



# *The Hebrew University of Jerusalem*

## *Syllabus*

### *General Histology - 94609*

*Last update 26-09-2016*

*HU Credits: 4*

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

*Responsible Department: bio-medical sciences*

*Academic year: 0*

*Semester: 1st Semester*

*Teaching Languages: Hebrew*

*Campus: Ein Karem*

*Course/Module Coordinator: Dr. Ayal Ben-Zvi*

*Coordinator Email: [ayalb@ekmd.huji.ac.il](mailto:ayalb@ekmd.huji.ac.il)*

*Coordinator Office Hours: By appointment by email*

*Teaching Staff:*

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Dr. Eitan Shaulian  
Dr. Ayal Ben-Zvi  
Dr.  
Dr. Jacob Rachmilewitz  
Mr. Baruch Haimson  
Mr. Muhannad Aburemaileh  
Ms.  
Mr.  
Mr.  
Mr.

Course/Module description:

*Introductory course that provides knowledge on the structure of tissues and basic systems in the human body, emphasizing the connection between the structure of tissues and organs and their functions.*

*The course includes frontal lectures and workshops in which students observe histological slides.*

Course/Module aims:

*To provide students with knowledge and understanding of tissues structure, and teaching them to identify the structure of the tissue , while understanding the relationship between structure and function*

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

*To recognize body's tissues  
To understand the interaction between the various tissues of organs  
To recognize the microscopic image of various tissues sections  
To identify the different tissues  
To explain the relationship between the structure of tissue and its functioning*

Attendance requirements(%):

*Lecture: none  
Workshop: 100%*

*Teaching arrangement and method of instruction: Lecture and workshops*

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### Course/Module Content:

*Epithelial tissues: structure and function of epithelial tissue, general characteristics, classification, polarity of cells and tissue, characteristic modifications of apical cell pole, cell junctions, basal pole and basement membrane, glands.*

*Connective tissues: Characteristics of connective tissue, classification: loose and dense connective tissue, connective proper, specialized connective tissue, extracellular matrix, fibers (collagen, reticular and elastic fibers), ground substance. Cells in connective tissue (fibroblasts, macrophages, mast cells, leukocytes, pericytes), adipose tissue.*

*Muscles: General structure of muscle tissue and classification: striated muscle (skeletal and cardiac muscle) and smooth muscle. Skeletal muscle: myofibers, myofibrils, myofilaments, sarcoplasmic reticulum, T-tubules. Mechanism of contraction, damage repair. Connective tissue investments: epimysium, perimysium, endomysium. Skeletal muscles: structure and function, intercalated disks. Smooth muscle: comparison between three types of muscles.*

*Nervous system: structure of nervous tissue, neuron structure: cell body, axon, dendrites, synapses. Types of neurons: multipolar, pseudounipolar, bipolar. Glia cells: Schwann cells, satellite cells, ependyma, oligodendrocytes, astrocytes, microglia. Myelin, principles of nerve stimulus conduction. Central and peripheral nervous system. Voluntary and autonomic (sympathetic and parasympathetic) nervous system.*

*Central nervous system: meninges, brain (cerebrum and cerebellum), spinal cord. Gray and white matter, sublayers. Brain chambers, choroid plexus, cerebrospinal fluid, blood-brain barrier, regeneration.*

*Peripheral nervous system: connective tissue investments of nerves: epineurium, perineurium, endoneurium. Sensory, sympathetic and parasympathetic ganglia.*

*Skin: Layers of skin, layers of epidermis, and cells of epidermis: keratinocytes and their differentiation, melanocytes, Langerhans cells and Merkel cells. Layers of dermis, sensory receptors in skin, skin appendages: sweat glands, hair follicles and sebaceous glands.*

*Cardiovascular system: General structure of the system and the relationship between the blood and the lymphatic system. General characteristics of arteries and veins, unique properties of each type of artery and vein. Classification of blood capillaries, passage of substances via capillary wall. Lymphatic vessels. Structure of the heart: endocardium, myocardium and pericardium. Pacemakers and conduction system.*

*Blood and bone marrow: Blood: plasma, cells: erythrocytes and leukocytes (basophils, eosinophils, neutrophils, lymphocytes and monocytes), blood platelets.*

*Bone marrow: structure, hematopoiesis: general principles, hematopoietic pluripotential stem cells, typical developmental processes of each cell lineage.*

*Lymphatic system: Lymphocytes, diffused lymphatic system, lymphatic modules.*

*Lymph nodes: structure and function, cortex, paracortex and medulla, subcapsular sinus, medullary cords, lymphatic sinuses. Spleen: structure and function, white and red pulp, periarterial lymphatic sheet, marginal zone, blood sinuses. Thymus:*

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*structure and function, cortex and medulla, blood-thymus barrier, Hassal's corpuscles, T cell education.*

*Required Reading:*

*HISTOLOGY, a Text and Atlas, by Ross H.M., Gordon I. K. and Pawlina W., LWW, 6th edition (2010)*

*Additional Reading Material:*

*Basic histology books and atlases*

*Course/Module evaluation:*

*End of year written/oral examination 100 %*

*Presentation 0 %*

*Participation in Tutorials 0 %*

*Project work 0 %*

*Assignments 0 %*

*Reports 0 %*

*Research project 0 %*

*Quizzes 0 %*

*Other 0 %*

*Additional information:*

*Prerequisite : Course 94625, or equivalent level course*