

# *The Hebrew University of Jerusalem*

## *Syllabus*

### **GENERAL ENDOCRINOLOGY - 71810**

*Last update 10-01-2024*

*HU Credits:* 3

*Degree/Cycle:* 1st degree (Bachelor)

*Responsible Department:* Animal Sciences

*Academic year:* 0

*Semester:* 1st Semester

*Teaching Languages:* English

*Campus:* Rehovot

*Course/Module Coordinator:* Dr. Asaf Marco

*Coordinator Email:* [Asaf.Marco@mail.huji.ac.il](mailto:Asaf.Marco@mail.huji.ac.il)

*Coordinator Office Hours:* By appointment

*Teaching Staff:*

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Dr. Asaf Marko,  
Ms. hadar parnas

Course/Module description:

- The main purpose of the course is to provide students with a comprehensive understanding of the endocrine system and its role in regulating various physiological processes in the body. In the first step, I will give a general description of the endocrine system and its products, and I will elaborate on the mechanisms of synthesis, release and transport of hormones. Next, I will expand on the mechanisms of action of hormones while emphasizing the differences between hormones that are peptides and steroids.
- In the next step we will discuss the mechanisms and function of different hormones, how they communicate with target cells to promote physiological reactions. As part of the course, the students will learn about the various glands and hormones involved in maintaining homeostasis and the role they play in maintaining health and contributing to various diseases.
- I will expand about the connection between the hypothalamus and the pituitary gland. I will give a general description of this system and its products, while focusing on 7 central hormones.
- Next, I will focus on 4 central endocrine glands (thyroid, adrenal, pancreas and digestive system). In each system we will learn about the effects of hormones on target cells, physiological processes and diseases that may develop as a result of abnormal activity.
- In the course we will also expand on ways to measure and quantify hormones and on endocrine-disrupting chemicals

Course/Module aims:

- Learn basic concepts in endocrinology and deepen the connection between this course and advanced courses on similar topics.
- By the end of the course, we inspire that the students will have a solid understanding of the basics of endocrinology and the ability to apply this knowledge in homework exercises (independently) and in writing a short section (detailed below).
- Increase the professional vocabulary in English and provide basic tools for examining a scientific text (in English)

Learning outcomes - On successful completion of this module, students should be able to:

- Following the course, the students will acquire basic knowledge in endocrinology, will recognize several central systems and will recognize the main differences

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between different hormones and endocrine systems.

- Following the course, the students will be able to examine a scientific section on endocrinology and identify in the text the main methods for quantifying and measuring hormones.
- Following the course, the students will be able to implement the knowledge learned and offer a (theoretical only) solution for the treatment of a known disease or endocrine disorder.

Attendance requirements(%):

100

Teaching arrangement and method of instruction: Lectures + online practice

13 frontal lectures

(6 lectures of 3 hours and 7 lectures of 2 hours)

Home exercises: the purpose of the exercises is to deepen the knowledge learned in the lecture. In addition, I would like to present the challenges and problems encountered by researchers in the field, to strengthen creative and critical thinking. The application exercises will be divided into three stages:

Task A - You have to answer a set of multiple-choice questions on the Moodle website or do an assignment in PhysioEx

Task B - You will have to read a short section in English from an article and answer several questions on the subject.

Task C - summary task. You must choose a pathology related to one of the endocrine systems studied in class and write a short section (up to 300 words) that includes:

- A brief description of the pathology and the causes of its development
- How and when to measure the hormone or biological aspects related to the disorder
- To offer completely theoretical ways of treatment (certainly does not have to be applicable).

Course/Module Content:

- Lecture 1: General description of the endocrine system and its products. Differences between this system and the nervous system. Synthesis, release and transport of hormones.
- Lecture 2: The differences between peptides, amines, steroids hormones and

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prostaglandins. Overview of the different receptors and mechanisms of action of hormones according to groups.

- *Lecture 3 and 4: The pineal gland. The relationship between the hypothalamus and the pituitary gland. A general description of this system and its products, while focusing on 7 central hormones:*

- o GH

- o ACTH

- o TSH

- o FSH/LH

- o Prolactin

- o Oxytocin

- *Lecture 5-6: Thyroid and parathyroid: mode of action, target organs, related disorders.*

- *Lecture 7-8: Adrenal: mode of action, target organs, related disorders*

- *Lecture 9: Pancreas mode of action, target organs, related disorders*

- *Lecture 10: The digestive system. Mode of action, target organs, associated disorders*

#### Required Reading:

*Will appear in presentations*

#### Additional Reading Material:

*Will appear in presentations*

#### Grading Scheme:

*Written / Oral / Practical Exam 60 %*

*Submission assignments during the semester: Exercises / Essays / Audits / Reports / Forum / Simulation / others 40 %*

#### Additional information:

*The lectures in this course will be recorded and revealed to anyone interested. The recordings will be available immediately after the lesson - there will be no live broadcast of the lesson (except in special circumstances and subject to the approval of the teaching committee).*