[Medicinski fakultet u Rijeci]

Curriculum
2023/2024

[Za kolegij]

Histology and Embryology

Study program:	**Medical Studies in English (R)** [Sveučilišni integrirani prijediplomski i diplomski studij]
Department:	**[Zavod za histologiju i embriologiju]**
Course coordinator:	**izv. prof. dr. sc. Wensveen Felix, dipl. biolog**
Year of study:	**2**
ECTS:	**10**
Incentive ECTS:	**0 (0.00%)**
Foreign language:	**Possibility of teaching in a foreign language**

Course information:

Histology and Embryology is a mandatory course at the second year of the Integrated Undergraduate and Graduate University Study of Medicine in English. It consists of 32 hours of lectures, 44 hours of seminars, and 44 hours of practical laboratory classes; overall 120 hours (10 ECTS). Lectures are held in lecture halls of the Faculty of Medicine according to the course schedule. Seminars and practical laboratory classes are held at the Department of Histology and Embryology.

Course objectives

Histology, a fundamental field of medicine, focuses on the microscopic structure of the human body. It examines cell morphology (cytology) and the fine details of organs (microscopic anatomy). Histology encompasses the entire sub-microscopic structure of organisms. In parallel, embryology explores embryo development, emphasizing morphogenesis during organogenesis and the molecular basis of differentiation. Understanding these complexities is essential for clinicians to grasp micro-anatomical pathophysiology and anomalies in organ development. This course holds significant practical value. Lastly, it delves into the relationship between congenital malformations and embryological errors.

Expected course learning outcomes

At the end of this course, students will be able to demonstrate a working knowledge of human histology and development and will be able to correlate structure and function of the human body. Students should be able to comprehend the molecular, biochemical, and cellular events that regulate the development of specialized cells, tissues and organs during embryonic development. Students should be able to comprehend tissue interactions and pattern formation. Moreover, students should understand the experimental strategies and techniques that are used to identify the molecular and cellular mechanisms of development.
Students should be thoroughly acquainted with structures and development of the human body by means of classical and contemporary methods of microscopic investigations; they should master the skills of microscopy of the most characteristic cells, tissues, and organs presented in histological slides. By utilizing their knowledge in physics, chemistry, biochemistry, biology, and anatomy, students should gain insight into the normal structure of the human body by means of light and electron microscopy.

Course content

The primary role of **histology** in the medical curriculum is to provide a basic understanding of the function of the human body based on its microscopical structure. Emphasis is placed on the normal structure as a basis for proper functioning and for understanding pathophysiological processes. The following topics and subtopics will be considered: epithelial tissues (cellular membrane, basal lamina, cell-cell interactions); connective tissue (general characteristics, cells and intercellular substance, fibers, and ground substance); types of connective tissue (proper - dense, regular and irregular, adipose tissue); cartilage (hyaline elastic, fibrocartilage); bone (microscopic structure of bones, bone cells, histogenesis of bone, synovial membrane), blood, lymphocytes and their immune role; muscular tissue (smooth, skeletal, cardiac muscle), nervous tissue (structure of neuron, nerve fiber, synapse and the relationship of neurons, neuroglia, choroid plexus); blood vascular system, lymphatic system, endocrine system, respiratory system, gastrointestinal tract, kidney and urinary tract, reproductive system and the organs of special senses.

The purpose of **embryology** is to provide students with a general outline of human development and to help them understand the complex relationships between the structures of the human body. Its practical medical implications are also of great importance since embryology can explain developmental anomalies and their molecular origins. The following topics and subtopics will be covered: fertilization, cleavage, gastrulation and formation of primary germ layers; differentiation of primary germ layers and organogenesis; cellular and molecular mechanisms that control tissue morphogenesis and differentiation; mechanisms that control differential gene expression leading to cell and tissue differentiation; extraembryonic coelom, connecting stalk, amnion, corium, placenta; neural plate, groove and tube; sex cycles, male and female sex organs; embryonic and fetal development; relationships between congenital malformations and errors in embryological development; environmental factors as causes of birth defects; development and anomalies of body systems; prenatal diagnostics.

List of assigned reading:

1. A.L. Mescher.: Junqueira's Basic Histology, XIV edition, The McGraw –Hill Education, New York 2016.
2. T.W.Sadler: Langman's Medical Embryology, XIII edition, Wolters Kluwer Health, Philadelphia,2015.
3. http://medsci.indiana.edu/junqueira/virtual/junqueira.htm
4. https://accessmedicine.mhmedical.com/book.aspx?bookid=2430

List of optional reading:

http://www.histologyguide.com/

Curriculum:

[Seminari] list (with titles and explanation):

S1 Histology and its Methods of Study

During seminars, students discuss in more detail themes introduced on the lectures and explain the unclear and insufficiently understandable topics. The seminars also provide an introduction to the topics that will be revealed on practicals. Students' theoretical knowledge for each seminar is checked and students are therefore obliged to come prepared for this form of teaching. LP are followed by lecture topics or seminars that precede. The practical part of the practicals involves an overview of histological images of tissues and organs using microscopes and atlases mentioned in the literature list as well as drawing and a discussion with the teacher and demonstrator. The student is expected to be able to recognize the structures of various tissues and organs on microphotography, to be able to relate the observed details to the function of tissues or organs, and to be able to extract important characteristics of an unknown microscopic slide, compare with known structures and determine which organ or tissue is involved. 5 Students must have the appropriate drawing equipment (wooden pencils - red and blue) and a notebook (without lines) and white coats. Their participation in classes, understanding of the preparations, and their ability to recognize microscopic structures are evaluated in each LP. Thus, the student prepares to pass the Tissue Recognition Test at the end of the course, in which the same materials (atlas) will be used. In the description of learning outcomes for each seminar and LP, a list of histological slides is added.

To explain the basic facts of the development of histological techniques and microscopy. To get acquainted with and acquire knowledge about the way of preparing classic histological slides, as well as various histological, histochemical, and immunohistological techniques. To explain the principle of the methods used in histology laboratories and microscopy.

S2 Bone marrow, hematopoiesis

To describe histological characteristics of bone marrow. To understand the emergence of individual blood cells during intrauterine development, as well as the basis of the hematopoietic process later in life.

S3 Epithelial Tissue

To classify and describe the microscopic and submicroscopic structure of epithelial cells. To define the peculiarities of certain types of glandular epithelia.

S4 Connective Tissue

To explain the characteristics and functions of connective tissue. To define cells and ECM (fibers and ground substances), connective tissue, and connective tissues with special properties. To compare the similarities and differences between these two types of tissues.

S5 Blood, Cartilage

To define the peculiarities of microscopic and submicroscopic structures of blood cells. To adopt criteria for blood cell definition based on their morphology. To define cellular and interstitial parts of different types of cartilage tissue. To explain the growth and healing processes of cartilage tissue damage. To explain the characteristics of the histological structure of joints.

S6 Bone, osteogenesis

To define the peculiarities of cells and ECM of bone tissue. To explain the characteristics of primary and secondary bones with respect to their histological properties. To explain the processes of osteogenesis, the fracture healing process, and bone remodeling.

S7 Stem cells

To define the peculiarities of stem cells and their cellular locations. To define the role of self-renewal and multipotency in stem cell biology. To explain the role of stem cells in the regeneration of tissues. To explain how differentiated tissues develop from stem cells.

S8 Muscle Tissue, Circulatory System

To clearly define cellular and interstitial properties of smooth, skeletal, and cardiac muscle tissue. To explain the ultrastructure of muscle cells and morphological conditions for the possibility of contraction in all types of muscle tissue. To describe the histological structure of the heart, artery, and vein. To adopt the classification of blood capillaries based on their microscopic structure.

S9 Nerve Tissue, Nervous System

To explain the classification, characteristics, and functions of nerve cells (neurons and glial cells). To explain the processes of central and peripheral myelination. To define the cells and interstitial substances of certain parts of the central and peripheral nervous system (big and small brain, spinal cord, ganglia, peripheral nerves). To explain the ultrastructure of the nerve cells, the ability to transmit the signal, and the structure of the synapse. To describe the histological structure of meninges and the blood-brain barrier.

S10 Female Reproductive System

To learn about sex cycles in male and female sex. To understand and explain changes in histological structure in the ovaries and testes that precede the emergence of mature sex cells. (ovary, uterine tube, uterus, vagina)

S11 Head and Neck Development

To explain and describe the processes that lead to the development of individual structures in the head and neck area. To adopt knowledge on the origin of the pharyngeal arches and its derivatives, the appearance of stomodeum and its differentiation during the embryonic and fetal developmental period. To describe the development of the temporomandibular joint.

S12 Embryology I

To overcome the peculiarities of changes during the first week of development - zygote, pruning, second week – implantation, formation of a double layered shield. To overcome the peculiarities of changes during third week - embryonic, fetal development (neurulation, somitogenesis, germinal derivatives)

S13 Embryology II

To explain the development of placental blood flow and function of embryonic envelopes – amnion, chorion, allantois, egg yolk sack. To understand the development, texture, and function of the placenta in different periods of pregnancy.

