UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

of Medicine

Course/module syllabus - part A

48SJ-HCEI
ECTS: 5
YEAR: 2020Z

HISTOLOGY WITH CYTOPHYSIOLOGY AND EMBRYOLOGY 1/2

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COURSE CONTENT
CLASSES

Structure and dynamics of biological membranes. Transmembrane transport. Vesicular transport: endocytosis and exocytosis. Membrane and intracellular receptors. Cellular organelles: rough endoplasmic reticulum and ribosomes, smooth endoplasmic reticulum, Golgi apparatus, lysosomes. Autophagy and heterophagy. Proteasomes. Peroxisomes. Mitochondria. Cytoskeleton. Cell nucleus. Cell cycle. Apoptosis. Necrosis. Ooogenesis and spermatogenesis. Fertilization. Blastulation. Implantation. Gastrulation. Embryonic disc: ectoderm, endoderm, mesoderm. Differentiation of the embryonic disc layers. Decidual membranes. Placenta. Histology and its methods of study. Epithelial tissue. Glands: types and structure. Connective tissue. Bone and cartilage. Bone ossification. Nervous tissue. Histology of nervous system. Muscle tissue. Cardiovascular system. Respiratory system.

LECTURES

Cell structure and functions.Cell nucleus. Adhesion molecules. Intercellular junctions. Extracellular matrix. Connective tissue. Bone and cartilage. Bone ossification. Nervous tissue. Nervous system. Muscle tissue.

EDUCATIONAL OBJECTIVE:

The main objective of the course is to provide students with knowledge about the structure and related functions of cells, tissues, organs and systems forming the body of an adult, and in the earliest stages of development. The fundamental assumption was that getting to know microarchitectonics and histophysiology of organs is a necessary introduction to teaching other disciplines in further years of study. The basic part of the course program is the recognition of cytological and histological slides during practical classes.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN RELATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	M/NM+++,
Codes of learning outcomes in a major area of study:	A.U1.+, A.U2.+, A.U5.+, A.W1.+, A.W2.+, A.W3.+, A.W4.+, A.W5.+, A.W6.+, B.W10.+, B.W11.+, B.W12.+, B.W13.+, B.W17.+, B.W18.+, D.U16.+, D.U17.+, K.5+, K.6.+, K.7.+, K.8.+, K.9.+,

LEARNING OUTCOMES:

Knowledge

W1 - A.W1. - anatomical, histological and embryological terminology in Polish and English; A.W2. - structure of the human body in a topographic approach (upper and lower limb, chest, abdomen, pelvis, back, head, neck) and functional (osteoarticular system, muscular system, circulatory system, respiratory system, digestive system, urinary system, reproductive systems, nervous system and sensory organs, integumentary system); A.W3. - topographic relations between individual organs; A.W4. - basic cellular structures and their functional specializations; A.W5. microarchitecture of tissues, extracellular matrix and organs; A.W6. stages of the human embryo development, structure and function of the fetal membranes and placenta, stages of individual organs development and the influence of harmful factors on the development of the embryo and fetus (teratogenic); B.W10. structure of simple organic compounds included in macromolecules present in cells, extracellular matrix and body fluids; B.W11. structure of lipids and polysaccharides and their functions in cellular and extracellular structures; B.W12. 1st, 2nd, 3rd and 4th order structures of proteins as well as post-translational and functional modifications of proteins and their importance; B.W13. functions of nucleotides in the cell, primary and secondary structures of DNA and RNA, and the structure of chromatin; B.W17. methods of communication between cells and between a cell and the extracellular matrix, signaling pathways within a cell, and examples of disorders in these processes leading to the development of neoplasms and other diseases; B.W18. processes: cell cycle, proliferation, cell differentiation and aging, apoptosis and necrosis and their importance for the functioning of the organism

Skills

U1 - U1 - in terms of skills, the graduate is able to: A.U1. operate the optical microscope, including using immersion; A.U2. recognize, in the images from the optical or electron microscope, the histological structures corresponding to organs, tissues, cells and cell structures, describe and interpret their structure and the relationship between the structure and function; A.U5. use anatomical, histological and embryological names in speech and writing; D.U16. show responsibility for improving their qualifications and transferring knowledge to others; D.U17. critically analyze medical literature, including in English, and draw conclusions.

Social competence

K1 - K1 - In terms of social competences, the graduate is ready to: K.5. Perceive and recognizing one's own limitations and self-assessing educational deficits and needs; K.6. promoting pro-health behavior; K.7. The use of objective sources of information; K.8. Formulate conclusions from own measurements or observations; K.9. implementing the principles of professional camaraderie and cooperation in a team of specialists, including representatives of other medical professions, also in a multicultural and multinational environment;

BASIC LITERATURE

Course/module:
Histology with Cytophysiology and Embryology 1/2

Fields of education:

Course status:	mandatory
Course group:	A - przedmioty podstawowe
ECTS code:	
Field of study:	Medicine
Specialty area:	Medicine
Educational profile:	General academic
Form of study:	full-time
Level of study:	uniform master's studies
Year/semester:	1 / 1

Type of course:
Classes, Lecture

Number of hours per semester/week:	Classes: 48, Lecture: 12

Teaching forms and methods

Classes(K1, U1, W1) : Multimedia presentations (PowerPoint presentations) preceding the practical part. Microscopic analysis of histolgical slides. Classes are carried out stationary or with remote learning platforms (MOODLE, MS TEAMS, CASE CENTER- virtual microscope). , Lecture(K1, U1, W1) : Multimedia presentation (PowerPoint presentation) or with remote learning platforms (MOODLE, MS TEAMS)

Form and terms of the verification results:

CLASSES: Colloquium test - The written colloquia (two in the first semester) consist of single-choice test questions. Results are evaluated according to the percentage system of correct answers (0-100%). To credit the first semester the arithmetic average of correct answers (calculated both for 1 practical and 2 theoretical colloquia) must be at least 50%.(K1, U1, W1) The colloquia are carried out stationary or with remote learning platforms (MOODLE, MS TEAMS);(K1, U1, W1) ; CLASSES: Written test - Short tests (before every class) consist of single-choice test questions and/or short descriptive questions. Results are evaluated according to the percentage system of correct answers (0-100%). The average score is calculated for all short tests. To credit the first semester the arithmetic average must be at least 50% of correct answers.(K1, U1, W1) Short tests are carried out stationary or with remote learning platforms (MOODLE, MS TEAMS); (K1, U1, W1) ; CLASSES: Colloquium practical - The practical colloquium consists of recognition of structures in 10 histological slides using a light microscope. Results are evaluated according to the percentage system of correct answers (0-100%). To credit the first semester the arithmetic average of correct answers (calculated both for 1 practical and 2 theoretical colloquia) must be at least 50% . (K1, U1, W1) The colloquium is carried out stationary or with remote learning platforms (MOODLE, MS TEAMS, CASE CENTER-virtual microscope); (K1, U1, W1) ; LECTURE: Colloquium test - Colloquium test - The written colloquia (two in the first semester) consist of single-choice test questions. Results are evaluated according to the percentage system of correct answers (0-100%). To credit the first semester the arithmetic average of correct answers

1) A. L. Mescher, Junqueira’s Basic Histology: Text and Atlas, 15th Edition, wyd. McGraw-Hill Lange, 2018 ; 2) T.W. Sadler, Langman’s Medical Embryology, 13th edition, wyd. Wolters Kluwer, 2015

SUPPLEMENTARY LITERATURE

1) A. L. Kierszenbaum, L. Tres, Histology and Cell Biology, 5th edition, wyd. Elsevier, 2020 ; 3) N. Chandar, S. Viselli, Cell and Molecular Biology, wyd. Wolters Kluwer, 2018 ; 4) B. M.Carlson, Human Embryology and Developmental Biology, 6tg edition, wyd. Elsevier, 2019 ; 6) B. Alberts, A. Johnson, J. Lewis, M. Raff, K. Roberts, P. Walter, Molecular Biology of the Cell, 5th edition, wyd. Garland Science, 2018 ; 6) L.P. Gartner, Textbook of Histology, 4th edition, wyd. Elsevier, 2016 ; 6) W. Kuehnel, Color Atlas of Cytology, Histology, and Microscopic Anatomy, 4th edition,, wyd. Thieme, 2003

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Number of ECTS points: 5

Language of instruction: English

Introductory courses:

Human biology

Preliminary requirements:

Basic knowledge of human anatomy, embryology, physiology and cell biology

Name of the organizational unit offering the course:

Katedra Histologii i Embriologii Człowieka,

Person in charge of the course:

prof. dr hab. n. med. Zbigniew Kmieć,

Course coordinators:

dr Jolanta Kiewisz, , dr hab. n. med. Anna Kowalczyk, prof. UWM, dr inż. Agnieszka Śliwińska-Jewsiewicka, , dr Jacek Kieżun, , dr Bartłomiej Kraziński, , mgr Damian Tański, , prof. dr hab. n. med. Zbigniew Kmieć,

Notes:

Group of students should consist of no more than 10 people.

Detailed description of the awarded ECTS points - part B

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The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: classes	48 h.
- participation in: lecture	12 h.
- consultation	2 h.
	62 h.

2. Student's independent work:

- - the student prepares for written short tests, written and practical colloquia through a thorough analysis, assimilation and consolidation of literature data and multimedia materials published on the department's website and remote education platforms, e.g. moodle, ms teams. these platforms will be used to the extent indicated by the teacher.	63 h.
	63 h.

1 ECTS point = 25-30 h of the average student's work, number of ECTS points = 125 h : 25 h/ECTS = 5,00 ECTS
on average: **5 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 2,48 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 2,52 ECTS points,