

<b>GENERAL INFORMATION</b>		
Course	<b>Histology</b>	
Course coordinator	<b>Prof. Tatjana Belovari, MD, PhD</b>	
Assistant/Associate	Prof. Srećko Gajović, MD, PhD Asst. Prof. Anton Glasnović, MD, PhD Josip Grbavac, MD Sandra Lea Lucić, MD Marko Sablić, MD	
Study Programme	<b>Integrated undergraduate and graduate university study of Medicine in German language</b>	
Status of the course	Mandatory	
Year of study, semester	1 <sup>st</sup> year, 2 <sup>nd</sup> semester	
Grading scale and workload	ECTS	<b>8</b>
	Hours (L+S+E)	<b>110 (40+30+40)</b>
<b>COURSE DESCRIPTION</b>		
<b>Course objectives</b>		
<p>Acquiring knowledge about the normal structure of human body on light microscopy and electron microscopy level, about cytomorphological and histomorphological properties of cells and tissues and their organization into organs and organ systems. Acquiring skills in microscopic examination of histologic preparations and differentiating between organs and tissues based on histologic properties. Understanding microscopic structure enables understanding the relation of structure and function of different organs and creates a basis for understanding the pathomorphological changes in the etiopathogenesis of diseases.</p>		
<b>Enrolment requirements and entry competencies</b>		
No requirements		
<b>Learning outcomes at the Programme level</b>		
<b>1.1., 2.1., 3.5., 4.2.</b>		
<b>Learning outcomes (5-10)</b>		
<p>After completing lectures, seminars and exercises, individual learning and passing the exam, the students will be able to:</p> <ol style="list-style-type: none"> <li>1. Choose the appropriate procedure for making histologic preparations regarding the required morphological analysis of the tissues and organs</li> <li>2. Critically evaluate the quality of a histologic preparation and possible issues with the interpretation of a histologic preparation</li> <li>3. Interpret microscopic structure of tissues and organs based on the properties of cells and extracellular matrix, their arrangement, and spatial relations</li> <li>4. Make conclusions about the functions of cells and tissues based on their histomorphological properties</li> <li>5. Estimate the impact of cell and tissue properties on the occurrence of diseases and disorders</li> </ol>		

## Course content

**Lectures:** Introduction into histology. Histology methods. Cell structure. Tissue types. Epithelial tissue. Connective tissue. Cartilage and bone. Muscle tissue. Nervous tissue. The circulatory system. Blood cells. The immune system. The digestive system. Glands associated with the digestive tract. The respiratory system. Skin and skin derivatives. The urinary system. Neuroendocrine system. Male reproductive system. Female reproductive system. The eye and the ear.

**Seminars:** Organization of epithelial tissue. Cells and extracellular matrix of the connective tissue. Cells and extracellular matrix of cartilage and bone. Ossification. Muscle tissue. Neuron, neuroglia, blood-brain barrier. Blood vessels, blood cells. Lymphoid organs. Oral cavity. Regional characteristics of gastrointestinal tract. Structure and function of liver and pancreas. Respiratory system. Skin and its derivatives. Urinary system. Endocrine glands. Male reproductive system. Female reproductive system. The eye and the ear. Knowledge repetition. **Exercises:** Sample preparation for histological analysis. Staining methods. Lining and secretory epithelium. Irregular connective tissue, tendon, cartilage. Decalcified bone. Intramembranous and endochondral ossification. Skeletal, cardiac, and smooth muscle. Central and peripheral nervous system. Heart valve, artery and vein, blood. Lymphoid organs. Salivary glands, tooth, tongue. Oesophagus, stomach: fundus and pylorus. Small and large intestine, appendix, liver and pancreas. Palate, trachea, and lungs. Skin of the scalp, mammary gland, lip. Kidney, ureter, and urinary bladder. Pituitary gland, thyroid gland, parathyroid glands, adrenal gland. Testis and epididymis, vas deferens, penis, prostate, seminal vesicles. Ovary, Fallopian tube, uterus, vagina. The eye and the ear.

<b>Mode of teaching</b>	<input checked="" type="checkbox"/> lectures	<input type="checkbox"/> independent tasks
	<input checked="" type="checkbox"/> seminars and workshops	<input type="checkbox"/> multimedia and network
	<input checked="" type="checkbox"/> exercises	<input checked="" type="checkbox"/> laboratory
	<input type="checkbox"/> distance education	<input type="checkbox"/> mentoring work
	<input type="checkbox"/> field teaching	<input type="checkbox"/> other

## Student obligations

Students are expected to attend all class sessions, as well as to take all the examinations. However, they are allowed for excused absences, totalling 30% of all classes. Missed exercise must be made up for.