S14 Muscular System, Limbs, Axial Skeleton – Development

To understand and explain the processes leading to differentiation of mesoderm and the formation of certain groups of skeletal and smooth muscles and the muscular wall of the heart. To explain the emergence of certain parts of the skeletal system - skull, spine, ribs, pelvis and limbs.

S15 Male Reproductive System – Structure

To define the peculiarities of the histological structure and its development of testes, epididymis and accessory glands.

S16 Endocrine System

To describe the classification, characteristics, and functions of the endocrine system. To define the specificity of the histological structure of certain endocrine glands; pituitary gland, epiphysis, thyroid, parathyroid glands and adrenal glands.

S17 Skin – Structure and Development

To clearly define the peculiarities of the histological structure of the skin. To understand and explain the facts about the skin glands. To describe hair and nails. To explain developmental processes that allow the formation of individual skin layers and skin derivatives. To adopt knowledge about differences in appearance and function of the breast and breastfeeding between pregnant women, breastfeeding women and women that are not pregnant.

S18 Ear – Structure and Development

To define the histological structure of various parts of the external, middle, and internal ear. To understand the function of individual parts of the internal ear. To describe the developmental processes that enable the emergence of the outer, middle, and inner ear.

S19 Digestive Glands – Structure

To understand and explain the structure and function of organs associated with the digestive tract – salivary glands, liver, pancreas and gallbladder. To understand and explain the flow of blood and bile inside the liver.

S20 Eye – Structure and Development

To define the peculiarities of the histological structure of the individual structures of the eye. To understand and explain the texture and function of the lens, cilia muscle, and individual parts of the retina. To explain the processes of optic cup development and formation of various parts of eye layers.

S21 Immune system – Structure and Development

To explain the characteristics and functions of the immune system. To define the histological structure of the thymus, lymph nodes, spleen, and tonsils. To describe the developmental processes that lead to the formation of the organs associated with the lymphatic system.

S22 Digestive tract – Development

To understand the developmental processes of various organs of digestive tract formation

S23 Oral Cavity – Structure and Development

To define the peculiarities of the individual parts of the oral cavity - lip, tongue, palate and teeth. To describe the development of the palate, the tongue, and the upper and the lower jaw. To explain the processes of denture formation in primary and secondary dentition.

S24 Digestive Tube – Structure

To define the histological structure of certain parts of the digestive tract (esophagus, stomach, intestine, and colon). To understand and explain the structure and function of the individual layers in the structure of various segments.

S25 Digestive Glands – Structure

To understand and explain the structure and function of intestinal glands - salivary glands, liver, pancreas. To understand and explain the flow of blood and bile inside the liver.

S26 Respiratory System

To define the basics of development and the peculiarities of the histological structure of the individual parts of the respiratory system (respiratory and nerve region, nose, paranasal sinuses, lungs, bronchi, bronchioles, alveoli). To understand and explain the structure and function of the blood-air barrier. (nasal cavity, trachea, lungs)

S27 Urinary System

To explain the basic characteristics of the structure and function of the urinary system. To define the peculiarities of the kidney structure - especially the cortex, the ureter, the bladder, the male and female urethra. To describe parts of the nephron. To define the characteristics of the transient epithelium.

S28 Urogenital system – Development

To understand and describe the processes that lead to the development of three generations of kidneys, the formation of the urethra, ureter, and urinary bladder. To understand the developmental process that leads to the normal male and female reproductive system - sexual glands and sex organs of the male and female sex.

S29 Birth Defects, Teratology

To define critical periods of development and to indicate teratogenic factors. To understand and explain the possibility of the emergence of anomalies and clinically important disorders that arise during development.

[Predavanja] list (with titles and explanation):

L1 Importance of Histology in Understanding Human Tissue Formation and Function

To understanding the aim of the course. To recognize the role of Histology as a foundation for subsequent studies in pathology and physiology.

L2 Epithelial Tissue

To define the microscopic structure and function of epithelial cells. To describe characteristic features of various types of epithelia.

L3-4 Connective Tissue, Blood

To explain the types, characteristics, and functions of the connective tissue. To describe and to define cells and ground substance (fibers and basic substances) of connective tissue proper, and connective tissues with special properties. To define the peculiarities of microscopic and submicroscopic blood cells - erythrocytes, leukocytes, and platelets, and blood plasma. To adopt criteria for classification of blood cells based on their morphology.

L5-6 Cartilage, Joints, Bone, Osteogenesis

To explain the classification, characteristics, and functions of supporting connective tissue. To define the ECM of different types of cartilage tissue. To explain the growth and healing processes of cartilage tissue damage. To explain the histological characteristics of joints. To explain the classification, characteristics, and functions of supporting

connective tissue. To define the peculiarities of cells and bone matrix. To explain the characteristics of primary and secondary bone tissue with respect to their histological properties. To explain the processes of intramembranous and endochondral ossification. To describe features of fracture bone remodeling and repair.

L7-8 Muscle Tissue, Circulatory System

To explain the classification, characteristics, and functions of three types of muscle tissue. To define cellular and ECM properties of smooth, skeletal, and cardiac muscle. To explain the ultrastructure of muscle fibers and morphological conditions for the possibility of contraction. To describe the histological structure of heart and vasculature.

L9 Endocrine System

To describe the classification, characteristics, and functions of the endocrine system. To define the specificity of the histological structure of certain endocrine glands; pituitary gland, epiphysis, thyroid, parathyroid glands, adrenal glands.

L10-11 Nerve Tissue, Nervous System

To explain the classification, characteristics, and functions of nerve cells (neurons and glial cells). To explain the processes of central and peripheral myelination. To define the cells and interstitial substances of certain parts of the central and peripheral nervous system (big and small brain, spinal cord, ganglia, peripheral nerves). To explain the ultrastructure of the nerve cells, the ability to transmit the signal, and the structure of the synapse. To describe the histological structure of meninges and blood-brain barrier.

L12 Male Reproductive System, Embryology – developmental processes, Gametogenesisnt

> To define the peculiarities of the histological structure of testes, epididymis and accessory glands.
>
> To describe the basis of key signaling pathways for development and some basis of organ formation. To understand and explain the processes of gametogenesis and the difference between spermatogenesis and oogenesis.

L13-14 Female Reproductive System, Sex Cycles, First Week, Second Week and Third Week of Development

> To define the peculiarities of histological characteristics of the female reproductive system during different periods of a woman's life. To learn and adopt knowledge about sex cycles in males and females. To understand and explain changes during the generative period of life.
>
> To become familiar with the goal of learning developmental processes, fertilization, embryonic and fetal development of human embryos. To understand the underlying developmental processes: proliferation, migration, induction, differentiation and programmed morphogenic cell death
>
> To overcome the peculiarities of changes during the first week of development of the fertilized ovary (zygote). To outline the general changes during the second week (implantation, two-layered sham) and the third week (gastrulation) of development. To understand the main changes during the embryonic and fetal period of intrauterine development.

L16 Embryology – Extra-embryonal Membranes

> To adopt knowledge about the development and function of fetal membranes: trophoblasts, amnions, coronas, egg yolks. To understand the development, texture, and function of the placenta and umbilicus in different periods of pregnancy. To understand the utero-placental bloodstream.

L17,18 Skin and Derivates – Structure and Development

To describe the structure and function of thin and thick skin layers. To understand and explain the structure of the skin glands and sensory receptors. To describe the main features of hair and nails. To explain diferent functional stages of the female mammary glands. To explain the developmental processes that allow the formation of individual skin layers and skin derivatives.

L19,20 Development of the Central Nervous System and endocrine glands

To explain and describe the processes of the formation and differentiation of nerve and glial cells and the formation of nerve tissue during early neurogenesis. To understand the development of individual parts of the central and peripheral nervous system. To explain development of endocrine glands (pituitary, pineal, thyroid, parathyroid, adrenal).

L21 Ear – Structure and Development

To define the histological structure of various parts of the external, middle, and internal ear. To understand the function of individual parts of the internal ear. To describe the developmental processes that enable the emergence of the outer, middle, and inner ear.

L22,23 Eye – Structure and Development

To define the peculiarities of the histological structure of the individual structures of the eye. To understand and explain the texture and function of the lens, cilia muscle, and individual parts of the retina. To explain the processes of optic cup development and formation of various parts of eye layers.

L24 Immune system – Structure and Development

To explain the characteristics and functions of the immune system. To define the histological structure of the thymus, lymph nodes, spleen, and tonsils. To describe the developmental processes that lead to the formation of the lymph system organs.

L25, 26 Digestive tract – Oral Cavity

To define the general structure of the digestive tract. To describe the peculiarities of organs in the oral cavity (lip, tongue). To explain the structure of primary and permanent teeth. To explain the processes of denture formation in primary and secondary dentition. To define the processes that lead to tooth eruptions.

L27-28 Digestive Tract - structure

To describe the peculiarities of organs - esophagus, stomach and intestine .

