

**UČNI NAČRT PREDMETA / COURSE SYLLABUS**

|                      |                                                              |
|----------------------|--------------------------------------------------------------|
| <b>Ime predmeta:</b> | Izbrane vsebine in novosti v mikrobiologiji in imunologiji   |
| <b>Course title:</b> | Selected topics and novelties in microbiology and immunology |

| <b>Študijski program in stopnja</b><br>Study programme and cycle | <b>Študijska smer</b><br>Study option | <b>Letnik</b><br>Year of study | <b>Semester</b><br>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

**Univerzitetna koda predmeta / University course code:**

| <b>Predavanja</b><br>Lectures | <b>Seminar</b><br>Seminar | <b>Vaje</b><br>Tutorial | <b>Klinične vaje</b><br>Clinical training | <b>Druge oblike študija</b><br>Other forms of study | <b>Samost. delo</b><br>Individual work | <b>ECTS</b> |
|-------------------------------|---------------------------|-------------------------|-------------------------------------------|-----------------------------------------------------|----------------------------------------|-------------|
| 5                             | 40                        | AV LV RV                |                                           |                                                     | 45                                     | 3           |

**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):**

Predmet je namenjen študentom, ki jih zanima raziskovalno delo, saj se bodo na praktičnem primeru manjše projektne naloge spoznali z načinom zasnove projekta, različnimi metodami v mikrobioloških raziskavah, analizo rezultatov ter načini za predstavitev rezultatov.

Teme projektov vključujejo npr. izolacijo in molekularno karakterizacijo različnih pomembnih mikroorganizmov v določenem okolju ali določeni populaciji, raziskave naravnih mikrobiot, spremljanje genetskih determinant za odpornost proti antibiotikom.

**Content (syllabus outline):**

This course is designed for students interested also in the research work and give the opportunity to perform a smaller practical research project within diverse microbiological topics (such as isolation and characterization of pathogens from different environments or patient populations; natural and changed microbiota; follow up of antibiotic resistance genetic determinants)

## Temeljni literatura in viri / Reading materials:

- Ihan A (urednik) Medicinska bakteriologija z mikologijo in parazitologijo, 2020;
- Horvat, Sabina, Rupnik, Maja. How and why to analyze microbiota : a quick guide for clinicians = Kako in zakaj analiziramo mikrobioto : hitri vodnik za zdravnike. Acta medico-biotechnica : AMB. [Tiskana izd.]. 2020, vol. 13, [no.] 1, str. 11-22, ilustr. ISSN 1855-5640.
- Znanstvena in strokovna periodika glede na temo (Nature Reviews Microbiology; Baničevi dnevi – zborniki v slovenskem jeziku)

### Cilji in kompetence:

Študent pri izbirnem predmetu razširjeno in poglobljeno obravnava ozko izbrano temo iz celotnega obsega vsebin izbranega predmeta. Obravnava, presega raven obravnave v učbeniku. Pri izbranem predmetu študent utrjuje znanja in veščine, potrebne za samostojno delo in razčlenjevanje posameznih problemov na osnovi podatkov, dobljenih iz sodobne strokovne literature. Hkrati s tem utrjuje znanja in veščine, potrebne za samostojno iskanje sodobnih virov podatkov iz izbranega področja, njihovo razčlenjevanje, analizo in predstavitev. Cilj je priprava študenta na samostojno obravnavo in predstavitev posameznih tem na osnovi tekočih dogajanj v stroki

### Objectives and competences:

Chosen subject out of the electives is studied profoundly. Knowledge about the subject extends the matter given in the course book. Thus, student revise obtained knowledge and skills needed for independent work and problem analyse. Student gains experience how to look for newest data on the chosen field and on the basis of acquired modern data from professional literature learns how to classify, analyse and present them.

Goal is to prepare student for competent interpretation and presentation of cutting edge professional themes.

