The Hebrew University of Jerusalem

Syllabus

SELECTED TOPICS IN ANIMAL PHYSIOLOGY - 73801

Last update 12-08-2023

HU Credits: 2

Degree/Cycle: 2nd degree (Master)

Responsible Department: Animal Sciences - International Program

Academic year: 0

Semester: 1st Semester

Teaching Languages: English

Campus: Rehovot

Course/Module Coordinator: Dr. Natalie Avital-Cohen

Coordinator Email: natalie.avital@mail.huji.ac.il

Coordinator Office Hours: : By appointment via Division for International Studies

Teaching Staff:

Dr. Natalie Cohen,
Dr. Yossi Wein

Course/Module description:
Introduction to body functions at the cellular, tissue, organ and systems level with emphasis on the mechanisms of operation.

Course/Module aims:
•Identify the relationship between cells, tissues and organs.
•Recognize and explain the principle of homeostasis and the use of feedback loops to control the physiology of the body systems.
•Describe the structure and function of important components involved in the normal functioning of various animal species,
•Identify and explain the structure and function relationship of various physiological systems.
•Develop the anatomical/physiological vocabulary essential to success in this course.
•Apply the scientific method when thinking and learning about animal physiology.
• Demonstrate an understanding of basic physical and biochemical concepts inherent to the function of the mammalian and other animal body.

Learning outcomes - On successful completion of this module, students should be able to:
Appreciate mammalian and avian physiology.
Recognize of a number of important physiological systems including the cardio-respiratory, neurophysiology muscular and digestive systems; be able to recognise
Identify the principle tissue structures in those systems
Analyse and extrapolate from their knowledge of the separate systems to discuss physiological responses to challenges

Attendance requirements(%):
100

Teaching arrangement and method of instruction: Lectures

Course/Module Content:
•Introduction to Physiology
•The cardiovascular system:
1.The circuitry, structure, resistance and capacitance vessels, the biophysics of

blood flow, local and systemic control of vessel diameter, microcirculation in capillaries, exchange of solutes thru capillary walls.
2.Electric activity of cardiac muscle, action potential generation and conductance in the heart, pacemaker potential, cardiac ion channels, autonomic control of pacemaker activity, EKG.
3.Mechanical properties of the heart, pressure-volume curves, the cardiac cycle - relation to structure, preload, peripheral resistance and afterload.
•Anatomy: skeleton, muscles, skin and feather
•Blood system, blood pressure, respiration-lung air sacs, respiration mechanism
•Respiration mechanics, ventilation, volume, blood circulation, gas exchange
•Kidney – anatomy, function, salt gland, uric acid metabolism, incubation behavior – presentation of recent findings in incubation behavior physiology
•Avian physiology
1.Digestive system: anatomy histology, embryo development, difference between broilers and layers breeds, factors affecting guts development, early feeding Vs in ovo feeding
2.Myogenesis, satellite cells, factors affecting muscle development.
3.Embryo vs. after hatch development.
4.Functional physiology of intestinal mucosa.
5.The major exocrine and endocrine secretory processes.

Required Reading:
Selected readings appear in Moodle

Additional Reading Material:
Selected readings appear in Moodle

Grading Scheme:
Written / Oral / Practical Exam 100 %

Additional information:
The course is given in English