Univerza v Mariboru
Medicinska fakulteta

UČNI NAČRT PREDMETA / COURSE SYLLABUS			
Ime predmeta:	**Mikrobiote pri človeku**		
Course title:	**Human Microbiome**		
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. Maja Rupnik

Jeziki /Languages:	**Predavanja / Lectures:**	Slovenski/Slovene
	Vaje / Tutorial:	Slovenski/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):**
- Različne mikrobiote pri človeku s poudarkom na črevesni, vaginalni, kožni in ustni mikrobioti - Kaj sestavlja mikrobiote - Pomen mikrobiote pri razvoju in vzdrževanju homeostaze - Pomen mikrobiote pri boleznih (kronične bolezni, metabolne motnje, duševne motnje, nevrodegenartivne bolezni, alergije, rak) - Kako proučujemo mikrobiote (sekvenciranje naslednje generacije, metagenomika, metabolomika, in vitro sistemi, načini za vizualno predstavitev analiziranih podatkov) - Kaj vpliva na mikrobioto in načini za modulacijo mikrobiot (mikrobne transplantacije, dieta, fagna terapija, probiotiki, prebiotiki) - Mikrobiote kot terapevtske tarče	– Diversity of human microbiome with focus on gut, vaginal, skin and oral microbiota – Composition of microbiota – The role of microbiota in development and health maintenance – The role of microbiota in diseases (chronic diseases, metabolic disorders, psychological disorders, neurodegenerative diseases, allergies, cancer) – How microbiota is studied (next generation sequencing, metagenomics, metabolomics, in vitro systems, how the data is visually represented) – Different factors affecting the microbiota and how microbiota can be modulated (microbial transplantations, diet, phage therapy, probiotics, prebiotics)

	– Microbiota as a therapeutic target
Temeljni literatura in viri / Reading materials:	
Zaradi hitrega razvoja na področju se bo uporabljala predvsem znanstvena periodika (Nature Reviews Microbiology, Microbiome, Beneficial microbes, Science, Nature in druge)	
Cilji in kompetence:	**Objectives and competences:**
- Poznavanje vloge mikrobiote pri vzdrževanju zdravja in razvoju bolezni. - Poznavanje možnosti za spremembe mikrobiot. - sposobnost razumevanja strokovne literature na temo mikrobiote. - Sposobnost načrtovanja raziskovalnega dela s področja mikrobiote.	- Understanding the role of microbiota in health and disease. - Understanding the possibilities to modulate microbiota. - Ability to understand scientific literature on microbiota. - Ability to plan the research including microbiota studies.
Predvideni študijski rezultati:	**Intended learning outcomes:**
Znanje in razumevanje: - Pomena specifičnih mikrobiot pri človeku. - Načinov študija mikrobiote.	**Knowledge and understanding:** - Significance of human microbiome. - Approaches for microbiome research.
Prenosljive/ključne spretnosti in drugi atributi: Obvladovanje znanstvene literature na obsežnem in hitro razvijajočem znanstvenem področju Poznavanje različnih raziskovalnih metod (sekvenciranje naslednje generacije, etični vidiki študij, in vitro sistemi)	**Transferable/key competences and other abilities:** How to deal with literature in the large and quickly developing scientific topic Use of methodological knowledge in research work
Metode poučevanja in učenja:	**Learning and teaching methods:**
Predavanja/konzultacije Seminar Vaje (demonstracija analize mikrobiote) Samostojno delo	Lectures/consultations Seminar Tutorial (practical demonstration of microbiota analysis) 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	**30 %**	Oral exam
Seminarska naloga	**70 %**	Seminar paper

Reference nosilca / Course coordinator's references:

MAHNIČ, Aleksander, PINTAR, Špela, SKOK, Pavel, RUPNIK, Maja. Gut community alterations associated with Clostridioides difficile colonization in hospitalized gastroenterological patients with or without inflammatory bowel disease. Frontiers in microbiology. Sep. 2022, vol. 13, str. 1-8, ilustr. ISSN 1664-302X. https://doi.org/10.3389/fmicb.2022.988426, DOI: 10.3389/fmicb.2022.988426. [COBISS.SI-ID 120477443], kategorija: 1A1 (Z, A', A1/2)

MAHNIČ, Aleksander, BREZNIK, Vesna, BOMBEK, Maja, RUPNIK, Maja. Comparison between cultivation and sequencing based approaches for microbiota analysis in swabs and biopsies of chronic wounds. Frontiers in medicine. Jun. 2021, vol. 8, str. 1-10, ilustr. ISSN 2296-858X.

https://www.frontiersin.org/articles/10.3389/fmed.2021.607255/full, DOI: 10.3389/fmed.2021.607255. [COBISS.SI-ID 66168067], kategorija: 1A2 (Z, A1/2)

MAHNIČ, Aleksander, AUCHTUNG, Jennifer, POKLAR ULRIH, Nataša, BRITTON, Robert A., RUPNIK, Maja. Microbiota in vitro modulated with polyphenols shows decreased colonization resistance against Clostridioides difficile but can neutralize cytotoxicity. Scientific reports. 2020, vol. 10, no. 8358, 1-11 str., ilustr. ISSN 2045-2322. https://www.nature.com/articles/s41598-020-65253-0, DOI: 10.1038/s41598-020-65253-0. [COBISS.SI-ID 16205827], kategorija: 1A1 (Z, A', A1/2)