### Predvideni študijski rezultati:

Znanje in razumevanje:

- pomembnejših in novejših tem v mikrobiologiji
- sodobnih metod v diagnostiki in raziskavah

Prenesljive/ključne spretnosti in drugi atributi:

- sposobnost samostojnega dela
- sposobnost reševanja problemov
- uporaba primarnih virov literature
- učinkovita prezentacija

### Intended learning outcomes:

Knowledge and Understanding:

- of relevant, new and emerging topics in Microbiology
- state of the art in diagnostic methods and in research

Transferable/Key Skills and other attributes:

- capability of independent work
  - capability of problem solving
  - use of primary sources of scientific literature
- knowledge, how to present

### Metode poučevanja in učenja:

projektna naloga

Seminar – predstavitev naloge

### Learning and teaching methods:

seminar

project work

### Načini ocenjevanja:

Način (pisni izpit, ustno izpraševanje, naloge, projekt)

#### ŠTUDIJSKE OBVEZNOSTI ŠTUDENTOV:

Študent mora izvesti manjši praktični projekt, pripraviti seminarsko nalogo/poročilo projekta in jo ustno zagovarjati.

Delež (v %) /

Share (in %)

### Assessment methods:

ACADEMIC OBLIGATIONS OF STUDENTS:

Student has to perform a small practical project, prepare a written report and a short oral presentation.

#### Knowledge assessment

The final mark is composed of :  
mark for practical work (30%),

|                                                                                                                                                                                                             |                |                                                                                                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------------------------------------------------------------------------------------------------------------------|
| NAČIN OCENJEVANJA:<br>Končna ocena je sestavljena iz :<br>ocene praktičnega dela (30%),<br>pisnega izdelka (40%) in<br>predstavitve (30%).<br><br>POGOJI ZA PRISTOP K POSAMEZNEMU<br>PREVERJANJU ZNANJA: ni | 30<br>40<br>30 | for written report (40%) and<br>for presentation (30%).<br><br>REQUIREMENTS FOR ACCESS TO INDIVIDUAL<br>KNOWLEDGE CHECKING: - |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------------------------------------------------------------------------------------------------------------------|

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

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],

MAHNIČ, Aleksander, BRESKVAR, Martin, DŽEROSKI, Sašo, SKOK, Pavel, PINTAR, Špela, **RUPNIK, Maja**. Distinct types of gut microbiota dysbiosis in hospitalized gastroenterological patients are disease non-related and characterized with the predominance of either Enterobacteriaceae or Enterococcus. Frontiers in microbiology. Feb. **2020**, vol. 11, str. 1-10, ilustr. ISSN 1664-302X. <https://www.frontiersin.org/articles/10.3389/fmicb.2020.00120/full>, DOI: 10.3389/fmicb.2020.00120. [COBISS.SI-ID 33165351],

TKALEC, Valerija, VIPREY, Virginie, DAVIS, Georgina L, JANEŽIČ, Sandra, SENTÉ, Béatrice, DEVOS, Nathalie, WILCOX, Mark, DAVIES, Kerrie, **RUPNIK, Maja**. *Clostridioides difficile* positivity rate and PCR ribotype distribution on retail potatoes in 12 European countries, January to June 2018. Eurosurveillance. [Online ed.]. **2022**, vol. 27, no. 15, str. 1-10. ISSN 1560-7917. <https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2022.27.15.2100417>, DOI: 10.2807/1560-7917.ES.2022.27.15.2100417. [COBISS.SI-ID 105165315],

HORVAT, Sabina, MAHNIČ, Aleksander, MAKUC, Damjan, PEČNIK, Klemen, PLAVEC, Janez, RUPNIK, Maja. Children gut microbiota exhibits a different composition and metabolic profile after in vitro exposure to *Clostridioides difficile* and increases its sporulation. Frontiers in microbiology. 9. Dec. **2022**, vol. 13, [article no.] 1042526, str. 1-11, ilustr. ISSN 1664-302X. DOI: 10.3389/fmicb.2022.1042526. [COBISS.SI-ID 134179587]

JANEŽIČ, Sandra, BLAŽEVIČ, Ines, EYRE, David, KOTNIK-KEVORKIJAN, Božena, REMEC-ZAFRED, Tatjana, RUPNIK, Maja. Possible contribution of shoes to *Clostridioides difficile* transmission within hospitals. Clinical microbiology and infection. [Online ed.]. May **2021**, vol. 27, issue 5, 797-799. ISSN 1469-0691. <https://www.sciencedirect.com/science/article/abs/pii/S1198743X20306911?via%3Dihub>, DOI: 10.1016/j.cmi.2020.11.001. [COBISS.SI-ID 42661635],