L29 Respiratory system – Structure

To define histological characteristics of parts forming the respiratory system (respiratory and olfactory region of the nose, paranasal sinuses, lungs, bronchi, bronchioles, alveoli). To understand and explain the structure and function of the blood-air barrier.

L30 Urinary system – Structure

To explain the basic characteristics of the structure and function of the urinary system. To define the peculiarities of the kidney structure - especially the cortex, the ureter, the bladder, the male and female urethra. To describe parts of the nephron. To define the characteristics of the transient epithelium.

L31-32 Development of the Cardiovascular and Respiratory Systems

To understand the patterning of primary heart field, cardiac, and vascular development. To describe the developmental processes that lead to the formation of lymphatic capillaries and vessels. To describe the developmental processes of forming the respiratory system.

L15 -Embryonic, Fetal Period, Body Cavities

To become familiar with the goal of learning developmental processes, fertilization, embryonic and fetal development of human embryos. To understand the underlying developmental processes: proliferation, migration, induction, differentiation and programmed morphogenic cell death

To overcome the peculiarities of changes during the first week of development of the fertilized ovary (zygote). To outline the general changes during the second week (implantation, two-layered sham) and the third week (gastrulation) of development. To understand the main changes during the embryonic and fetal period of intrauterine development

[Vježbe] list (with titles and explanation):

LP1 Methods in Histology

To explain the basic facts of the development of histological techniques and microscopy. To get acquainted with and acquire knowledge about the way of preparing classic histological slides, as well as various histological, histochemical, and immunohistological techniques. To explain the principle of the methods used in histology laboratories and microscopy.

LP2 Epithelial Tissue

To classify and describe the microscopic and submicroscopic structure of epithelial cells. To define the peculiarities of certain types of glandular epithelia. (dental pulp - endothellium, small intestine – simple columnar, goblet cells, simple tubular glands, esophagus – squamous moist, mucous glands, skin – squamous dry, merocrine, holocrine, apocrine glands)

LP3 Connective Tissue

mesenchyme, skin – intravital staining, tendon, epicardium

LP4 Blood, Cartilage

trachea, ear auricle – HE, orcein staining, meniscus, blood smear

LP5 Bone, Osteogenesis

ground bone, decalcified bone, fetal skull and finger, bone marrow

LP6 Muscle Tissue, Circulatory System

skeletal, cardiac, smooth muscle, endocardium, small artery and vein – HE, orcein staining

LP7 Nerve Tissue, Nervous System

spinal cord and cerebellum – HE, silver staining, nerve, sensory, autonomic ganglia

LP8 Female Reproductive System

To learn about sex cycles in male and female sex. To understand and explain changes in histological structure in the ovaries and testes that precede the emergence of mature sex cells. (ovary, uterine tube, uterus, vagina)

LP9 Embryology

chorionic villi, umbilical cord, embryo

LP10 Male Reproductive System

testes, epididymis, vas deferens, prostate gland

LP11 Endocrine System

pituitary gland, adrenal gland, thyroid gland, pineal gland

LP12 Skin – Structure

thin skin with glands – axilla, hair, thick skin, mammary gland – 2 stages

LP13 Ear

auricle, inner ear

LP14 Eye – Structure and Development

cornea, iris, ciliary body, lens, retina, development of eye – early, late stage

LP15 Immune System

thymus, lymph node, spleen, tonsil

LP16 Oral Cavity, Teeth – Structure and Development

lip, tongue, filiform and vallate papillae, dentin, cementum, enamel, enamel organ – early, late stage

LP17 Digestive Tube

esophagus, stomach, small intestine, large intestine, vermiform appendix

LP18 Digestive Glands

liver, pancreas, gallbladder, salivary glands

LP19 Respiratory System

nasal cavity, trachea, lungs

LP20 Urinary system

kidney, ureters, bladder

LP21 Tissue section repetition

Tissue section repetition

LP22 Tissue section slide recognition

Tissue section slide recognition

Student obligations:

Class attendance, including test attendance, is mandatory. Students may be absent from 30% of each form of teaching provided they have a justifiable cause. If a student is absent for more than 30% of the classes, they will have to re-enroll the course. Students are expected to actively participate in all aspects of the course, complete laboratory reports on time, and attend the examinations. Moreover, preparation of the course content, which is going to be discussed during seminars and laboratory practicals, is mandatory.

Exam (exam taking, description of the written/oral/practical part of the exam, point distribution, grading criteria):

Student grading will be conducted according to the current Ordinance on Studies of the University of Rijeka (approved by the Senate) and the Ordinance on Student Grading at the Faculty of Medicine in Rijeka (approved by the Faculty Council).

Assessment of student work

Student grading will be conducted according to the current Ordinance on Studies of the University of Rijeka (approved by the Senate) and the Ordinance on Student Grading at the Faculty of Medicine in Rijeka (approved by the Faculty Council).

Assessment of student work

Student work will be assessed and graded during the course and on the final exam. During the course, students may obtain a total of 100 grade points (credits). Students can achieve up to 70% of the final grade during the classes, and a maximum of 30% of the final grade at the final exam. Evaluation of students' progress during classes, midterms, and the final exam in the academic year 2024/2025 is shown in Table 1.

Table 1. Distribution of grade points in the course "Histology and Embryology"

	Evaluation	Grade points	
Midterm exams	Midterm exam I	24	
	Midterm exam II	20	
	Total	**44**	
Seminars, Laboratory practicals	Active participation (max. 8 points) Completed LPs and an accepted written report (max. 3 points)	11	
Tissue section recognition	Recognition of Slides exam	15	
TOTAL		**70**	
	Oral exam	30	
	Total	**30**	
TOTAL		**100**	

Written midterm exams

During the semester, two written midterm exams are planned that will include the content of lectures, seminars, and practical laboratory classes. MT I – general histology and basic embryology. MT II – histology and development of various organs. The maximum of grade points that a student can obtain is 24 (MT I) and 20 (MT II). The midterm exams consist of 60 multiple-choice questions and are evaluated according to the criteria

Table 2. Evaluation of written midterm exams

	MT I	MT II
No. of correctly answered questions	**Grade points/credits**	**Grade points/credits**
55 - 60	24	20
50 - 54	22	18
46 - 49	20	16
42 - 45	18	14
38 - 41	16	12
34 - 37	14	10
30 - 33	12	8
26 - 29	6	4
0 – 24	0	0

Correction of the midterm exams

A student can retake each of the two midterm exams if they are not satisfied with the obtained credits or were absent at the midterm exam. If a student retakes the midterm exam because they are not satisfied with the obtained grade points, only the credits gained from the retaken midterms will be considered. Evaluation of the midterm corrections will be performed according to the criteria shown in Table 2. Students can retake each midterm exam only once. Correction of the midterm exams will be done before the final exams in February on a date that will be communicated by the course coordinator via Merlin.

Seminars and practical laboratory classes (LPs)

A student can obtain a maximum of 11 credits (Table 3) throughout seminars and practical laboratory classes. Evaluation of LPs implies a completed and accepted written report with drawings of all slides. During LPs and seminars, the oral examination can be performed by the teacher or through short written exams. If the theoretical knowledge of a student during a seminar is considered insufficient, the teacher has the right to give a grade of 1 (F) for that seminar. **The student is subsequently not allowed to participate in the next midterm exam.** However, before the midterm exam is held, the student is allowed to request a brief oral exam on the topic for which he/she received a 1 (F) by one of the staff members of the dept. of histology and embryology. If his/her knowledge is considered sufficient, the grade for this seminar will be increased from 1 (F) to 2 (D), which allows participation to the midterm exam. An oral examination for a seminar can only be requested if a grade of 1 (F) is given. An oral exam should be requested by first registering with the secretary of the dept. of histology & embryology, by sending an email to Lidija.karinja@medri.uniri.hr or to the course coordinator. Subsequently, the student and teacher will agree on a date and time for the oral examination.

Table 3. Evaluation of seminars and practical laboratory classes

Points for class participation (Max. 8) will be based on the average grade obtained during the seminars and LPs. If a student did not get at least three grades during the seminars and LPs, participation is considered insufficient and no grade points will be awarded.

Final topics evaluation	Grade points/credits

2,00 – 2,51	3
2,51 – 3,00	4
3,01 – 3,50	5
3,51 – 4,00	6
4,01 – 4,50	7
4,51 – 5,00	8

Points for the completed written report (Lab book) of the LPs (max. 3 points) will be based on the proper graphical representation of the various tissues and marking of the key features of each tissue.

Recognition of Slides (ROS) exam

Is a mandatory oral exam and is required for students to be qualified for the final exam. Before going to this colloquium, the student must have completed all the LPs. If he/she was absent from one or more LPs, these need to be done in the time provided for making up the exercises (i.e. LP21 and LP22). A student must identify at least 8 of the 10 microscopic slides, as well as the structures that are described (and drawn) during the practical laboratory classes. For this ROS-examination a student can receive a maximum of 15 points. At least 8 points are required to pass the exam. Each slide is evaluated with ½, 1, or 1 ½ points depending on the student's knowledge. Recognition of the slides awards ½ point and answering additional questions adds up to 1 point for each slide. This ROS-exam will be held in the weeks before each final exam. Per exam period, a student can apply twice for an ROS-exam, with at least three days between each examination. Precise dates and hours will be communicated digitally.

