

# UČNI NAČRT PREDMETA / COURSE SYLLABUS

|                      |                                               |
|----------------------|-----------------------------------------------|
| <b>Predmet:</b>      | <b>Molekularna in celična endokrinologija</b> |
| <b>Course title:</b> | <b>Molecular and Cellular Endocrinology</b>   |

| Študijski program in stopnja<br>Study programme and level                | Študijska smer<br>Study field | Letnik<br>Academic year | Semester<br>Semester |
|--------------------------------------------------------------------------|-------------------------------|-------------------------|----------------------|
| Biomedicinska tehnologija/Biomedical Technology<br>3. stopnja/3rd Degree |                               | 2                       | 3 ali 4              |

**Vrsta predmeta / Course type**

Izbirni/Elective

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

| Predavanja<br>Lectures | Seminar<br>Seminar | Vaje<br>Tutorial | Klinične vaje<br>work | Druge oblike<br>študija | Samost. Delo<br>Individ. Work | ECTS |
|------------------------|--------------------|------------------|-----------------------|-------------------------|-------------------------------|------|
| 15                     | 20                 | 10               |                       |                         | 105                           | 5    |

**Nosilec predmeta / Lecturer:**

Prof. dr. Marjan Slak Rupnik  
Doc. dr. Andraž Stožer

**Jeziki /**

**Predavanja / Lectures:** Angleško/English

**Languages:**

**Vaje / Tutorial:** Angleško/English

**Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:**

**Prerequisites:**

Kandidat mora doseči 300 ECTS na predhodnem študiju.

Graduate degree 300 ECTS

**Vsebina:**

1. Uvod v molekularno in celično endokrinologijo
2. Endokrine celice v trebušni slinavki
3. Vzdražnost in izločanje insulina in glukagona
4. Homeostaza citosolnega kalcija
5. Medcelični stiki in sinhronizacija izločanja hormonov
6. Živčna modulacija endokrinega izločanja v trebušni slinavki
7. Okvare molekularnih in celičnih mehanizmov pri sladkorni bolezni
8. Okvare molekularnih in celičnih mehanizmov pri debelosti
9. Celične in tkivne kulture v endokrinologiji
10. Molekularni mehanizmi uravnavanja vezikularnega transporta snovi
11. Celični tipi v hipofizi
12. Razvojni aspekti molekularne in celične endokrinologije

**Content (Syllabus outline):**

1. Introduction to molecular and cellular endocrinology
2. Endocrine cells in pancreas
3. Excitability and insulin and glucagon release
4. Homeostasis in cytosolic calcium
5. Gap junctions and synchronization of hormone release
6. Neural modulation of endocrine release in pancreas
7. Molecular and cellular defects in diabetes
8. Molecular and cellular defects in obesity
9. Cell and tissue cultures in endocrinology
10. Molecular mechanisms of the vesicular transport
11. Molecular and cellular physiology of pituitary
12. Developmental aspects of molecular and cellular endocrinology

**Temeljni literatura in viri / Readings:**

- Bolander FF Jr. (2004). Molecular endocrinology, 3rd ed. Academic Press
- Conn PM in Freeman ME. (2000) Neuroendocrinology in physiology and medicine. Humana press.
- Tekoča periodika in zlasti pregledni članki s področij: molecular endocrinology, cellular endocrinology, endocrine pancreas, insulin release, diabetes mellitus, hormone release, signaling pathways, calcium homeostasis

#### Cilji in kompetence:

Poglavitni cilj predmeta je predstavitev modernih eksperimentalnih pristopov v molekularni in celični endokrinologiji. Žarišče zanimanja so molekularni in celični procesi, ki sodelujejo pri endokrini funkciji in disfunkciji. Prvi, večji del predmeta je namenjen molekularnim in celičnim procesom v endokrinem delu trebušne slinavke in okvaram teh procesov pri sladkorni bolezni in debelosti. V drugem delu je poudarek na mehanizmih izločanja hormonov iz hipofize in drugih žlez.

#### Predvideni študijski rezultati:

##### Znanje in razumevanje:

Poglobljeno znanje o fiziologiji in patofiziologiji trebušne slinavke. Razumevanje modernih eksperimentalnih pristopov v molekularni in celični endokrinologiji.

##### Prenesljive/ključne spretnosti in drugi atributi:

Študent pridobi ustrezno znanje molekularne in celične endokrinologije.

#### Metode poučevanja in učenja:

predavanja in seminarji

#### Objectives and competences:

The major aim of the course is to present the state of the art experimental approaches in molecular and cellular endocrinology. In the focus are the molecular and cellular processes in endocrine function and dysfunction. First, major part of the course is dedicated to molecular and cellular processes in endocrine pancreas and the defects related to diabetes and obesity. Second part deals with mechanisms of endocrine release from pituitary and other glands.

#### Intended learning outcomes:

##### Knowledge and understanding:

In-depth knowledge about physiology and pathophysiology of endocrine pancreas. Understanding the state of the art experimental approaches in molecular and cellular endocrinology.

##### Transferable/Key Skills and other attributes:

Students gets suitable knowledge of molecular and cellular endocrinology.

#### Learning and teaching methods:

lectures and seminars

#### Načini ocenjevanja:

projekt in  
ustno izpraševanje

#### Delež (v %) /

#### Weight (in %)

#### Assessment:

project and  
oral