## Monitoring student work

Attending classes	x	Class activity	x	Seminar work		Experimental work	
Written exam	x	Oral exam	x	Essay		Research	
Project		Continuous knowledge verification	x	Paper		Practical work	x
Portfolio							

## Grading and evaluation of student work during classes and of the final examination

Teaching activity	ECTS	Learning outcome	Student activity	Assessment methods	Grade points	
					Min.	Max.
Attending classes	0,6	1-5	Attendance at classes (L, S, E)	Keeping records	4	7
Seminars	0,7	1-5	Active participation	Keeping records of	5	9

Exercises	0,7	2-4	in seminars and exercises	seminar activity and exercise logs	5	9
Knowledge tests (partial tests or the whole written exam)	2	1-5	Studying for partial knowledge tests or whole written part of the test	Partial tests H1 and H2	12	15
Final exam	1,6 2,4	1-5	Studying for the final exam	Written part* Practical part Oral part	10 14	20 30
<b>Total</b>	<b>8</b>				<b>50</b>	<b>100</b>

\* Students who didn't pass H1 and H2 during the classes.

*Calculation of final grade:*

### **Final exam**

The student needs to meet the minimal criteria for each part (written, practical, oral) to qualify for passing the final exam.

**Written part of the exam** consists of general histology test (H1, 50 questions) and special histology test (H2, 50 questions). Students who don't pass the partial written knowledge tests (H1 and H2) during the classes will take them during the final exam. Students who take both partial tests during the final exam will take them together, and each of them will be evaluated separately. Passed written part of the exam is valid for 12 months.

Evaluation of the partial tests and the written part of the final exam:

Percentage of correct answers (%)	Grading points
60.00-64.99	6
65.00-69.99	7
70.00-74.99	8
75.00-79.99	9
80.00-84.99	10
85.00-89.99	11
90.00-94.99	12
95.00-100.00	12,5

**Practical part of the exam.** The student receives 6 histological preparations which need to be independently analysed using a microscope, the correct tissue or organ must be determined, and its structure needs to be described. If the student determines two (2) preparations incorrectly, he/she cannot be positively evaluated during the practical part of the exam, as well as the final exam.

Evaluation of the practical part of the exam:

10 grading points: all preparations determined correctly, the knowledge meets the minimal criteria, or, one preparation determined incorrectly, and average knowledge demonstrated for others

13 grading points: all preparations determined correctly, average knowledge with noticeable mistakes demonstrated, or, one preparation determined incorrectly, and very good or excellent knowledge demonstrated for others

16 grading points: all preparations determined correctly, very good knowledge with minor

mistakes demonstrated

20 grading points: all preparations determined correctly, excellent knowledge

**Oral part of the exam** consists of six (6) questions: 3 questions for general histology and 3 questions for special histology.

Evaluation of the oral part of the exam:

14-18 grading points: the knowledge meets the minimal criteria

19-22 grading points: average knowledge with noticeable mistake

23-26 grading points: very good knowledge with minor mistakes

27-30 grading points: excellent knowledge

**Forming the final grade:**

Based on the total sum of the points awarded during the course and the final exam, the final grade is determined according to the following distribution:

A – excellent (5): 80-100 grade points; B – very good (4): 70-79.99 grade points; C – good (3): 60-69.99 grade points; D – sufficient (2): 50-59.99 grade points

### Required reading

1.Welsch U, Kummer W, Deller T: Histologie, 5. Auflage, Urban & Fischer in Elsevier (Verlag), 2018

### Additional reading

1.Mescher AL: Junqueira's Basic Histology: Text and Atlas. 16<sup>th</sup> edition. New York: McGraw-Hill Education, 2021.

2.Sobotta, J, Welsch, U: Sobotta Atlas Histologie. Zytologie, Histologie und Mikroskopische Anatomie. Urban & Fischer, 2001

3.Online histološki atlas. <https://histologyguide.com/>

### Number of copies of required literature in relation to the number of students currently attending classes in the course

Title	Number of copies	Number of students
1.Welsch U, Kummer W, Deller T: Histologie, 5. Auflage, Urban & Fischer in Elsevier (Verlag), 2018	20 / 20	

### Course evaluation procedures

Anonymous, quantitative, standardized student survey providing feedback on the course as well as on the work of course coordinators and their assistants/associates is being conducted by the QA Office of the Faculty of medicine Osijek.