Final exam

The final oral exam is mandatory and covers the entire course content. During the final exam, students can obtain a maximum of 30 credits.

Assessment of the oral part of the final exam:

up to 15 credits: minimum criteria satisfied

16 – 20 credits: average criteria satisfied with noticeable errors

21 – 25 credits: answers with a few errors

26 – 30 credits: outstanding answers.

A student must pass the oral exam (i.e. receive at least 1 point) to pass the course, independent of the number of points that the student has collected before taking the final exam. If a student is not satisfied with the final grade, they may refuse the grade, but this will count as a failed attempt. In case a student does not accept the grade, he/she must re-enter the final exam.

Conditions for admission to the final exam

A student who has accomplished at least 35 grade points during all course classes and has passed the ROS exam and has attended at least 70% of lectures, seminars and LPs (70% of each) can enter the final exam.

Final grade

The final grade represents a sum of all grade points obtained during all course classes and the final exam. Students are evaluated according to the ECTS (A-F) and numerical (5-1) system.

The ECTS and the numerical grading system are defined by the following criteria:

B (4) 75,0 – 89,9 credits

C (3) 60,0 – 74,9 credits

D (2) 50,0 – 59,9 credits

F (1) 0 – 49,9 credits

Exempt of lectures

A student who fulfilled all requirements for admission to the final exam but did not successfully complete the final exam may request that he/she does not need to attend lectures/seminars/LPs in the following year, while retaining the right to apply for the final exam. This request needs to be sent by email before the start of the next academic year to the course coordinator. Should the student instead decide to follow lectures anew, he/she loses all points of the previous year.

Exam dates

- 11.02.2025
- 25.02.2025
- 09.07.2025
- 03.09.2025
- 17.09.2025

Other notes (related to the course) important for students:

Class attendance, including test attendance, is mandatory. Students may be absent from 30% of each form of teaching provided they have a justifiable cause. If a student is absent for more than 30% of the classes, they will have to re-enroll the course. Students are expected to actively participate in all aspects of the course, complete laboratory reports on time, and attend the examinations. Moreover, preparation of the course content, which is going to be discussed during seminars and laboratory practicals, is obligatory.

Academic Honesty

It is expected that all students and teachers follow the Code of Academic Honesty in accordance with the Code of Ethics for the students of the Faculty of Medicine at the University of Rijeka. Please read the policy regarding academic honesty at: http://medical-studies-in-english.com/wp-content/uploads/2016/12/CODE-OF-ETHICS.pdf

Contact information

For questions and concerns, please feel free to contact us by e-mail or via the Department’s website. If you want to speak with a teacher during office hours (each working day between 11:00 am and 13:00 am), please let us know by e-mail or in class.

Expected competencies at course enrollment:

Students are expected to have basic knowledge of biology and anatomy.

COURSE HOURS 2023/2024

Histology and Embryology

[Predavanja] (Place and time or group)	**[Vježbe]** (Place and time or group)	**[Seminari]** (Place and time or group)
02.10.2023		

L1 Importance of Histology in Understanding Human Tissue Formation and Function:
• [P15 - VIJEĆNICA] (08:15 - 11:00) [195] [145]
  ○ HAE
 	
L2 Epithelial Tissue:
• [P15 - VIJEĆNICA] (08:15 - 11:00) [195] [145]
  ○ HAE
 	
L3-4 Connective Tissue, Blood:
• [P15 - VIJEĆNICA] (08:15 - 11:00) [195] [145]
  ○ HAE		

prof. dr. sc. Polić Bojan, dr. med. [145] · izv. prof. dr. sc. Wensveen Felix, dipl. biolog [195]		
03.10.2023		

	LP1 Methods in Histology:
	• [Zavod za histologiju i embriologiju - Vježbaonica] (09:45 - 11:00) [180]
	  ○ HAE-P2
	• [Zavod za histologiju i embriologiju - Vježbaonica] (13:00 - 14:15) [180]
	  ○ HAE-P1
		S1 Histology and its Methods of Study:
		• [Zavod za histologiju i embriologiju - Vježbaonica] (08:15 - 09:45) [180]
		  ○ HAE-S2
		• [Zavod za histologiju i embriologiju - Vježbaonica] (11:30 - 13:00) [180]
		  ○ HAE-S1

prof. dr. sc. Lenac Roviš Tihana [180]		
04.10.2023		

L3-4 Connective Tissue, Blood:
• [P15 - VIJEĆNICA] (11:15 - 12:00) [145]
  ○ HAE
	LP1 Methods in Histology:
	• [Zavod za histologiju i embriologiju - Vježbaonica] (09:45 - 11:00) [180] [1647]
	  ○ HAE-P3
		S1 Histology and its Methods of Study:
		• [Zavod za histologiju i embriologiju - Vježbaonica] (08:15 - 09:45) [180]
		  ○ HAE-S3

prof. dr. sc. Lenac Roviš Tihana [180] · prof. dr. sc. Polić Bojan, dr. med. [145] · Rudančić Tina [1647]		
06.10.2023		
L5-6 Cartilage, Joints, Bone, Osteogenesis: • [P15 - VIJEĆNICA] (08:15 - 10:00) [179] ○ HAE		
prof. dr. sc. Krmpotić Astrid, dr. med. [179]		
09.10.2023		

	LP2 Epithelial Tissue: • [Zavod za histologiju i embriologiju - Vježbaonica] (09:45 - 11:00) [191] ◦ HAE-P3 • [Zavod za histologiju i embriologiju - Vježbaonica] (14:45 - 16:00) [191] ◦ HAE-P1	S3 Epithelial Tissue: • [Zavod za histologiju i embriologiju - Vježbaonica] (08:15 - 09:45) [182] ◦ HAE-S3 • [Zavod za histologiju i embriologiju - Vježbaonica] (13:15 - 14:45) [182] ◦ HAE-S1
Doc. dr. sc. Lenartić Maja, dipl. ing. [182] · Mikašinović Sanja, mag. biotech. in med [191]		
10.10.2023		
	LP2 Epithelial Tissue: • [Zavod za histologiju i embriologiju - Vježbaonica] (09:45 - 11:00) [191] ◦ HAE-P2 LP3 Connective Tissue: • [Zavod za histologiju i embriologiju - Vježbaonica] (12:00 - 13:30) [1409] ◦ HAE-P1	S3 Epithelial Tissue: • [Zavod za histologiju i embriologiju - Vježbaonica] (08:15 - 09:45) [182] ◦ HAE-S2 S4 Connective Tissue: • [Zavod za histologiju i embriologiju - Vježbaonica] (11:15 - 12:00) [189] ◦ HAE-S1
doc.dr. sc. Jelenčić Vedrana, mag. ing. mol. bioteh. [189] · Doc. dr. sc. Lenartić Maja, dipl. ing. [182] · Materljan Jelena, dr. med. [1409] · Mikašinović Sanja, mag. biotech. in med [191]		
11.10.2023		
	LP3 Connective Tissue: • [Zavod za histologiju i embriologiju - Vježbaonica] (09:15 - 10:45) [1409] ◦ HAE-P3	S4 Connective Tissue: • [Zavod za histologiju i embriologiju - Vježbaonica] (08:30 - 09:15) [189] ◦ HAE-S3 S2 Bone marrow, hematopoiesis: • [P01] (11:15 - 12:00) [195] ◦ HAE
doc.dr. sc. Jelenčić Vedrana, mag. ing. mol. bioteh. [189] · Materljan Jelena, dr. med. [1409] · izv. prof. dr. sc. Wensveen Felix, dipl. biolog [195]		
12.10.2023		
	LP3 Connective Tissue: • [Zavod za histologiju i embriologiju - Vježbaonica] (09:15 - 10:45) [1409] ◦ HAE-P2	S4 Connective Tissue: • [Zavod za histologiju i embriologiju - Vježbaonica] (08:30 - 09:15) [189] ◦ HAE-S2
doc.dr. sc. Jelenčić Vedrana, mag. ing. mol. bioteh. [189] · Materljan Jelena, dr. med. [1409]		
13.10.2023		
L7-8 Muscle Tissue, Circulatory System: • [P08] (08:15 - 10:00) [185] ◦ HAE		
prof. dr. sc. Tomac Jelena, dr. med. [185]		
16.10.2023		

	LP4 Blood, Cartilage:
	• [Zavod za histologiju i embriologiju - Vježbaonica] (09:15 - 10:45) [193]
	  ◦ HAE-P3
	• [Zavod za histologiju i embriologiju - Vježbaonica] (14:15 - 15:45) [193]
	  ◦ HAE-P1
		S5 Blood, Cartilage:
		• [Zavod za histologiju i embriologiju - Vježbaonica] (08:30 - 09:15) [1464]
		  ◦ HAE-S3
		• [Zavod za histologiju i embriologiju - Vježbaonica] (13:30 - 14:15) [1464]
		  ◦ HAE-S1

doc. dr. sc. Babić Čač Marina, dipl. ing. biol. [1464] · Mladenić Karlo, mag. biotech. in med. [193]		
17.10.2023		

	LP4 Blood, Cartilage:
	• [Zavod za histologiju i embriologiju - Vježbaonica] (09:15 - 10:45) [193]
	  ◦ HAE-P2
	
	LP5 Bone, Osteogenesis:
	• [Zavod za histologiju i embriologiju - Vježbaonica] (12:45 - 14:00) [181]
	  ◦ HAE-P1
		S5 Blood, Cartilage:
		• [Zavod za histologiju i embriologiju - Vježbaonica] (08:30 - 09:15) [1464]
		  ◦ HAE-S2
		
		S6 Bone, osteogenesis:
		• [Zavod za histologiju i embriologiju - Vježbaonica] (11:15 - 12:45) [185]
		  ◦ HAE-S1

doc. dr. sc. Babić Čač Marina, dipl. ing. biol. [1464] · Imširović Vanna, mag. biochem. [181] · Mladenić Karlo, mag. biotech. in med. [193] · prof. dr. sc. Tomac Jelena, dr. med. [185]		
18.10.2023		

L9 Endocrine System:
• [P15 - VIJEĆNICA] (11:15 - 12:00) [195]
  ◦ HAE
	LP5 Bone, Osteogenesis:
	• [Zavod za histologiju i embriologiju - Vježbaonica] (09:45 - 11:00) [181]
	  ◦ HAE-P3
		S6 Bone, osteogenesis:
		• [Zavod za histologiju i embriologiju - Vježbaonica] (08:15 - 09:45) [185]
		  ◦ HAE-S3

Imširović Vanna, mag. biochem. [181] · prof. dr. sc. Tomac Jelena, dr. med. [185] · izv. prof. dr. sc. Wensveen Felix, dipl. biolog [195]		
19.10.2023		

	LP5 Bone, Osteogenesis:
	• [Zavod za histologiju i embriologiju - Vježbaonica] (09:45 - 11:00) [193]
	  ◦ HAE-P2
		S6 Bone, osteogenesis:
		• [Zavod za histologiju i embriologiju - Vježbaonica] (08:15 - 09:45) [185]
		  ◦ HAE-S2

Mladenić Karlo, mag. biotech. in med. [193] · prof. dr. sc. Tomac Jelena, dr. med. [185]		
20.10.2023		
L10-11 Nerve Tissue, Nervous System: • [P01] (08:15 - 10:00) [179] ◦ HAE		
prof. dr. sc. Krmpotić Astrid, dr. med. [179]		
23.10.2023		

L12 Male Reproductive System, Embryology – developmental processes, Gametogenesisnt:
• [P08] (11:15 - 12:00) [195]
  ○ HAE
	LP6 Muscle Tissue, Circulatory System:
	• [Zavod za histologiju i embriologiju - Vježbaonica] (09:45 - 11:00) [193]
	  ○ HAE-P3
	• [Zavod za histologiju i embriologiju - Vježbaonica] (15:00 - 16:15) [193]
	  ○ HAE-P1
		S8 Muscle Tissue, Circulatory System:
		• [Zavod za histologiju i embriologiju - Vježbaonica] (08:15 - 09:45) [185]
		  ○ HAE-S3
		• [Zavod za histologiju i embriologiju - Vježbaonica] (13:30 - 15:00) [185]
		  ○ HAE-S1

Mladenić Karlo, mag. biotech. in med. [193] · prof. dr. sc. Tomac Jelena, dr. med. [185] · izv. prof. dr. sc. Wensveen Felix, dipl. biolog [195]		
24.10.2023		

	LP6 Muscle Tissue, Circulatory System:
	• [Zavod za histologiju i embriologiju - Vježbaonica] (10:00 - 11:15) [193]
	  ○ HAE-P2
	
	LP7 Nerve Tissue, Nervous System:
	• [Zavod za histologiju i embriologiju - Vježbaonica] (12:45 - 14:00) [188]
	  ○ HAE-P1
		S8 Muscle Tissue, Circulatory System:
		• [Zavod za histologiju i embriologiju - Vježbaonica] (08:30 - 10:00) [185]
		  ○ HAE-S2
		
		S9 Nerve Tissue, Nervous System:
		• [Zavod za histologiju i embriologiju - Vježbaonica] (11:15 - 12:45) [182]
		  ○ HAE-S1

Gaćina Lydia, mag. eksp. biol. [188] · Doc. dr. sc. Lenartić Maja, dipl. ing. [182] · Mladenić Karlo, mag. biotech. in med. [193] · prof. dr. sc. Tomac Jelena, dr. med. [185]		
25.10.2023		

	LP7 Nerve Tissue, Nervous System:
	• [Zavod za histologiju i embriologiju - Vježbaonica] (09:45 - 11:00) [188]
	  ○ HAE-P3
		S9 Nerve Tissue, Nervous System:
		• [Zavod za histologiju i embriologiju - Vježbaonica] (08:15 - 09:45) [182]
		  ○ HAE-S3
		
		S7 Stem cells:
		• [P15 - VIJEĆNICA] (11:15 - 12:00) [145]
		  ○ HAE

Gaćina Lydia, mag. eksp. biol. [188] · Doc. dr. sc. Lenartić Maja, dipl. ing. [182] · prof. dr. sc. Polić Bojan, dr. med. [145]		
26.10.2023		

	LP7 Nerve Tissue, Nervous System:
	• [Zavod za histologiju i embriologiju - Vježbaonica] (09:45 - 11:00) [188]
	  ○ HAE-P2
		S9 Nerve Tissue, Nervous System:
		• [Zavod za histologiju i embriologiju - Vježbaonica] (08:15 - 09:45) [182]
		  ○ HAE-S2

Gaćina Lydia, mag. eksp. biol. [188] · Doc. dr. sc. Lenartić Maja, dipl. ing. [182]		
27.10.2023		
L13-14 Female Reproductive System, Sex Cycles, First Week, Second Week and Third Week of Development: • [P01] (08:15 - 10:00) [179] ○ HAE		
prof. dr. sc. Krmpotić Astrid, dr. med. [179]		

30.10.2023		
	LP8 Female Reproductive System: • [Zavod za histologiju i embriologiju - Vježbaonica] (09:45 - 11:00) [1409] ◦ HAE-P3 • [Zavod za histologiju i embriologiju - Vježbaonica] (15:00 - 16:15) [1409] ◦ HAE-P1	S10 Female Reproductive System: • [Zavod za histologiju i embriologiju - Vježbaonica] (08:15 - 09:45) [1464] ◦ HAE-S3 • [Zavod za histologiju i embriologiju - Vježbaonica] (13:30 - 15:00) [1464] ◦ HAE-S1
doc. dr. sc. Babić Čač Marina, dipl. ing. biol. [1464] · Materljan Jelena, dr. med. [1409]		
31.10.2023		
	LP8 Female Reproductive System: • [Zavod za histologiju i embriologiju - Vježbaonica] (09:45 - 11:00) [1409] ◦ HAE-P2	S10 Female Reproductive System: • [Zavod za histologiju i embriologiju - Vježbaonica] (08:15 - 09:45) [1464] ◦ HAE-S2
doc. dr. sc. Babić Čač Marina, dipl. ing. biol. [1464] · Materljan Jelena, dr. med. [1409]		
03.11.2023		
L16 Embryology – Extra-embryonal Membranes: • [P01] (08:15 - 10:00) [185] ◦ HAE L15 -Embryonic, Fetal Period, Body Cavities: • [P01] (08:15 - 10:00) [185] ◦ HAE		
prof. dr. sc. Tomac Jelena, dr. med. [185]		
06.11.2023		
		S12 Embryology I: • [Zavod za histologiju i embriologiju - Vježbaonica] (08:30 - 10:45) [1480] ◦ HAE-S3 • [Zavod za histologiju i embriologiju - Vježbaonica] (13:30 - 15:45) [1480] ◦ HAE-S1
dr. sc. Šestan Marko, dr. med. vet. [1480]		
07.11.2023		
	LP9 Embryology: • [Zavod za histologiju i embriologiju - Vježbaonica] (12:45 - 14:00) [191] ◦ HAE-P1	S12 Embryology I: • [Zavod za histologiju i embriologiju - Vježbaonica] (08:30 - 10:45) [1480] ◦ HAE-S2 S13 Embryology II: • [Zavod za histologiju i embriologiju - Vježbaonica] (11:15 - 12:45) [185] ◦ HAE-S1
Mikašinović Sanja, mag. biotech. in med [191] · prof. dr. sc. Tomac Jelena, dr. med. [185] · dr. sc. Šestan Marko, dr. med. vet. [1480]		

08.11.2023		
	LP9 Embryology: • [Zavod za histologiju i embriologiju - Vježbaonica] (09:45 - 11:00) [191] ◦ HAE-P3	S13 Embryology II: • [Zavod za histologiju i embriologiju - Vježbaonica] (08:15 - 09:45) [185] ◦ HAE-S3 S11 Head and Neck Development: • [P01] (11:15 - 12:00) [185] ◦ HAE
Mikašinović Sanja, mag. biotech. in med [191] · prof. dr. sc. Tomac Jelena, dr. med. [185]		
09.11.2023		
	LP9 Embryology: • [Zavod za histologiju i embriologiju - Vježbaonica] (09:45 - 11:00) [191] ◦ HAE-P2	S13 Embryology II: • [Zavod za histologiju i embriologiju - Vježbaonica] (08:15 - 09:45) [185] ◦ HAE-S2
Mikašinović Sanja, mag. biotech. in med [191] · prof. dr. sc. Tomac Jelena, dr. med. [185]		
10.11.2023		
L17,18 Skin and Derivates – Structure and Development: • [P01] (08:15 - 10:00) [195] ◦ HAE		
izv. prof. dr. sc. Wensveen Felix, dipl. biolog [195]		
15.11.2023		
		S14 Muscular System, Limbs, Axial Skeleton – Development: • [P01] (11:15 - 12:00) [185] ◦ HAE
prof. dr. sc. Tomac Jelena, dr. med. [185]		
17.11.2023		
L19,20 Development of the Central Nervous System and endocrine glands: • [P01] (08:15 - 10:00) [185] ◦ HAE		
prof. dr. sc. Tomac Jelena, dr. med. [185]		
20.11.2023		
	LP10 Male Reproductive System: • [Zavod za histologiju i embriologiju - Vježbaonica] (09:15 - 10:45) [191] ◦ HAE-P3 • [Zavod za histologiju i embriologiju - Vježbaonica] (14:15 - 15:45) [191] ◦ HAE-P1	S15 Male Reproductive System – Structure: • [Zavod za histologiju i embriologiju - Vježbaonica] (08:30 - 09:15) [195] ◦ HAE-S3 • [Zavod za histologiju i embriologiju - Vježbaonica] (13:30 - 14:15) [195] ◦ HAE-S1
Mikašinović Sanja, mag. biotech. in med [191] · izv. prof. dr. sc. Wensveen Felix, dipl. biolog [195]		

21.11.2023		
	LP10 Male Reproductive System: • [Zavod za histologiju i embriologiju - Vježbaonica] (09:15 - 10:45) [191] ◦ HAE-P2 LP11 Endocrine System: • [Zavod za histologiju i embriologiju - Vježbaonica] (13:15 - 14:45) [191] ◦ HAE-P1	S15 Male Reproductive System – Structure: • [Zavod za histologiju i embriologiju - Vježbaonica] (08:30 - 09:15) [195] ◦ HAE-S2 S16 Endocrine System: • [Zavod za histologiju i embriologiju - Vježbaonica] (12:30 - 13:15) [189] ◦ HAE-S1
doc.dr. sc. Jelenčić Vedrana, mag. ing. mol. bioteh. [189] · Mikašinović Sanja, mag. biotech. in med [191] · izv. prof. dr. sc. Wensveen Felix, dipl. biolog [195]		
22.11.2023		
L21 Ear – Structure and Development: • [P15 - VIJEĆNICA] (11:15 - 12:00) [145] ◦ HAE	LP11 Endocrine System: • [Zavod za histologiju i embriologiju - Vježbaonica] (09:15 - 10:45) [191] ◦ HAE-P2	S16 Endocrine System: • [Zavod za histologiju i embriologiju - Vježbaonica] (08:30 - 09:15) [189] ◦ HAE-S2
doc.dr. sc. Jelenčić Vedrana, mag. ing. mol. bioteh. [189] · Mikašinović Sanja, mag. biotech. in med [191] · prof. dr. sc. Polić Bojan, dr. med. [145]		
23.11.2023		
	LP11 Endocrine System: • [Zavod za histologiju i embriologiju - Vježbaonica] (09:15 - 10:45) [191] ◦ HAE-P3	S16 Endocrine System: • [Zavod za histologiju i embriologiju - Vježbaonica] (08:30 - 09:15) [189] ◦ HAE-S3
doc.dr. sc. Jelenčić Vedrana, mag. ing. mol. bioteh. [189] · Mikašinović Sanja, mag. biotech. in med [191]		
24.11.2023		
L22,23 Eye – Structure and Development: • [P01] (08:15 - 10:00) [185] ◦ HAE		
prof. dr. sc. Tomac Jelena, dr. med. [185]		
27.11.2023		
	LP12 Skin – Structure: • [Zavod za histologiju i embriologiju - Vježbaonica] (09:45 - 11:00) [1409] ◦ HAE-P3 • [Zavod za histologiju i embriologiju - Vježbaonica] (15:00 - 16:15) [1409] ◦ HAE-P1	S17 Skin – Structure and Development: • [Zavod za histologiju i embriologiju - Vježbaonica] (08:15 - 09:45) [1480] ◦ HAE-S3 • [Zavod za histologiju i embriologiju - Vježbaonica] (13:30 - 15:00) [1480] ◦ HAE-S1
Materljan Jelena, dr. med. [1409] · dr. sc. Šestan Marko, dr. med. vet. [1480]		
28.11.2023		

	LP12 Skin – Structure:
	• [Zavod za histologiju i embriologiju - Vježbaonica] (09:45 - 11:00) [1409]
	  ◦ HAE-P2
	
	LP13 Ear:
	• [Zavod za histologiju i embriologiju - Vježbaonica] (13:00 - 14:15) [188]
	  ◦ HAE-P1
		S17 Skin – Structure and Development:
		• [Zavod za histologiju i embriologiju - Vježbaonica] (08:15 - 09:45) [1480]
		  ◦ HAE-S2
		
		S18 Ear – Structure and Development:
		• [Zavod za histologiju i embriologiju - Vježbaonica] (12:15 - 13:00) [189]
		  ◦ HAE-S1

Gaćina Lydia, mag. eksp. biol. [188] · doc.dr. sc. Jelenčić Vedrana, mag. ing. mol. bioteh. [189] · Materljan Jelena, dr. med. [1409] · dr. sc. Šestan Marko, dr. med. vet. [1480]		
29.11.2023		

L24 Immune system – Structure and Development:
• [P01] (11:15 - 12:00) [1480]
  ◦ HAE
	LP13 Ear:
	• [Zavod za histologiju i embriologiju - Vježbaonica] (09:30 - 10:45) [188]
	  ◦ HAE-P2
		S18 Ear – Structure and Development:
		• [Zavod za histologiju i embriologiju - Vježbaonica] (08:45 - 09:30) [189]
		  ◦ HAE-S2

Gaćina Lydia, mag. eksp. biol. [188] · doc.dr. sc. Jelenčić Vedrana, mag. ing. mol. bioteh. [189] · dr. sc. Šestan Marko, dr. med. vet. [1480]		
30.11.2023		

	LP13 Ear:
	• [Zavod za histologiju i embriologiju - Vježbaonica] (09:30 - 10:45) [188]
	  ◦ HAE-P3
		S18 Ear – Structure and Development:
		• [Zavod za histologiju i embriologiju - Vježbaonica] (08:45 - 09:30) [189]
		  ◦ HAE-S3

Gaćina Lydia, mag. eksp. biol. [188] · doc.dr. sc. Jelenčić Vedrana, mag. ing. mol. bioteh. [189]		
01.12.2023		
L25, 26 Digestive tract – Oral Cavity: • [P08] (08:15 - 10:00) [185] ◦ HAE		
prof. dr. sc. Tomac Jelena, dr. med. [185]		
04.12.2023		

	LP14 Eye – Structure and Development:
	• [Zavod za histologiju i embriologiju - Vježbaonica] (09:45 - 11:00) [191]
	  ◦ HAE-P3
	• [Zavod za histologiju i embriologiju - Vježbaonica] (15:00 - 16:15) [191]
	  ◦ HAE-P1
		S20 Eye – Structure and Development:
		• [Zavod za histologiju i embriologiju - Vježbaonica] (08:15 - 09:45) [189]
		  ◦ HAE-S3
		• [Zavod za histologiju i embriologiju - Vježbaonica] (13:30 - 15:00) [189]
		  ◦ HAE-S1

doc.dr. sc. Jelenčić Vedrana, mag. ing. mol. bioteh. [189] · Mikašinović Sanja, mag. biotech. in med [191]		
05.12.2023		

	LP14 Eye – Structure and Development:
	• [Zavod za histologiju i embriologiju - Vježbaonica] (09:45 - 11:00) [191]
	  ◦ HAE-P2
	
	LP15 Immune System:
	• [Zavod za histologiju i embriologiju - Vježbaonica] (13:00 - 14:30) [181]
	  ◦ HAE-P1
		S20 Eye – Structure and Development:
		• [Zavod za histologiju i embriologiju - Vježbaonica] (08:15 - 09:45) [189]
		  ◦ HAE-S2
		
		S21 Immune system – Structure and Development:
		• [Zavod za histologiju i embriologiju - Vježbaonica] (12:45 - 13:00) [1480]
		  ◦ HAE-S1

Imširović Vanna, mag. biochem. [181] · doc.dr. sc. Jelenčić Vedrana, mag. ing. mol. bioteh. [189] · Mikašinović Sanja, mag. biotech. in med [191] · dr. sc. Šestan Marko, dr. med. vet. [1480]		
06.12.2023		

	LP15 Immune System:
	• [Zavod za histologiju i embriologiju - Vježbaonica] (09:15 - 10:45) [181]
	  ◦ HAE-P2
		S21 Immune system – Structure and Development:
		• [Zavod za histologiju i embriologiju - Vježbaonica] (08:30 - 09:15) [1480]
		  ◦ HAE-S2
		
		S19 Digestive Glands – Structure:
		• [P01] (11:15 - 12:00) [185]
		  ◦ HAE

Imširović Vanna, mag. biochem. [181] · prof. dr. sc. Tomac Jelena, dr. med. [185] · dr. sc. Šestan Marko, dr. med. vet. [1480]		
07.12.2023		

	LP15 Immune System:
	• [Zavod za histologiju i embriologiju - Vježbaonica] (09:15 - 10:45) [181]
	  ◦ HAE-P3
		S21 Immune system – Structure and Development:
		• [Zavod za histologiju i embriologiju - Vježbaonica] (08:30 - 09:15) [1480]
		  ◦ HAE-S3

Imširović Vanna, mag. biochem. [181] · dr. sc. Šestan Marko, dr. med. vet. [1480]		
08.12.2023		
L27-28 Digestive Tract - structure: • [P15 - VIJEĆNICA] (08:15 - 10:00) [145] ◦ HAE		
prof. dr. sc. Polić Bojan, dr. med. [145]		
11.12.2023		

	LP16 Oral Cavity, Teeth – Structure and Development:
	• [Zavod za histologiju i embriologiju - Vježbaonica] (09:45 - 11:00) [1464]
	  ◦ HAE-P3
	• [Zavod za histologiju i embriologiju - Vježbaonica] (15:00 - 16:15) [1464]
	  ◦ HAE-P1
		S23 Oral Cavity – Structure and Development:
		• [Zavod za histologiju i embriologiju - Vježbaonica] (08:15 - 09:45) [185]
		  ◦ HAE-S3
		• [Zavod za histologiju i embriologiju - Vježbaonica] (13:30 - 15:00) [185]
		  ◦ HAE-S1

doc. dr. sc. Babić Čač Marina, dipl. ing. biol. [1464] · prof. dr. sc. Tomac Jelena, dr. med. [185]		

12.12.2023		

	LP16 Oral Cavity, Teeth – Structure and Development:
	• [Zavod za histologiju i embriologiju - Vježbaonica] (09:45 - 11:00) [1464]
	  ○ HAE-P2
	
	LP17 Digestive Tube:
	• [Zavod za histologiju i embriologiju - Vježbaonica] (13:00 - 14:15) [1409]
	  ○ HAE-P1
		S23 Oral Cavity – Structure and Development:
		• [Zavod za histologiju i embriologiju - Vježbaonica] (08:15 - 09:45) [185]
		  ○ HAE-S2
		
		S24 Digestive Tube – Structure:
		• [Zavod za histologiju i embriologiju - Vježbaonica] (11:30 - 13:00) [145]
		  ○ HAE-S1

doc. dr. sc. Babić Čač Marina, dipl. ing. biol. [1464] · Materljan Jelena, dr. med. [1409] · prof. dr. sc. Polić Bojan, dr. med. [145] · prof. dr. sc. Tomac Jelena, dr. med. [185]		
13.12.2023		

	LP17 Digestive Tube:
	• [Zavod za histologiju i embriologiju - Vježbaonica] (09:45 - 11:00) [1409]
	  ○ HAE-P3
		S24 Digestive Tube – Structure:
		• [Zavod za histologiju i embriologiju - Vježbaonica] (08:15 - 09:45) [145]
		  ○ HAE-S3
		
		S22 Digestive tract – Development:
		• [P15 - VIJEĆNICA] (11:15 - 12:00) [185]
		  ○ HAE

Materljan Jelena, dr. med. [1409] · prof. dr. sc. Polić Bojan, dr. med. [145] · prof. dr. sc. Tomac Jelena, dr. med. [185]		
14.12.2023		

	LP17 Digestive Tube:
	• [Zavod za histologiju i embriologiju - Vježbaonica] (09:45 - 11:00) [1409]
	  ○ HAE-P2
		S24 Digestive Tube – Structure:
		• [Zavod za histologiju i embriologiju - Vježbaonica] (08:15 - 09:45) [145]
		  ○ HAE-S2

Materljan Jelena, dr. med. [1409] · prof. dr. sc. Polić Bojan, dr. med. [145]		
15.12.2023		

L29 Respiratory system – Structure:
• [P08] (08:15 - 10:00) [185] [145]
  ○ HAE
 	
L30 Urinary system – Structure:
• [P08] (08:15 - 10:00) [185] [145]
  ○ HAE		

prof. dr. sc. Polić Bojan, dr. med. [145] · prof. dr. sc. Tomac Jelena, dr. med. [185]		
18.12.2023		

	LP18 Digestive Glands:
	• [Zavod za histologiju i embriologiju - Vježbaonica] (09:15 - 10:45) [188]
	  ○ HAE-P3
		S25 Digestive Glands – Structure:
		• [Zavod za histologiju i embriologiju - Vježbaonica] (08:30 - 09:15) [145]
		  ○ HAE-S3

Gaćina Lydia, mag. eksp. biol. [188] · prof. dr. sc. Polić Bojan, dr. med. [145]		

19.12.2023		
	LP18 Digestive Glands: • [Zavod za histologiju i embriologiju - Vježbaonica] (13:00 - 14:30) [188] ◦ HAE-P1	S25 Digestive Glands – Structure: • [Zavod za histologiju i embriologiju - Vježbaonica] (12:15 - 13:00) [145] ◦ HAE-S1
Gaćina Lydia, mag. eksp. biol. [188] · prof. dr. sc. Polić Bojan, dr. med. [145]		
20.12.2023		
	LP18 Digestive Glands: • [Zavod za histologiju i embriologiju - Vježbaonica] (09:15 - 10:45) [188] ◦ HAE-P2	S25 Digestive Glands – Structure: • [Zavod za histologiju i embriologiju - Vježbaonica] (08:30 - 09:15) [185] ◦ HAE-S2
Gaćina Lydia, mag. eksp. biol. [188] · prof. dr. sc. Tomac Jelena, dr. med. [185]		
08.01.2024		
	LP19 Respiratory System: • [Zavod za histologiju i embriologiju - Vježbaonica] (09:15 - 10:45) [181] ◦ HAE-P3 • [Zavod za histologiju i embriologiju - Vježbaonica] (12:15 - 13:45) [181] ◦ HAE-P1	S26 Respiratory System: • [Zavod za histologiju i embriologiju - Vježbaonica] (08:30 - 09:15) [1480] ◦ HAE-S3 • [Zavod za histologiju i embriologiju - Vježbaonica] (11:30 - 12:15) [1480] ◦ HAE-S1
Imširović Vanna, mag. biochem. [181] · dr. sc. Šestan Marko, dr. med. vet. [1480]		
09.01.2024		
	LP19 Respiratory System: • [Zavod za histologiju i embriologiju - Vježbaonica] (09:15 - 10:45) [181] ◦ HAE-P2 LP20 Urinary system: • [Zavod za histologiju i embriologiju - Vježbaonica] (14:00 - 15:15) [193] ◦ HAE-P1	S26 Respiratory System: • [Zavod za histologiju i embriologiju - Vježbaonica] (08:30 - 09:15) [1480] ◦ HAE-S2 S28 Urogenital system – Development: • [P08] (11:15 - 12:00) [185] ◦ HAE S27 Urinary System: • [Zavod za histologiju i embriologiju - Vježbaonica] (12:30 - 14:00) [195] ◦ HAE-S1
Imširović Vanna, mag. biochem. [181] · Mladenić Karlo, mag. biotech. in med. [193] · prof. dr. sc. Tomac Jelena, dr. med. [185] · izv. prof. dr. sc. Wensveen Felix, dipl. biolog [195] · dr. sc. Šestan Marko, dr. med. vet. [1480]		
10.01.2024		
	LP20 Urinary system: • [Zavod za histologiju i embriologiju - Vježbaonica] (10:00 - 11:15) [193] ◦ HAE-P2	S27 Urinary System: • [Zavod za histologiju i embriologiju - Vježbaonica] (08:30 - 10:00) [195] ◦ HAE-S2
Mladenić Karlo, mag. biotech. in med. [193] · izv. prof. dr. sc. Wensveen Felix, dipl. biolog [195]		

11.01.2024		

	LP20 Urinary system:
	• [Zavod za histologiju i embriologiju - Vježbaonica] (10:00 - 11:15) [193]
	  ○ HAE-P3
		S27 Urinary System:
		• [Zavod za histologiju i embriologiju - Vježbaonica] (08:30 - 10:00) [195]
		  ○ HAE-S3

Mladenić Karlo, mag. biotech. in med. [193] · izv. prof. dr. sc. Wensveen Felix, dipl. biolog [195]		
12.01.2024		
L31-32 Development of the Cardiovascular and Respiratory Systems: • [P01] (08:15 - 10:00) [179] ○ HAE		
prof. dr. sc. Krmpotić Astrid, dr. med. [179]		
15.01.2024		

	LP21 Tissue section repetition:
	• [Zavod za histologiju i embriologiju - Vježbaonica] (08:30 - 10:00) [1464]
	  ○ HAE-P3
	• [Zavod za histologiju i embriologiju - Vježbaonica] (13:00 - 15:00) [182] [1409]
	  ○ HAE-P1	

doc. dr. sc. Babić Čač Marina, dipl. ing. biol. [1464] · Doc. dr. sc. Lenartić Maja, dipl. ing. [182] · Materljan Jelena, dr. med. [1409]		
16.01.2024		

	LP22 Tissue section slide recognition:
	• [Zavod za histologiju i embriologiju - Vježbaonica] (08:30 - 10:00) [186]
	  ○ HAE-P3
	
	LP21 Tissue section repetition:
	• [Zavod za histologiju i embriologiju - Vježbaonica] (10:00 - 11:30) [181]
	  ○ HAE-P2	

Gašparini Dora, dr. med. [186] · Imširović Vanna, mag. biochem. [181]		
17.01.2024		
	LP22 Tissue section slide recognition: • [Zavod za histologiju i embriologiju - Vježbaonica] (08:30 - 10:00) [1409] [189] ○ HAE-P2	
doc.dr. sc. Jelenčić Vedrana, mag. ing. mol. bioteh. [189] · Materljan Jelena, dr. med. [1409]		
18.01.2024		

	LP22 Tissue section slide recognition: • [Zavod za histologiju i embriologiju - Vježbaonica] (08:30 - 10:00) [182] ○ HAE-P1	
Doc. dr. sc. Lenartić Maja, dipl. ing. [182]		
19.01.2024		
		S29 Birth Defects, Teratology: • [P08] (08:15 - 10:00) [179] ○ HAE
prof. dr. sc. Krmpotić Astrid, dr. med. [179]		

List of lectures, seminars and practicals:

[PREDAVANJA] (TOPIC)	Number of hours	Location
L1 Importance of Histology in Understanding Human Tissue Formation and Function	1	[P15 - VIJEĆNICA]
L2 Epithelial Tissue	1	[P15 - VIJEĆNICA]
L3-4 Connective Tissue, Blood	2	[P15 - VIJEĆNICA]
L5-6 Cartilage, Joints, Bone, Osteogenesis	2	[P15 - VIJEĆNICA]
L7-8 Muscle Tissue, Circulatory System	2	[P08]
L9 Endocrine System	1	[P15 - VIJEĆNICA]
L10-11 Nerve Tissue, Nervous System	2	[P01]
L12 Male Reproductive System, Embryology – developmental processes, Gametogenesisnt	1	[P08]
L13-14 Female Reproductive System, Sex Cycles, First Week, Second Week and Third Week of Development	3	[P01]
L16 Embryology – Extra-embryonal Membranes	1	[P01]
L17,18 Skin and Derivates – Structure and Development	2	[P01]
L19,20 Development of the Central Nervous System and endocrine glands	2	[P01]
L21 Ear – Structure and Development	1	[P15 - VIJEĆNICA]
L22,23 Eye – Structure and Development	2	[P01]
L24 Immune system – Structure and Development	1	[P01]
L25, 26 Digestive tract – Oral Cavity	2	[P08]
L27-28 Digestive Tract - structure	2	[P15 - VIJEĆNICA]
L29 Respiratory system – Structure	1	[P08]
L30 Urinary system – Structure	1	[P08]
L31-32 Development of the Cardiovascular and Respiratory Systems	2	[P01]
L15 -Embryonic, Fetal Period, Body Cavities	1	[P01]

[VJEŽBE] (TOPIC)	Number of hours	Location

LP1 Methods in Histology	2	[Zavod za histologiju i embriologiju - Vježbaonica]
LP2 Epithelial Tissue	2	[Zavod za histologiju i embriologiju - Vježbaonica]
LP3 Connective Tissue	2	[Zavod za histologiju i embriologiju - Vježbaonica]
LP4 Blood, Cartilage	2	[Zavod za histologiju i embriologiju - Vježbaonica]
LP5 Bone, Osteogenesis	2	[Zavod za histologiju i embriologiju - Vježbaonica]
LP6 Muscle Tissue, Circulatory System	2	[Zavod za histologiju i embriologiju - Vježbaonica]
LP7 Nerve Tissue, Nervous System	2	[Zavod za histologiju i embriologiju - Vježbaonica]
LP8 Female Reproductive System	2	[Zavod za histologiju i embriologiju - Vježbaonica]
LP9 Embryology	2	[Zavod za histologiju i embriologiju - Vježbaonica]
LP10 Male Reproductive System	2	[Zavod za histologiju i embriologiju - Vježbaonica]
LP11 Endocrine System	2	[Zavod za histologiju i embriologiju - Vježbaonica]
LP12 Skin – Structure	2	[Zavod za histologiju i embriologiju - Vježbaonica]
LP13 Ear	2	[Zavod za histologiju i embriologiju - Vježbaonica]
LP14 Eye – Structure and Development	2	[Zavod za histologiju i embriologiju - Vježbaonica]
LP15 Immune System	2	[Zavod za histologiju i embriologiju - Vježbaonica]
LP16 Oral Cavity, Teeth – Structure and Development	2	[Zavod za histologiju i embriologiju - Vježbaonica]
LP17 Digestive Tube	2	[Zavod za histologiju i embriologiju - Vježbaonica]
LP18 Digestive Glands	2	[Zavod za histologiju i embriologiju - Vježbaonica]
LP19 Respiratory System	1	[Zavod za histologiju i embriologiju - Vježbaonica]
LP20 Urinary system	1	[Zavod za histologiju i embriologiju - Vježbaonica]
LP21 Tissue section repetition	2	[Zavod za histologiju i embriologiju - Vježbaonica]
LP22 Tissue section slide recognition	3	[Zavod za histologiju i embriologiju - Vježbaonica]

[SEMINARI] (TOPIC)	Number of hours	Location
S1 Histology and its Methods of Study	2	[Zavod za histologiju i embriologiju - Vježbaonica]

S2 Bone marrow, hematopoiesis	1	[P01]
S3 Epithelial Tissue	2	[Zavod za histologiju i embriologiju - Vježbaonica]
S4 Connective Tissue	1	[Zavod za histologiju i embriologiju - Vježbaonica]
S5 Blood, Cartilage	1	[Zavod za histologiju i embriologiju - Vježbaonica]
S6 Bone, osteogenesis	2	[Zavod za histologiju i embriologiju - Vježbaonica]
S7 Stem cells	1	[P15 - VIJEĆNICA]
S8 Muscle Tissue, Circulatory System	2	[Zavod za histologiju i embriologiju - Vježbaonica]
S9 Nerve Tissue, Nervous System	2	[Zavod za histologiju i embriologiju - Vježbaonica]
S10 Female Reproductive System	2	[Zavod za histologiju i embriologiju - Vježbaonica]
S11 Head and Neck Development	1	[P01]
S12 Embryology I	3	[Zavod za histologiju i embriologiju - Vježbaonica]
S13 Embryology II	2	[Zavod za histologiju i embriologiju - Vježbaonica]
S14 Muscular System, Limbs, Axial Skeleton – Development	1	[P01]
S15 Male Reproductive System – Structure	1	[Zavod za histologiju i embriologiju - Vježbaonica]
S16 Endocrine System	1	[Zavod za histologiju i embriologiju - Vježbaonica]
S17 Skin – Structure and Development	2	[Zavod za histologiju i embriologiju - Vježbaonica]
S18 Ear – Structure and Development	1	[Zavod za histologiju i embriologiju - Vježbaonica]
S19 Digestive Glands – Structure	1	[P01]
S20 Eye – Structure and Development	2	[Zavod za histologiju i embriologiju - Vježbaonica]
S21 Immune system – Structure and Development	1	[Zavod za histologiju i embriologiju - Vježbaonica]
S22 Digestive tract – Development	1	[P15 - VIJEĆNICA]
S23 Oral Cavity – Structure and Development	2	[Zavod za histologiju i embriologiju - Vježbaonica]
S24 Digestive Tube – Structure	2	[Zavod za histologiju i embriologiju - Vježbaonica]
S25 Digestive Glands – Structure	1	[Zavod za histologiju i embriologiju - Vježbaonica]
S26 Respiratory System	1	[Zavod za histologiju i embriologiju - Vježbaonica]
S27 Urinary System	2	[Zavod za histologiju i embriologiju - Vježbaonica]
S28 Urogenital system – Development	1	[P08]

S29 Birth Defects, Teratology	2	[P08]

EXAM DATES (final exam):

1.	13.02.2024.
2.	27.02.2024.
3.	10.07.2024.
4.	04.09.2024.
5.	18.09.2024.