, Scopus do 19. 6. 2023: št. citatov (TC): 3, čistih citatov (CI): 3, čistih citatov na avtorja (CIAu): 0.60], financer: ARRS, Program, P2-0032, SI, Process systems engineering and sustainable development; ARRS, Program, P2-0046, SI, Separation processes and product design, kategorija: 1A2 (Z, A1/2); uvrstitev: SCIE, Scopus, MBP (DOAJ, INSPEC, METADEX, PUBMED); tip dela je verificiral OSICT točke: 16.57, št. avtorjev: 5