

COURSE UNIT (MODULE) DESCRIPTION

Course unit (module) title	Code
Comparative histology	

Lecturer(s)	Department(s) where the course unit (module) is delivered
Coordinator: dr. Rasa Aukštikalnienė	Department of Zoology, LSC, Vilnius University
Other(s): none	

Study cycle	Type of the course unit (module)
Continuous studies (first cycle)	Compulsory

Mode of delivery	Period when the course unit (module) is delivered	Language(s) of instruction
Face-to-face	Autumn semester	English

Requirements for students	
Prerequisites: invertebrate zoology, vertebrate zoology, cell biology	Additional requirements (if any): -

Course (module) volume in credits	Total student's workload	Contact hours	Self-study hours
5	133	64 (32 – lectures; 32 – laboratory work)	69

Purpose of the course unit (module): programme competences to be developed		
<p>The objective of a Comparative histology course is to lead the students to understand the microanatomy of cells, tissues, and organs and to correlate structure with functions, great attention is paid to the identification of tissues of diverse animals</p> <p>Development of subject-specific competences: fundamental knowledge and skills in areas related to micromorphological structures of animals, the ability to apply micromorphological research methods; perception of the individual and historical development patterns of living things, together with the principles of biological evolution and the ability to apply them in practice.</p> <p>Development of general competences: ability of planning, organizing and performing research; ability to work independently, communicate and collaborate; ability to use information and data sources, the use of information technology.</p>		
Learning outcomes of the course unit (module)	Teaching and learning methods	Assessment methods
- Will possess the ability to work both individually and in group, also take responsibility for his/her work. Will be able to reason critically; to be creative and have initiative, to be able to seek goal. Will evaluate limits of own competences and, in case of necessity, to address for assistance.	Problem-oriented teaching, demonstrations, active learning (group discussion), elements of investigation (search for information), elements of investigation (search for information, reading of literature)	Continuous evaluation during laboratory work; colloquium and exam test (open and multiple choice questions)
- Will understand and be able to use basic morphological research methods studying peculiarities of different tissues of multicellular organisms. Will percept body structure of animals also basics of their functioning and interactions studying histological slides/photos/pictures that may be related to normal or pathological condition	Problem-oriented teaching, demonstrations, active learning (group discussion), elements of investigation (search for information), elements of investigation (search for information, reading of literature)	Continuous evaluation during laboratory work; colloquium and exam test (open and multiple choice questions)
- Understanding the principles of biological evolution will be able to compare differences of embryology and tissues in various groups of animals (invertebrate and vertebrate) and morphofunctional peculiarities related to different living conditions.	Problem-oriented teaching, demonstrations, active learning (group discussion), elements of investigation (search for information), elements of investigation (search for information, reading of literature)	Continuous evaluation during laboratory work; colloquium and exam test (open and multiple choice questions)

Content: breakdown of the topics	Contact hours							Self-study work: time and assignments	
	Lectures	Tutorials	Seminars	Exercises	Laboratory work	Internship/work placement	Contact hours	Self-study hours	Assignments
1. Much of the histology course content can be framed in terms of light microscopy, which is used in the laboratory exercises. The electron microscope is often the last step in data acquisition from many auxiliary techniques of cell and molecular biology.	2						3	7	Self-study of literature, preparation for examination. Group discussion in laboratory work.
2. Epithelial tissue is characterized by close cell apposition and presence at free surface.	4				6		10		Self-study of literature, preparation for examination. Group discussion in laboratory work.
3. Connective tissue underlies or supports the other three basic tissues. CT in embryo. The CT found in close association with most epithelia is loose. Where only strength is required is found dense CT. Blood and haemopoiesis. Histophysiology of inflammation.	8				8		16	7	Self-study of literature, preparation for examination. Group discussion in laboratory work
4. Histophysiology of skeletal connective tissue. Bone and cartilage are characterized by the material associated with collagen - calcium (bones) and hyaluronic acid (cartilage).	4				6		10	5	Self-study of literature, preparation for examination. Group discussion in laboratory work
5. Histophysiology of muscle tissue. Muscle tissue is categorized on the ability of its cells to contract. Smooth, skeletal and cardiac muscle share a common characteristic: the bulk of the cytoplasm consists of the contractile proteins.	4				2		5	5	Self-study of literature, preparation for examination. Group discussion in laboratory work
6. Histophysiology of nervous tissue. Nerve tissue integrates information from outside and inside the body to control the activities of the body. It consists of nerve cells and associated supporting cells.	4				6		10	5	Self-study of literature, preparation for examination. Group discussion in laboratory work
7. Tissues of various animals (invertebrate and vertebrate) in comparable aspect. Each type of tissue makes a lot of variations in various groups of animals and has a lot of different structures appropriate only to this group.	6				4		10	16	Self-study of literature, preparation for examination. Group discussion in laboratory work
8. Preparation for examination								24	Repeating and consulting
Total	32				32		64	69	

Assessment strategy	Weight, %	Deadline	Assessment criteria
Every student presents five short reports on various histological topics	1/3 of the final score	During semester	The accuracy, completeness, logic, consistency of the answer to the question is evaluated
Identification of tissues in histological slides	1/3 of the final score	During last laboratory work	It is valued the ability to manipulate the light microscope and to identify as many tissues as possible in histological slides of the sections of various organs
Exam: test	1/3 of	during exam	Test is composed of 100 open and multiple-choice questions

	the final score	session	(of different difficulty, from understanding to evaluation), each weight 1 point. Evaluation criteria: 10. Perfect knowledge and skills. Level of evaluation and synthesis. 100-95 correct answers. 9. Very good knowledge and skills, some non-essential mistakes. Level of evaluation. 94-85 correct answers. 8. Average knowledge and skills mistakes present. Level of analysis. 84-75 correct answers. 7. Knowledge and skills below average, some essential mistakes present. Level of knowledge application. 74-65 correct answers. 6. Knowledge and skills still correspond to minimal requirements. Numerous mistakes. Level of understanding. 64-55 correct answers. 5. Numerous mistakes. Still correspond to minimal requirements. Only 54-45 correct answers. 4. Below minimal requirements. 44-35 correct answers.
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Author	Year of publication	Title	Issue of a periodical or volume of a publication	Publishing place and house or web link
Compulsory reading				
1. Ross M.H., Pawlina W.	2016	Histology. A text and atlas. 7th Edition		Wolters Kluver
2. Bozzolla J.J., Russell L.D.	1999	Electron microscopy: principles and techniques for biologists		Jones and Bartlett Publ., Boston
3. Griffiths G.	1993	Fine structure immuno- cytochemistry		Springer-Verlag, Berlin