האוניברסיטה העברית בירושלים
THE HEBREW UNIVERSITY OF JERUSALEM

The Hebrew University of Jerusalem

Syllabus

Cardiovascular blood and lymphatic system of the healthy person - 96201

Last update 04-10-2021

HU Credits: *4.5*

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

Responsible Department: *Medicine*

Academic year: *0*

Semester: *1st Semester*

Teaching Languages: *Hebrew*

Campus: *Ein Karem*

Course/Module Coordinator: *Ayal Ben-Zvi, PhD.*

Coordinator Email: *ayalb@ekmd.huji.ac.il*

Coordinator Office Hours: *Coordinate by email*

Teaching Staff:
Prof Jacob Assaf,
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Mr. Oriel Fridlich,
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Course/Module description:
The course will review the structure and normal functions of the blood vessels, the heart, the blood system and lymphatic.

Course/Module aims:
To attain comprehensive knowledge and understanding of the vascular system, the heart, the blood system and lymphatic in terms of function and basic structure.

Learning outcomes - On successful completion of this module, students should be able to:
Comprehend the macroscopic anatomical structure of the heart, blood vessels, blood components, and the lymphatic system.

Comprehend the histological structure of the heart, blood vessels, blood components, and the lymphatic system.

Describe the heart function as a pump and an electrical system.

Hemodynamics: will describe principles of hydrodynamics and substance exchange through blood vessels.

Comprehend the principles of autoregulation and neural regulation of blood vessels.

Comprehend the mechanism of coagulation and platelets

Will recognize the lymphatic system, tubes, lymphatic fluid and lymph nodes including thymus and spleen.

Attendance requirements(%):
No obligatory attendance in the frontal lectures. 100% attendance required in the small study groups and the anatomical dissections.

Teaching arrangement and method of instruction: Frontal lectures given by experts in each section and module as well as small study groups going over central and important modules. In addition there will be anatomical dissections as well as histological labs

Course/Module Content:
1. Anatomy of the cardiovascular system and the lymphatic system. – 4 hours
A. General anatomy of the heart: location, structure, pericardium, heart wall, rooms and spasms, valves, large blood vessels, blood supply to the heart, heart cycle and transport system. B. General anatomy of blood vessels: structure of arteries, veins and capillaries. Arterial arteries and blood circulation.
C. Anatomy of the lymphatic system: lymphatic tissues (lymph nodes, spleen and adenoids), lymph cycle.

Anatomy Dissection Laboratory, 6 hours: Two laboratories, 3 hours each. One of the thorax and one on the heart.

2. Histology – blood vessels 3 hours lectures (Ayal Ben Zvi) -3 hours (Michal Moyal).

Myocardium: Structure and activity. Smooth muscle: structure and activity. Comparison of the three types of muscle.

Blood vessels and lymph nodes: general structure of the system, the relationship between the circulatory system and the lymphatic system, general characteristics of arteries and veins, unique characteristics of each of the arteries and veins, the different types of capillaries and the passage of substances through the capillaries. Structure of the heart: endocardium, myocardium and epicardium, pacemaker and stimulation system.

Lymphatic system:
Histology Laboratory – 2 hours. Examination of histological preparation of blood vessels, heart (lymph nodes will be given as part of immunology).

3. Physiology; 28 lecture hours (Kobi Assaf), 8 hours of practice - 4 meetings, 2 hours each exercises. One laboratory of 3 hours.

Heart as pump: heart cycle, cardiomyocytes, pulse volume control and cardiac output, pressure, sounds, valves, rhythm and control of heart activity.
Practice on the heart 1: heart as pump

The heart as an electrical system: Neural control of the blood vessels and heart, ECG, the connection between the heart and blood vessels - feedback, circulatory response: blood pressure and heart failure.
Practice on the heart 2: The Heart as an Electric System.

Hemodynamics: hydrodynamics, capillarity and passage of substances through the capillaries.
Practice on the blood 1: Hemodynamics

Vascular physiology: autoregulation and neural control of blood vessels.
Practice on the Blood 2: Blood-Heart regulation

Laboratories in Cardiovascular Physiology: Blood circulation in humans: Various aspects of the cardiovascular system are examined, with emphasis on non-invasive clinical measures in humans.

Required Reading:
Will be given below

Additional Reading Material:

Course/Module evaluation:
End of year written/oral examination 71 %
Presentation 0 %
Participation in Tutorials 0 %
Project work 0 %
Assignments 0 %
Reports 0 %
Research project 0 %
Quizzes 20 %
Other 9 %
Practical anatomy

Additional information: