



Course: Pathology

Course Coordinator: Assist Prof Emina Babarović, MD, PhD

Department: Department of Pathology

Study program: Integrated Undergraduate and Graduate University Study of Medicine in English

Study year: 3rd

Academic year: 2021/22

SYLLABUS

Course description (a brief description of the course, general instructions, where and in what form the lessons are organized, necessary equipment, instructions for attendance and preparation for classes, student obligations, etc.):

The Pathology is a compulsory course in the third year of the Integrated Undergraduate and Graduate Study in Medicine and consists of 27 hours of lectures, 96 hours of exercises and 81 hours of seminars; valued 16 ECTS credits. The course is conducted on the premises of the Department of General Pathology and Pathological Anatomy, Faculty of Medicine, University of Rijeka.

Course objectives and planned outcome

The goal of the course in Pathology is to provide the student with knowledge about the mechanisms of damage to cells, tissues, and organs and to familiarize him with the morphological changes that underlie the disease. The task of the course is to enable students to recognize morphological changes in cells, tissues, and organs by acquiring theoretical knowledge in lectures and seminars, gaining their own experience in presence during clinical autopsies and analyzing microscopic and macroscopic preparations.

Learning outcomes

I. Cognitive Domain – Knowledge

1. List the factors that cause cell damage, define the mechanisms of their action, and classify and describe the types of cell adaptation and damage.
2. Describe the inflammatory response, distinguish acute and chronic, and compare them with morphological forms; analyze the healing modality and relate the inflammatory response to the clinical presentation.
3. Define certain types of disorders of the immune responses and compare them with different morphological defects or different states of the disease.
4. Define certain forms of disorders of body fluids and hemodynamics, describe their morphological characteristics and compare them with clinical presentation.
5. Define and divide neoplasms, describe the biology of tumor growth, list the epidemiology of neoplasms, enumerate carcinogens, describe carcinogenesis, tumor immunity and define the clinical characteristics of tumors.
6. Define certain forms of developmental and genetic diseases and describe certain diseases that are associated with these disorders, as well as infant and childhood diseases.
7. Within individual organ systems, define the etiopathogenetic factors that lead to tissue and organ damage, then classify (define) individual diseases, describe the morphological features, and ultimately relate them to the clinical picture.
8. Describe the methods (techniques) of work in pathology laboratories and distinguish between methods and possibilities of their application in diagnostics.

II. Psychomotor domain - skills

1. Recognize and describe the macroscopic changes of individual tissues and organs and, based on that, determine which disease state is considered (possible disease states).
2. Identify and describe microscopic changes in cells and tissues and define the diagnosis of the disease based on the information provided.
3. Distinguish individual disease states based on morphological changes.
4. Compare macroscopic and microscopic images of the most common disease states.
5. Relate morphological changes to the clinical presentation of the disease state.

6. Identify conditions in which, in addition to routine pathohistological staining, additional diagnostic methods need to be applied.
7. Identify the possibilities and limitations of emergency, intraoperative diagnostics.

Course content

The pathology course consists of a general and a systemic section. In the general part of the course are studied the etiopathogenetic factors and morphological changes: cell in adaptation, cell damage and death, inflammation and repair, neoplasms, genetic disorders, immune system diseases, disorders of body fluids and hemodynamics, diseases caused by deficit states, pathological changes caused by action environment, childhood diseases and diseases of aging. In the systemic part of pathology, etiopathogenetic factors and morphological changes related to particular organs and organ systems of the whole body are studied. During which the student acquires knowledge and skills in the application of nomenclature of pathological entities and diseases in Latin.

Assigned reading:

1. Basic pathology, 10th Edition, Kumar, Abbas, Aster
2. Robbins and Cotran Pathologic Basis of Disease, 9th Edition, Kumar, Abbas, Aster

Optional/additional reading:

1. GPS – General Pathology Synopsis (Pathology Self-Assessment question's Handbook)
 2. SPS – Systemic Pathology Synopsis (Systemic Pathology Self-assessment question's Handbook).
 3. Web –online content microscopic and macroscopic content <http://mikromed.hr>
- Patologija. I. Damjanov, S. Seiwerth, S. Jukić, M. Nola. Peto, prerađeno i dopunjeno izdanje, Medicinska naklada, Zagreb 2018.
- Atlas iz patologije, Katedra za patologiju, Medicinski fakultet u Rijeci

COURSE TEACHING PLAN:

The list of lectures (with topics and descriptions):

Lectures are a compulsory form of teaching that provides an introduction and overview of a thematic unit that will be covered in more detail at seminars.

L1. Introduction and Cellular pathology

Learning Outcomes:

1. Define all forms of cell damage.
2. Compare reversible and irreversible cell damage.
3. List all forms of cellular adaptation and differentiate between them.
4. Define the role of apoptosis in physiological and pathological conditions.

L2. Inflammation: the definition, division, and components of acute inflammation

Learning Outcomes:

1. Define inflammation.
2. List the types of inflammation.
3. List and explain the components of acute inflammation.

L3. Hemodynamic disorders

Learning Outcomes:

1. Define edema, describe and explain the mechanisms of edema formation and its clinical features.
2. Define hyperemia and congestion and explain pathogenesis.
3. Define thrombosis.
4. Be able to list the predisposing factors for the formation of thrombus, enumerate the different types of thrombus and their morphology.
5. Indicate and explain the fate of the thrombus and indicate possible clinical consequences.
6. Define infarction, indicate division, explain etiopathogenesis, pathohistological and clinical features.
7. Define, classify and explain the different stages of shock. State and describe morphological and clinical features.

L4. Neoplasms

Learning Outcomes:

1. Define the term neoplasm and histogenetically classify the neoplasm.

2. Describe the principles of nomenclature and neoplasm division based on macroscopic and histopathological images.
3. List the typical characteristics of benign and malignant neoplasms.
4. Describe the growth modes and types of tumor metastasis.
5. Explain the principles underlying the clinical and histological grade of neoplasms.

L5. Carcinogenesis

Learning Outcomes:

1. Define and explain the term carcinogenesis.
2. List the substances that may be carcinogenic (chemical, physical, biological agents).
3. Explain the mechanism of action of the virus as a carcinogenic agent (eg HPV, EBV).
4. Define oncogenes, explain their role in carcinogenesis, and mechanisms for the conversion of proto-oncogenes to oncogenes.
5. Define tumor suppressor genes and explain their role in carcinogenesis.
6. Explain the role of apoptotic genes in carcinogenesis.
7. Explain the importance of repair genes in neoplasm formation.

L6. Molecular methods in pathology

Learning Outcomes:

1. Explain the importance of molecular diagnostics in pathology.
2. Define and explain the mechanisms of PCR, reverse transcription of PCR, real time PCR.
3. Explain the difference between PCR, reverse transcription of PCR and real time PCR.
4. Define in situ hybridization and why is it used.
5. Define sequencing and why is it used.
6. List and list examples of solid tumors in which molecular diagnostics is an indispensable part of modern clinical treatment of patients and explain why.

L7. Immunopathology

Learning Outcomes:

1. List examples of hypersensitivity reactions.
2. Explain the mechanism of transplantation reaction formation.
3. List the most significant features of Systemic lupus erythematosus, Sjögren's syndrome and Systemic sclerosis.
4. Classify immunodeficiency states.
5. Explain the mechanism of emergence of acquired immunodeficiency syndrome.
6. State the characteristics of amyloidosis, classify amyloidosis.

L8. Developmental and genetic diseases

Learning Outcomes:

1. Enumerate, identify environmental teratogens.
2. List and describe chromosomal disorders (frequency and types of common chromosomopathies).
3. Describe and determine the origin and causes of numerical and structural chromosome disorders.
4. Enumerate cytogenetic tests in prenatal diagnosis.
5. List and describe screening tests for maternal serum.
6. Classify and describe genetic disorders inherited by Mendel's laws (autosomal dominant, autosomal recessive and sexually transmitted inheritance diseases).
7. Enumerate, classify and describe the morphological characteristics of the most common gene syndromes with atypical inheritance (caused by repeated triplet, mitochondrial gene mutations, imprinting disorders).
8. Classify and describe the morphological characteristics of diseases caused by polygenic inheritance.

L9. Blood vessels

Learning Outcomes:

1. Define vasculitis, classify vasculitis, list the causes and explain the pathogenesis of vasculitis.
2. Describe the characteristic morphological changes of giant cell arteritis, Takayasu arteritis, nodose polyarteritis, hypersensitive vasculitis and obliterating thrombangitis with guidance complications and associations with the clinical picture.
3. Recognize the pathohistological characteristics of nodose polyarteritis.
4. Define Churg-Strauss syndrome, Wegener's granulomatosis, Kawasaki's and Raynaud's disease and describe their morphological and clinical characteristics.

L10. Heart

Learning Outcomes:

1. Define and classify ischemic heart disease, provide epidemiological information and known causes and risk factors for ischemic heart disease.
2. Define and classify angina pectoris, list the causes and describe the morphological and clinical characteristics of angina.
3. Define and classify myocardial infarction, list the causes of myocardial infarction, describe and identify macroscopic and microscopic morphological characteristics of myocardial infarction, explain the association of coronary thrombosis site and infarct localization, describe, identify and explain the complications of infarction and clinical picture.
4. Define chronic ischemic heart disease and sudden cardiac death and list their epidemiological characteristics, causes and clinical picture, describe the morphological characteristics of chronic ischemic heart disease.
5. Define rheumatic fever and rheumatic heart disease, list epidemiological data, causes and explain pathogenesis, describe their morphological macroscopic and microscopic changes, state complications and their correlation with the clinical picture.

L11. Hematopathology

Learning Outcomes:

1. Define malignant white blood cell disease.
2. Describe methods in the diagnosis of white blood cell neoplasms.
3. Compare myeloproliferative neoplasms.
4. Distinguish non-Hodgkin's lymphoma from Hodgkin's lymphoma.

L12. Respiratory system: Restrictive lung diseases

Learning Outcomes:

1. Define and classify restrictive lung diseases, provide epidemiological data, causes, explain the pathogenesis of the disease, describe the morphological changes and the clinical picture.

L13. Respiratory system: Lung tumors

Learning Outcomes:

1. Classify lung tumors, provide epidemiological data, causes, risk factors, describe macroscopic morphological characteristics and explain the relationship to the clinical picture.
2. Describe the microscopic characteristics of lung cancer and indicate the epidemiological, etiological and clinical features of the major histological types of lung cancer (planocellular carcinoma, adenocarcinoma, small cell and large cell carcinoma).
3. Define and classify neuroendocrine lung tumors, describe morphological and clinical characteristics.
4. Define lung metastases and indicate their origin, describe their morphological characteristics and explain the association with the clinical picture.

L14. Digestive system

Learning Outcomes:

1. List and define diseases of the esophagus, stomach, small and large intestine, worm and abdomen.

L15. Liver

Learning Outcomes:

1. Describe and list clinical evaluation of liver and liver disease, circulatory disorders, viral hepatitis, and toxic lesions and cirrhosis.
2. List the tumors of the liver and related lesions and diseases of the gallbladder and bile ducts.

L16. Tumors of the digestive system

Learning Outcomes:

1. Neuroendocrine tumors: define incidence, enumerate localizations, specify division, and describe diagnostics and clinical characteristics.
2. Gastrointestinal stromal tumors: define incidence, list localizations, indicate division, and describe diagnostics and clinical characteristics.

L17. Kidney

Learning Outcomes:

1. List and describe developmental disorders of kidney number, position, and shape.

2. Classify and describe cystic kidney disease.
3. Classify glomerular diseases.
4. Classification of tubulointerstitial diseases.
5. Classify diseases of the renal blood vessels.
6. Describe the morphological features and pathogenesis of some of the most common kidney disease (benign and malignant nephrosclerosis, renal artery stenosis, shock kidneys, HUS).
7. Classify and describe the pathogenesis of particular types of urolithiasis.
8. Classify and describe obstructive diseases of the urologic tract.
9. Classify kidney tumors (benign and malignant tumors).
10. Describe the morphological features of malignant tumors of the origin of the renal tubules.
11. List and describe developmental disorders in the number, position, and shape of the urethra, bladder, and urethra.
12. List and describe inflammatory diseases of the urethra, bladder and urethra.
13. Classify spinal tumors and describe the morphological features of benign and malignant spinal tumors.

L18. Urinary system

Learning Outcomes:

1. Define, classify and describe the morphological features and pathogenesis of the following urological diseases:
 - Developmental disorders of the kidney.
 - Glomerular disease.
 - Tubulointerstitial kidney disease.
 - Renal vascular disease, obstructive urological disease.
 - Kidney tumors.
 - Diseases of the urethra, bladder and urethra.

L19. The male sexual system

Learning Outcomes:

1. Define, classify and describe developmental and inflammatory disorders, and tumors of the penis, adnexal testis and prostate.

L20. The female sex system: Characteristics of HPV virus and HPV infection

Learning Outcomes:

1. Describe the etiology and pathogenesis of cervical intraepithelial neoplasms, characteristics of HPV virus and HPV infection.
2. Describe and explain the morphology and classification of cervical intraepithelial neoplasia.
3. State the risk factors, classification and clinical picture of invasive cervical cancer.

L21. The female sex system: Classification of ovarian tumors

Learning Outcomes:

1. Describe epidemiology, pathogenesis, classification, pathology, and clinical ovarian and fallopian tube neoplasms.
2. List and describe ovarian tumors with clinical correlation.

L22. Breast

Learning Outcomes:

1. List and describe developmental disorders of the breast.
2. List and describe breast inflammation.
3. Enumerate and describe fibrocystic changes, apply acquired knowledge by emphasizing clinical significance of fibrocystic changes and proliferative breast disease, explain the risk of breast cancer.
4. List and describe breast tumors.
5. Describe and explain breast cancer, apply the knowledge gained by emphasizing the clinical features of malignant breast tumors.
6. List and describe the prognostic factors of breast cancer.
7. List and describe predictive factors of response to therapy.
8. List and describe molecular prognostic and predictive factors.
9. Enumerate and describe stromal breast tumors.
10. Describe and explain male gynecomastia and cancer.

L23. The endocrine system

Learning Outcomes:

1. List and describe endocrine gland disorders.
2. List and describe disorders of pituitary function.
3. List and describe neoplasms associated with the over-secretion of the hormone of the adenohypophysis.
4. List and describe the causes of insufficient secretion of the hormone adenohypophysis.
5. List and describe diseases of the neurohypophysis.
6. List and describe thyroid function disorders.
7. List, describe and explain the causes of thyrotoxicosis and hyperthyroidism.
8. Describe and explain goiter.
9. List and describe thyroiditis.
10. List and describe thyroid neoplasms.
11. List and describe disorders of the thyroid gland.
12. List, describe and explain the causes of primary hyperparathyroidism.
13. List, describe and explain the causes of secondary hyperparathyroidism.
14. Describe and explain tertiary hyperparathyroidism.
15. List, describe and explain the causes of hypoparathyroidism.
16. List and describe disorders of the adrenal gland.

L24. Skin

Learning Outcomes:

1. Define skin diseases.
2. Describe epithelial skin changes.
3. Describe pigmented skin lesions.
4. List metastatic changes in skin.
5. Describe immune disorders of the skin.

L25. The bone system

Learning Outcomes:

1. Define bone disease.
2. List and describe the basic features of bone development disorders.
3. Compare primary and secondary bone tumors.
4. Define primary bone tumors.
5. Indicate the characteristics of the neoplasms according to the patient's age, location and radiological appearance of the tumor.
6. Describe the basic morphological characteristics of particular bone neoplasms.

L26. Central nervous system: Cerebrovascular and neurodegenerative diseases of the central nervous system

Learning Outcomes:

1. List the main features of general cerebral hypoxic-ischemic encephalopathy.
2. Etiology, pathogenesis and clinical manifestations of local ischemia.
3. Etiology and pathogenesis of hemorrhage as a result of a rupture of cerebral artery aneurysms and clinical event.
4. Basic characteristics of neurodegenerative diseases, pathogenesis and clinical manifestation (Alzheimer's disease, frontotemporal lobar degeneration, Parkinson's disease, Huntington's disease, Friedreich's ataxia, Teleangiectatic ataxia, Amyotrophic lateral sclerosis).

L27. Central nervous system: neoplasms of the central nervous system

Learning Outcomes:

1. Epidemiology and classification of neoplasms of the central nervous system.
2. Basic morphological characteristics of glial tumors, medulloblastomas, meningiomas.

The list of seminars with descriptions:

The seminar is an active part of the teaching and involves the obligatory preparation of students. Students, with the help of a tutor, process a specific thematic unit from a theoretical point of view. Together they discuss and discuss its practical application, ie its importance in clinical practice.

S1. Cellular pathology

Learning Outcomes:

1. Explain the notion of homeostasis and stimulus responses.
2. Describe the factors that are essential for maintaining homeostasis.
3. Morphologically classify forms of cell damage (reversible and irreversible).
4. List the patterns of cell damage.
5. Describe and explain the mechanisms of acute reversible damage or cellular swelling.
6. Describe the particular forms of excessive buildup and other substances that lead to chronic reversible damage.
7. Define and describe individual forms of cellular adaptation: atrophy, hypertrophy, hyperplasia, metaplasia, and dysplasia.
8. Define irreversible cell damage from apoptosis, necrosis, wilting, aging until death.
9. Describe the individual characteristics of irreversibly damaged cells.

S2. Inflammation

Learning Outcomes:

1. Define inflammation - division, etiopathogenesis, pathology, clinical correlation, complications.
2. List the components of the inflammatory process, and in particular the cells, explain the role of blood vessels and surrounding tissue.
3. Classify mediators, that is, chemical mediators of inflammation.
4. Describe the vascular and cellular phase of inflammation.
5. List the morphological forms of inflammation and state the difference between exudates and transudates.
6. Define granulomatous inflammation and list and describe its morphological forms.
7. Describe the signs of inflammation (local, systemic and clinical features).
8. Define and explain wound regeneration, repair and healing.
9. Explain the concepts of labile, stable and permanent cells.
10. List the complications of wound healing.

S3. Hemodynamic disorders

Learning Outcomes:

1. Define edema, describe and explain the mechanisms of edema formation and its clinical features.
2. Describe the morphological changes of edema.
3. Describe the mechanism of occurrence and possible consequences of dehydration.
4. Define hyperemia and congestion, explain pathogenesis, pathohistological and clinical features.
5. Describe the morphological changes of hyperemia and congestion in different organs.
6. Define bleeding, explain mechanisms of onset, histopathological and clinical features.
7. Define thrombosis, classify thrombi, explain the etiopathogenesis and morphology of individual thrombi.
8. Indicate and describe the fate of the thrombus and indicate possible clinical consequences.
9. Define the term disseminated intravascular coagulopathy (DIC), list clinical disorders associated with DIC, explain the mechanisms of onset, pathohistological and clinical features.
10. Define embolism, indicate division, explain the etiopathogenesis and morphological characteristics of individual emboli, and list and describe possible consequences with clinical correlation.
11. Define infarction, indicate division, explain etiopathogenesis, pathohistological and clinical features.
12. Define, classify and explain the different stages of shock. State and explain morphological and clinical features.

S4. Neoplasms

Learning Outcomes:

1. Classify and explain the division of neoplasms (morphological, clinical, histogenetic, etiological).
2. Describe the characteristics of benign and malignant neoplasms.
3. Explain and cite examples of clinical and pathological classification and term of tumors.
4. Outline and describe the basic principles of tumor growth biology (gene changes, cell membrane changes, metabolic changes, tumor cell survival).
5. Explain the relationship of tumor cells to the environment.
6. Define metastasis and describe forms of metastasis.
7. Define the epidemiology of tumors and describe the prevalence, mortality, relative risk, survival and risk factors in tumor formation.
8. List the carcinogens and describe the basic principles in carcinogenesis.
9. Define and explain tumor immunity.

S5. Neoplasms

Learning Outcomes:

1. List and describe the clinical features of the neoplasms (local, systemic manifestations, define paraneoplastic syndrome).
2. Classify and define the importance of laboratory methods in tumor diagnosis.
3. Define and explain the importance of immunohistochemistry and molecular methods in the diagnosis, classification and treatment of neoplasms.

S6. Molecular pathology

Learning Outcomes:

1. List the molecular-biological methods used in pathological diagnostics.
2. Explain the polymerase chain reaction (PCR) method.
3. Compare PCR and Real-time PCR methods.
4. Describe the application of molecular biological methods in analyzes of genetic rearrangements in cells cancer.
5. List the activating mutations in oncogenes that are targeted molecules of targeted therapy in lung, colon, and melanoma cancers.
6. Explain the mechanism of action of tyrosine kinase inhibitors in the treatment of chronic myeloid leukemia.

S7. Immunopathology

Learning Outcomes:

1. List the components of the immune system.
2. Define you and list your hypersensitivity reactions and give examples.
3. Explain the mechanism of transplant response.
4. Define autoimmune diseases and list the most important features of systemic lupus erythematosus, Sjögren's syndrome, systemic sclerosis and rheumatoid arthritis.
5. Classify immunodeficiency states.
6. Explain the mechanism of emergence of acquired immunodeficiency syndrome, describe the morphological changes in particular organ systems and the clinical picture.
7. Define and classify amyloidosis, list causes and types of amyloid proteins, describe morphological changes in individual organs.

S8. Developmental and genetic diseases

Learning Outcomes:

1. Classify infant diseases.
2. Describe the most common morphological characteristics of preterm infants and complications of prematurity.
3. Classify the most common birth injuries (injuries to the head, nerves, bones, soft tissues).
4. Describe the morphological and pathogenetic characteristics of fetal erythroblastosis.
5. Describe Sudden Infant Death Syndrome.
6. List, classify the most common childhood diseases.
7. List, classify the most common childhood tumors (congenital and acquired tumors).

S9. Diseases of the blood vessels

Learning Outcomes:

1. Define and classify arteriosclerosis.
2. Define atherosclerosis, list risk factors and explain pathogenesis, describe and identify macroscopic and microscopic features, list complications and relate them to the clinical picture.
3. Define calcifying sclerosis media and arteriolosclerosis and describe their microscopic morphological characteristics.
4. Define hypertension and hypertensive vascular disease, classify hypertension, list the causes and explain the pathogenesis of hypertension and hypertensive vascular disease, list the complications and relate them to the clinical picture.
5. Define and classify aneurysms, list the causes and explain the pathogenesis of the aneurysms, describe and identify the morphological characteristics of the aneurysms, list their complications and relate them to the clinical picture.
6. Define varicosities, list the causes and explain the pathogenesis of varicosities, describe and identify the morphological characteristics of varicosities, list their complications and relate them to the clinical picture.

7. Define phlebotrombosis and thrombophlebitis, give them causes, explain their pathogenesis, describe morphological characteristics, list their complications and link them to the clinical picture.
8. Define upper and lower cavity syndrome and hepatic vein thrombosis, list the causes and their complications and link them to the clinical picture.
9. Define and classify lymphedema and lymphangitis, list the causes and explain the pathogenesis, describe the morphological characteristics, list the complications and relate them to the clinical picture.
10. Define and classify blood vessel tumors and state known etiological factors.
11. List and describe pathological changes resulting from therapeutic procedures in vascular diseases.

S10. Heart disease

Learning Outcomes:

1. Define and classify heart failure, list the causes and explain the pathogenesis of heart failure, describe the morphological changes of organs in heart failure, and relate them to the clinical picture of heart failure.
2. Define and classify congenital heart defects, list epidemiological data and known causes, risk factors, describe the morphological characteristics of congenital heart defects, and relate them to the clinical picture.
3. Define and classify hypertensive heart disease, list the causes, morphological characteristics and complications of systemic hypertensive heart disease and relate them to the clinical picture.
4. List the causes, morphological characteristics and complications of pulmonary heart disease and relate them to the clinical picture.
5. State the etiological and pathophysiological classification of valve disease, their complications, and association with the clinical picture.
6. Define aortic stenosis, mitral ring ligament and mitral valve prolapse, indicate their epidemiological characteristics, explain pathogenesis, describe morphological characteristics, and relate them to the clinical picture.
7. Define and classify endocarditis, list epidemiological data, risk factors, causes and explain pathogenesis, describe macroscopic and microscopic changes, list complications and their association with the clinical picture.
8. Define carcinoid heart disease, list the causes and explain the pathogenesis, describe the morphological and clinical characteristics of carcinoid heart disease.
9. List and explain the complications of artificial flaps.
10. Define and classify cardiomyopathies and myocarditis, list the causes, describe the morphological changes and the clinical picture of myocarditis and cardiomyopathy.
11. Describe and explain morphological changes in myocardial damage when using cardiotoxic drugs, in amyloidosis, haemochromatosis, hyper and hypothyroidism.
12. Define and classify pericardial effusion and pericarditis, list causes and describe morphological changes and clinical picture of pericardial and pericarditis.
13. Classify heart tumors, provide epidemiological data for heart tumors, describe the clinical picture of heart tumors.
14. List the most common causes of morphological changes in the transplanted heart.

S11. Diseases of the hematopoietic organs

Learning Outcomes:

1. Describe the basic characteristics of peripheral blood, bone marrow, and normal lymph node and spleen structures.
2. Define anemia, state epidemiological characteristics and explain morphological and etiological classification.
3. List bleeding diseases.

S12. Diseases of the hematopoietic organs

Learning Outcomes:

1. Classify non-Hodgkin lymphomas into neoplasms of mature B and T lymphocytes.
2. Describe the most common lymphomas of mature B cells of a more indolent form.
3. Describe the most common mature B cell lymphomas of a more aggressive form.
4. Describe plasma cell neoplasms and similar diseases.
5. List the basic characteristics of T lymphoma lymphocytes and describe the most common forms.
6. Describe the basic features of Hodgkin's lymphoma and classify it.
7. State the basic characteristics of nodular lymphocytic predominance of Hodgkin's lymphoma.
8. List the basic characteristics of some forms of classical Hodgkin's lymphoma: duodenal sclerosis, mixed

cellularity, lymphocytic depletion and lymphocyte-rich.
9. Describe neoplasms of histiocytes and dendritic cells.

S13. Respiratory system

Learning Outcomes:

1. Define rhinitis and sinusitis, list the causes, describe the morphological characteristics and clinical picture.
2. Classify neoplasms of the nose and paranasal sinuses, state epidemiological data and known etiological factors, describe the morphological and clinical characteristics of papilloma squamous epithelium and sinonasal carcinoma.
3. Define pharyngitis and tonsillitis, list the causes, describe the morphological characteristics and clinical picture.
4. Classify neoplasms of the pharynx, provide epidemiological data and known etiological factors, describe the morphological and clinical characteristics of the pharynx and lymphoma cancers.
5. Define laryngeal inflammation, list the causes, describe the morphological characteristics and clinical picture of acute laryngitis, croup, epiglottitis and chronic laryngitis.
6. Classify neoplasms of the larynx, provide epidemiological data and known etiological factors, describe the morphological and clinical characteristics of papillomas and cancers of the larynx. Define tracheobronchitis, classify inflammation of the trachea.
7. Define and classify congenital lung anomalies, describe the morphological and clinical characteristics of lung aplasia and hypoplasia, pulmonary sequestration, congenital adenomatoid cystic malformations and bronchogenic cysts.
8. Define and classify pulmonary atelectasis, list the causes, describe the morphological characteristics and clinical picture.
9. Define and classify vascular and circulatory diseases of the lungs, list the causes, describe the morphological characteristics, state the consequences and relate them to the clinical picture.
10. Define diffuse alveolar damage, list causes, describe morphological characteristics and clinical picture.
11. Define and classify pneumonia (acute bacterial pneumonia, chronic pneumonia, primary atypical pneumonia, pneumonia in HIV patients), provide epidemiological data, causes, describe the clinical picture and complications.
12. Describe and recognize macroscopic and microscopic morphological characteristics of bronchopneumonia, lobar pneumonia and abscessing pneumonia, interstitial pneumonias. Define SARS.
13. Define and classify lung tuberculosis, provide epidemiological data, causes, explain the etiopathogenesis of the disease, describe the morphological characteristics of primary and secondary tuberculosis and explain the differences between them.
14. Recognize the macroscopic and microscopic morphological characteristics of lung tuberculosis, describe the clinical picture and complications of lung tuberculosis.
15. Define and classify obstructive pulmonary diseases, provide epidemiological data, describe morphological characteristics and clinical picture.
16. Define and classify pleural effusion and pleuritis, list the causes and describe the clinical picture, and identify the morphological characteristics.
17. Define and classify pneumothorax, list causes, describe morphological changes and clinical picture of pneumothorax.
18. Classify pleural tumors, list epidemiological data and causes, describe morphological characteristics and clinical picture.
19. Classify mediastinal tumors and explain differential diagnosis of mediastinal tumors, morphological characteristics and describe the clinical picture.
20. Recognize the pathohistological characteristics of lung aspergilloma.

S14. Digestive system

Learning Outcomes:

1. Define gastritis - etiopathogenesis, classification, pathology, clinical correlation.
2. State hyperplastic gastropathies.
3. Extract acute gastric ulceration.
4. Describe the chronic value of the stomach and explain the etiopathogenesis, pathology, clinical correlation, complications.
5. Define gastric cancer - epidemiology, etiopathogenesis, classification, pathology, clinical correlation, prognosis.
6. Distinguish primary gastric lymphomas.
7. List mesenchymal tumors of the stomach - division, morphological characteristics.

8. Describe Meckel's diverticulum and other diverticula, obliteration, stenoses and duplications, congenital vascular malformations, and congenital and acquired megacolon - etiopathogenesis, pathology, clinical correlation.
9. Indicate infectious bowel diseases - etiopathogenesis, pathology, division, clinical correlation.
10. Describe malabsorption syndrome with particular emphasis on celiac disease - etiopathogenesis, epidemiology, division, pathology, clinical correlation.
11. Describe idiopathic inflammatory bowel disease - epidemiology, etiopathogenesis, division, pathology, clinical correlation, complications.
12. List the tumors of the small intestine.
13. Describe benign tumors and similar changes of the colon - classification, pathology, clinical correlation, role of precancerous lesion, hereditary bowel polyposis.
14. Define colon cancer, neuroendocrine neoplasms, carcinoid syndrome, and mesenchymal neoplasms of the bowel - morphology, classification, prognosis, molecular basis.
15. Describe worm inflammation and neoplasms.
16. List diseases of the abdomen.

S15. The liver and the biliary system

Learning Outcomes:

1. Define viral hepatitis - epidemiology, etiopathogenesis, division, pathology, clinical correlation, complications.
2. Describe alcoholic liver disease - etiopathogenesis, division, pathology, clinical correlation, complications.
3. List the toxins and drugs caused by liver damage.
4. State immune liver diseases - etiopathogenesis, division, pathology, complications.
5. Isolate primary biliary cirrhosis with primary sclerosing cholangitis.
6. Indicate inflammation of intrahepatic bile ducts - etiopathogenesis, division, pathology, clinical correlation, complications.
7. Distinguish between hyperplasia and benign liver tumors with malignant liver tumors including metastases.
8. Describe gallstones with acute and chronic cholecystitis - epidemiology, etiopathogenesis, division, pathology, clinical correlation, complications.
9. List cancer of the gallbladder and extrahepatic bile ducts.

S16. Pancreas

Learning Outcomes:

1. Describe and explain acute pancreatitis - etiopathogenesis, pathology, clinical correlation, complications.
2. Describe and explain chronic pancreatitis - etiopathogenesis, pathology, clinical correlation, complications.
3. Classify, describe diabetes - etiopathogenesis, pathology, clinical correlation, complications.
4. Classify neoplasms of exocrine and endocrine part of pancreas - division, pathology, clinical correlation.

S17. Kidney

Learning Outcomes:

1. Define, enumerate and describe the most common congenital and acquired anomalies of the urotract.
2. Classify and describe the morphological features and pathogenesis of tubulointerstitial diseases.
3. Classify and describe the morphological features and pathogenesis of some of the most common renal blood diseases vascular (benign and malignant nephrosclerosis, renal artery stenosis, shock kidneys, HUS).

S18. Urinary system

Learning Outcomes:

1. Diseases of the urinary tract, bladder, and bladder: classify and describe pathogenesis particular types of urolithiasis.
2. Classify and describe obstructive diseases of the urological tract.
3. Classify kidney tumors (benign and malignant tumors) and describe the morphological features of malignant tumors of the origin of the renal tubules.
4. List and describe developmental disorders of the number, position, and shape of the urethra, bladder, and urethra.
5. List and describe inflammatory diseases of the urethra, bladder and urethra.

6. Classify spinal tumors and describe the morphological features of benign and malignant spinal tumors.
7. List and describe the most common morphological changes in the transplanted kidney.

S19. The male sexual system

Learning Outcomes:

1. List and describe developmental disorders of the number, position and shape of the prostate, testis, epididymis, penis, scrotum.
2. Classify according to the localization of the inflammatory disease of the male sexual system (prostate, testis, epididymis, penis, scrotum).
3. List and describe the circulatory disorders of the male sexual system (prostate, testis, epididymis, penis, scrotum).
4. Define and list the most common causes of male infertility.
5. Classify and describe prostate neoplasms.
6. Classify and describe the neoplasms of the testis, epididymis, and testicular lining.
7. Classify and describe the neoplasms of the penis.
8. Classify and describe neoplasms of the scrotum (scrotal hernia, hydrocele, spermatocele, pyocele, paratesticular cyst).

S20. The female sex system

Learning Outcomes:

1. List and describe congenital developmental disorders of the female sexual system with clinical correlation.
2. List and describe inflammatory diseases of the female sexual system. Explain etiopathogenesis and describe morphological changes and clinical features.
3. Describe the etiology, epidemiology, pathogenesis, morphology and clinical correlation of neoplasms of the vulva, vagina.

S21. The female sex system

Learning Outcomes:

1. Describe epidemics ology, pathogenesis, morphology and clinical correlation of adenomyosis and endometriosis.
2. State the classification of pathological changes of the placenta.
3. State the etiology and pathogenesis of maternal disease in pregnancy.
4. State the etiology, pathology, and clinical correlation of gestational trophoblastic disease.

S22. Breast

Learning Outcomes:

1. List and describe developmental disorders of the breast.
2. List and describe breast inflammation (etiology, epidemiology, pathology and clinical presentation).
3. Enumerate and describe fibrocystic changes (epidemiology, etiology and pathogenesis, pathology, clinical picture).
4. Demonstrate on the histological preparation the morphological characteristics necessary for the diagnosis of fibrocystic change.
5. Apply the knowledge gained by emphasizing the clinical significance of fibrocystic changes and proliferative breast disease.
6. Explain the risk of breast cancer.
7. Enumerate and describe breast tumors.
8. Describe and explain breast cancer (classification, epidemiology, clinical presentation).
9. Demonstrate on the histological preparation the morphological characteristics necessary for the diagnosis of breast cancer.
10. Apply the knowledge gained by emphasizing the clinical features of malignant breast tumors.
11. List and describe the prognostic factors of breast cancer.
12. List and describe predictive factors of response to therapy.
13. List and describe molecular prognostic and predictive factors.
14. Enumerate and describe stromal breast tumors.
15. Describe and explain male gynecomastia and cancer.

S23. Endocrine

Learning Outcomes:

1. List and describe endocrine gland disorders.

2. List and describe disorders of pituitary function.
3. List and describe neoplasms associated with the over-secretion of the hormone of the adenohypophysis (epidemiology, pathology, clinical picture).
4. List and describe the causes of insufficient secretion of the hormone adenohypophysis.
5. List and describe diseases of the neurohypophysis.
6. Apply the knowledge gained by emphasizing the clinical significance of pituitary disease.
7. List and describe thyroid function disorders.
8. List and describe developmental disorders.
9. List, describe and explain the causes of thyrotoxicosis and hyperthyroidism (epidemiology, etiology, pathology, clinical picture).
10. Describe and explain goiter.
11. List and describe thyroiditis.
12. List and describe thyroid neoplasms (epidemiology, etiology, pathology, clinical picture).
13. Demonstrate on the histological preparation the morphological characteristics necessary for the diagnosis of thyroid cancer.
14. List and describe disorders of the thyroid gland.
15. List, describe and explain the causes of primary, secondary and tertiary hyperparathyroidism.
16. List, describe and explain the causes of hypoparathyroidism.
17. List and describe disorders of adrenal function.
18. List and describe the tumors and marrow of the adrenal glands.
19. Enumerate and describe multiple endocrine neoplasia syndromes.

S24. Skin

Learning Outcomes:

1. State the most important morphological characteristics of the underlying pathological changes in the skin.
2. State the morphological characteristics of underlying congenital skin diseases.
3. Describe the morphological characteristics and indicate the clinical presentation of infectious skin diseases.
4. State the morphological characteristics of skin diseases caused by immune mechanisms.
5. State the morphological characteristics of idiopathic skin diseases.
6. Divide and describe the main morphological characteristics of pigmented skin lesions, distinguish them from potentially malignant lesions.
7. State the morphological characteristics of benign and malignant epithelial tumors of the skin.
8. State the morphological characteristics of benign and malignant adnexal skin tumors.

S25. Bone system, joints and soft tissues

Learning Outcomes:

1. List and describe bone developmental disorders that are generalized or localized.
2. Explain the etiology and pathogenesis and describe the pathology and clinical picture of osteonecrosis.
3. State the etiology and pathology and describe the pathology and clinical picture of osteomyelitis.
4. Define the etiology and describe the pathogenesis, pathology and clinical picture of osteoporosis.
5. Distinguish between rickets and osteomalacia.
6. Define Paget's disease, describe the etiology, pathology and clinical presentation.
7. Indicate the etiology of bone fractures and describe their pathogenesis and clinical picture.
8. Classify neoplasms, indicate their epidemiology and etiology, describe the clinical picture.
9. List all bone-forming tumors and describe their epidemiology, pathology and clinical picture.
10. List all the tumors that produce cartilage and describe their epidemiology, pathology and clinical picture.
11. List other bone tumors and describe their epidemiology, pathology and clinical picture.
12. Compare primary and metastatic bone tumors.
13. To describe tumors with similar conditions that occur in bone.
14. Describe inflammatory and degenerative joint diseases.
15. Define pain sixth crystal deposition in joints.
16. List the tumors and tumors-like changes that occur in the joints, describe their pathogenesis, pathology and clinical picture.
17. Define the concept of soft tissue tumors.
18. Describe the epidemiology, etiology, pathogenesis and clinical-pathological correlation of soft tissue tumors.
19. List and describe the basic morphological characteristics of benign soft tissue tumors.

20. List locally aggressive tumors and tumors similar to soft tissue changes.
21. Define malignant soft tissue tumors and indicate their basic morphological characteristics.

S26. Peripheral nervous system and skeletal muscle

Learning Outcomes:

1. Explain the underlying pathological reactions.
2. Describe and divide neuropathies by cause and by clinical presentation of the disease.
3. Describe and divide myopathies by cause and by clinical presentation of the disease.
4. Divide muscular dystrophies according to the pathogenic mechanisms of onset and clinical presentation of the disease.
5. List and describe neuromuscular junction diseases, provide clinical presentation of the disease.
6. List and list the most important morphological characteristics of peripheral nerve tumors.

S27. Central nervous system

Learning Outcomes:

1. Describe examples of developmental disorders of particular anatomical parts of the central nervous system.
2. Describe the etiology, pathogenesis, and pathology of open and closed brain and spinal cord injuries.
3. Compare traumatic epidural and subdural hematoma and subdural and intracerebral hemorrhages.
4. Describe the etiology, pathology and clinical picture of general cerebral hypoxic-ischemic encephalopathy.
5. Describe the etiology and pathology of brain infarction - occlusion of the arteries and thrombosis of the cerebral veins and sinuses of the dura.
6. Describe the epidemiology, pathology and clinical picture of hypertensive brain disease.
7. List and describe arterial-venous brain malformations.
8. Classify infectious brain diseases etiologically, chronologically, anatomically-pathologically and pathogenetically.
9. Describe the etiology, pathology and clinical picture of meningitis and viral encephalitis.
10. Describe the etiology, pathology and clinical picture of prion diseases.
11. Describe the etiology, pathology and clinical picture of multiple sclerosis.
12. Describe the etiology, pathology and clinical picture of Alzheimer's disease.
13. Describe the etiology, pathology and clinical picture of Parkinson's disease, Huntington's disease.
14. Compare the epidemiology, etiology, pathology and clinical picture of Friedreich ataxia, telangiectatic ataxia and amyotrophic lateral sclerosis.
15. Describe the epidemiology, etiology, classification and clinical picture of central nervous system neoplasms.
16. Describe the epidemiology, pathology and clinical picture of astrocytic tumors.
17. Describe the epidemiology, pathology and clinical picture of oligodendroglioma and ependymomas.
18. Describe the epidemiology, pathology and clinical picture of medulloblastoma.
19. Describe the epidemiology, pathology and clinical picture of meningoma.

Exercises

Exercises include the adoption of macroscopic and microscopic changes in tissues and organs, ie knowing the path to a correct diagnosis. Microscopic examination of the tissue will include examination of standard stained histological preparations as well as preparations stained with special techniques. Macroscopic examination of the tissue will be performed on current biopsies of the Department of Pathology, on specimens exposed in the Department's training room and during autopsy exercises. Students prepare for the exercises by learning to recognize the scanned pathohistological preparations (virtual microscopy) and using Atlas in Pathology.

E1. Cellular pathology

ATROPHIA CYANOTICA HEPATIS
 HYPERTROPHIA MYOCARDII
 HYPERPLASIA GLANDULARIS PROSTATAE
 METAPLASIA SQUAMOSA
 METAMORPHOSIS OF ADIPOSA HEPATIS
 ANTHRACOSIS PULMONIS
 HAEMOCHROMATOSIS
 INFARCTUS MYOCARDII RECENS
 ENCEPHALOMALATIA
 CASEOSA PULMONIS TUBERCULOSIS

MICROCALCIFICATIONES PLACENTAE

INFARCTUS ANAEMICUS PLACENTAE

STEATONECROSIS

E2. Inflammation

PERICARDITIS OF FIBRINOS

PNEUMONIA ABCEDENS ET PLEURITIS FIBRINOSA

APPENDICITIS

PHLEGMONOSA SIALOADENITIS SUPPURATIVE

CHRONICA SUPPURATIVA

SARCOIDOSIS LYMPHONODI

GRANULOMA CORPORIS ALIENI

GRANULOMATOS LYMPHADENITIS - CAT GRANULATIONES DISEASE

E3. Hemodynamic disorders

CYANOSIS ET OEDEMA PULMONUM

INDURATIO CYANOTICA PULMONUM

NECROSIS HAEMORRHAGICA CENTRALIS

HEPATIS THROMBOEMBOLIA ARTERIAE

PULMONALIS CUM INFARCTUS

HAEMORRHAGICUS PULMONIS

EMBOLIE

ADIPOSA PULMONIS

INFARCTUS

ANAEMICUS RENIS

E4. Neoplasms

PAPILOMA LINGUAE

CYSTADENOMA SEROSUM OVARIII

TERATOMA

PLEOMORPHE ADENOMA

CARCINOMA SCHIRROSUM

CARCINOMA ANAPLASTICUM

ADENOCARCINOMA

ADENOMA TUBULARE

LEIOMYOMA

LEIOMYSARCOMA

MORBUS BOWEN

ADENOCARCINOMA METASTATICUM

LYMPHONODS OF ADENOCARCINOMA

METASTATICUM HEPATIS LYMPHANGIOSIS

CARCINOMATOSA

E5. Laboratory methods

Learning Outcomes:

1. Describe and explain the importance of tissue fixation.
2. Outline the basic procedures for preparing paraffin sections.
3. List the standard and special dyes (presentation: polysaccharides, minerals, pigments, nerve tissue, microorganisms, connective and muscle tissues, etc.) used in the pathohistology laboratory.
4. Describe and state the differences between immunohistochemical and immunofluorescence staining.

E6. Laboratory methods

Learning Outcomes:

1. Master the basic methods and use of molecular diagnostics equipment (DNA isolation equipment, centrifuges, PCR device, sterile cabinet work, gel electrophoresis).
2. Independently isolate DNA from peripheral blood, measure concentration on a fluorimeter and check the quality of DNA by agarose gel electrophoresis.
3. By PCR, multiply the target region of the beta-globin control gene and explain the purpose of that analysis.

E7. Immunopathology

AMYLOIDOSIS RENIS

AMYLOIDOSIS HEPATIS

TOPHI URICI

Laboratory methods (student seminar)

E8. Diseases of the environment

ANTHRACOSIS PULMONIS
 ASBESTOSIS PULMONIS
 PNEUMONIA CUM GRANULOMATA CORPORI ALIENI
E9. Blood vessels
 ATHEROSCLEROSIS ARTERIAE THROMBOTICA
 POLYARTERITIS NODOSA
 ENDOCARDITIS OF VERRUCOSA
 ENDOCARDITIS OF CHRONICA FIBROS
E10. Heart
 INFARCTUS MYOCARDII RECENS
 CICATRIX MYOCARDII
 ENDOCARDITIS OF THROMBOTICA INFECTIVES
 ENDOCARDITIS OF CHRONICA FIBROS CALCIFICATA
E11. Autopsy exercise
E12. Hematopathology
 LEUKAEMIA LYMPHATICA HEPATIS
 LEUKAEMIA MYELOICA CHRONICA
 MYELOMA MULTIPLEX
 LYMPHADENITIS FOLLICULARIS
 LYMPHOMA NON-HODGKIN (FOLLICULAR TYPE)
 LYMPHOMA NON-HODGKIN (LARGE TYPE)
 LYMPHOMA HODGKIN (MIXED CELLULARITY)
 LYMPHOMA HODGKIN (NODULAR SCLEROSIS)
E13. Autopsy exercise
E14. Respiratory system
 MEMBRANAE HYALINAE
 PULMONUM BRONCHIECTASIAE ET BRONCHITIS
 CHRONICA SUPPURATIVA
 BRONCHOPNEUMONIA
 TUBERCULOSIS MILIARIS PULMONIS
E15. Autopsy exercise
E16. Respiratory system
 ASPERGILLOSIS PULMONIS
 CARCINOMA PLANOCELLULARE BRONCHI
 CARCINOMA MICROCELLULARE BRONCHI
 ADENOCARCINOMA PULMONIS (WITH BRONHIOLALVEOLAR COMPONENT)
E17. Autopsy exercise
E18. Digestive system
 CYSTADENOMA LYMPHOMATOSUM PAPILLARE (WHARTIN TUMOR)
 ULCUS VENTRICULI CHRONICUM
 CARCINOMA VENTRICULI (intestinal type)
 CARCINOMA VENTRICULI (diffuse type)
 GASTRITIS CHRONICA
 MORBUS CROHN
 ADENOCARCINOMA COLONIS
 ADENOMA TUBULOVILLOSUM COLONIS
 CARCINOIDES
E19. Autopsy exercise
E20. Liver
 HEPATITIS CHRONICA
 CIRRHOSIS HEPATIS
 CARCINOMA HEPATOCELLULARE PANCREATITIS
 CHRONICA ADENOCARCINOMA PANCREATIS
 CHOLECYSTITIS CHRONICA ADENOCARCINOMA
 VESICAE FELLEAE ECHINOCOCCUS HEPATIS
E21. Autopsy exercise-microscopy
E22. Kidney
 GLOMERULONEPHRITIS
 MESANGIOPROLIFERATIVE DIFFUSION
 GLOMERULONEPHRITIS MEMBRANOSA

GLOMERULONEPHRITIS CHRONICA
 SCLEROTISANS (terminalis)
 GLOMERULOSCLEROSIS NODULARIS DIABETICA CUM ARTERIO ET ARTERIOLOSCLEROSIS RENIS
 PYELONEPHRITIS CHRONICA SUPPURATIVA CARCINOMA RENIS (light cell type)
E23. Urinary system
 NON-INVASIVE PAPILLAR NEOPLASM OF LOW MALIGNANT POTENTIAL (CARCINOMA
 TRANSITIOCELLULARE PAPILLARE PYELI G I - pTa)
 CARCINOMA TRANSITIOCELLULARE NONPAPILLARE G III- pT2
 REJECTIO CHRONICA TRANSPLANTATI RENIS
E24. The male sexual system
 ORCHITIS CHRONICA SUPPURATIVA SEMINOMA
 TESTIS SUBSTITUTE MIXED TUMOR (anaplastic semen and embryonic carcinoma)
E25. The female sex system
 CIN III (CERVICAL INTRAEPITAL NEOPLASIA)
 HYPERPLASIA SIMPLEX ENDOMETRII
 ADENOCARCINOMA ENDOMETRII (endometrioid type with plate differentiation)
 ADENOMYOSIS
 ENDOMETRIOSIS INTESTINI CRASSI TUMOR
 SEROSUM ATYPICUM PROLIFERANS OVARIII
 ADENOCARCINOMA SEROSUM OVARIII
 CARCINOMA METASTATICUM OVARIII
 SALPINGITIS CHRONICA SUPPURATIVA
 GRAVIDITAS TUBARIA
 PLEUSE OF HYDATIDOS COMPLETE
E26. Clinical-pathological correlation of autopsy (student seminar)
E27. Breast
 MASTITIS
 MASTOPATHIA FIBROSA CYSTICA FIBROADENOMA
 CARCINOMA DUCTALE INVASIVUM MAMMAE
 CARCINOMA LOBULARE INVASIVUM MMAMMAE
 CARCINOMA MEDULLARE MAMMAE MORBUS PAGET MAMMAE
E28. Endocrine
 STRUMA COLLOIDES GLANDULAE THYREOIDEAE
 THYREOIDITIS CHRONICA
 CARCINOMA PAPILLARE GLANDULAE THYREOIDEAE
 CARCINOMA FOLLICULARE GLANDULAE THYREOIDEAE
 CARCINOMA MEDULLARE GLANDULAE THYREOIDEAE
 CARCINOMA ANAPLASTICUM GLANDULA THYROIDEAE
 PHEOCHROMOCYTOMA
E29. Skin
 DERMATOFIBROM
 HYSTIOCYTOMA FIBROSUM MALIGNUM LIPOSARCOMA
 SARCOMA SYNOVIALE
 KERATOSIS SEBORRHOICA KERATOACANTHOMA
 CARCINOMA PLANOCELLULARE CORNEUM PILOMATRIXOMA
 NAEVUS COMPOSITUS
 MELANOMA MALIGNUM
E30. Bone system, joints and soft tissues
 OSTEOCHONDROMA
 CHONDROSARCOMA
 OSTEIOD OSTEOMA
 OSTEOSARCOMA
 TUMOR GIGANTOCELLULARIS OSSIS
 SARCOMA EWING
 DYSPLASIA FIBROSA
 CYSTIS ANEURISMATICA OSSEA
 ARTHITIS RHEUMATICA
 GANGLION
 TUMOR OF GIGANTOCELLULARIS SYNOVIAE TENDINIS
 LIPOMA

LIPOSARCOMA
 SARCOMA (MFH)
 SARCOMA SYNOVIALE
 FIBROMATOSIS
E31. Central nervous system
 CORPORA AMYLACEA CEREBRI
 SDH (HAEMATOMA SUBDURALE)
 HAEMATOMA INTRACEREBRALE ABSCESSUS
 CHRONICUS CEREBRI LEPTOMENINGITIS ACUTA SUPPURATIVA LYMPHOMA CEREBRI
 OLIGODENDROGLIOMA
E32. Central nervous system
 GLIOBLASTOMA
 MENINGIOMA
 NEURINOMA (NEURILEMMOMA, SCHWANOMA)
 GANGLIONEUROMA
 NEUROFIBROMAS
 ANGIOMA
 HERNIA DISCI INTERVERTEBRALIS

Students' obligations:

All forms of teaching are compulsory and student attendance at lectures, seminars and exercises will be conducted accordingly. Student has not fulfilled his / her obligations prescribed by the study program if he / she did not attend more than 30% of teaching hours of all forms of teaching (lectures, seminars or exercises) according to the Rulebook on Student Assessment at the Faculty of Medicine in Rijeka, class: 003-05/18-02/07, reg 2170-24-01-18-1.

Assessment (exams, description of written / oral / practical exam, the scoring criteria):

Students' performance will be evaluated during class and at the final exam. Out of a total of 100% of marks, during the class the student can achieve a maximum of 70% of marks, and at the final exam a maximum of 30% of marks.

I. Achievement during the class (maximum 70% of marks):

Students' knowledge will be continuously monitored and graded during the course, as well as upon completion of certain units in the form of two written checks (tests: part I and part II).

During the class the following are evaluated:

Acquired knowledge with two written examinations (maximum 70% of marks):

part I - General pathology test (50 questions) and part II – Systemic pathology test (60 questions).

Part I includes teaching content: L1 – L8, S1 – S8 and E1- E8, it will take place 08/12/2021

Remedial test, part I: 31/01/2022

part II includes teaching content: L9 – L27, S9 – S27 and E9 – E32, it will take place 06/6/2022

Remedial test, part II: 27/6/2022

Additional remedial test, part I or II: 07/7/2022

Tests in general pathology, part I, can achieve a maximum of overall 30% of assessment points, and test in systemic pathology, part II, a maximum of 40% of assessment points, ie a maximum total of 70% of assessment points, as follows in the tables:

Part I	
Correct Answers	Points
49 – 50	30
47 – 48	29
45 – 46	28
43 – 44	27
41 – 42	26
39 – 40	25
37 – 38	24
35 – 36	23
33 – 34	22
31 – 32	21
29 – 30	20
27 – 28	19
25 – 26	18
24	17
23	16
22	15
21	14
20	13

Part II	
Correct Answers	Points
59 – 60	40
57 – 58	39
55 – 56	38
53 – 54	37
51 – 52	36
49 – 50	35
47 – 48	34
45 – 46	33
43 – 44	32
41 – 42	31
39 – 40	30
37 – 38	29
35 – 36	28
33 – 34	27
31 – 32	26
29 – 30	25
27 – 28	24
25 – 26	23
24	22

In addition to regular proficiency tests, remedial tests will be organized for each test (part I and part II) for those students who have failed to earn points (insufficient academic achievement or failure to attend the exam for justified reasons) and students who want to improve the number of points gained by passing regular partial courses, in which case the number of points earned on the remedial will be counted as the final result.

Students will have the option of additional written correction of part I or part II.

II. Final exam in Pathology (maximum 30% of marks):

Only students who have fulfilled the following requirements can take the final exam:

1. have duly completed the course
2. have achieved a **minimum of 35% mark**, ie 50% or more mark, out of the maximum 70% mark that could be obtained during the course through continuous monitoring and evaluation of students.

Students who have earned a total of 0 to 49.9% of grades during the course of all forms of knowledge assessment, which could be obtained during the course through continuous monitoring and evaluation of students, are graded F (unsuccessful), cannot earn ECTS credits and must re-enroll in the course.

The final exam is conducted in oral form and includes the examination of theoretical knowledge in general and systemic pathology and the recognition of micro and macro preparations.

Each of the three parts of the final exam (theory, macro, micro) can achieve a minimum of 5 to a maximum of 10 points.

Exam score	Points
4,6 – 5,0	10
4,1 – 4,5	9
3,6 – 4,0	8
3,1 – 3,5	7
2,5 – 3,0	6
2,0 – 2,4	5

The final grade from the course is determined on the basis of the final success according to the table:

Total points	Final grade
90 - 100% (A)	Excellent (5)
75 - 89,9 % (B)	Very good (4)
60 - 74,9% (C)	Good (3)
50 - 59,9% (D)	Sufficient (2)

Other important information regarding to the course:

The course contents and all course related information are available on the student web portals, Departments of General Pathology and Pathological Anatomy and [Merlin 2021/2022 \(srce.hr\)](#).

COURSE SCHEDULE (for academic year 2021/2022)

List of lectures, seminars and exercises:

Lecture Date/Time	Seminar Date/Time	Exercises Date/Time	Topics No./ *Instructors	Location/Lecture room
L1 06.10.2021. 12:00-13:00	G1, G2 06.10.2021. 13:00-16:00	G1, G2 08.10.2021. 13:00-16:00	L1 D. Fučkar Čupić (S. Eminović)* S1 E1	Pathology lecture room Pathology seminar room/laboratories/autopsy room/library
L2 13.10.2021. 12:00-13:00	G1, G2 13.10.2021. 13:00-16:00	G1, G2 15.10.2021. 13:00-16:00	L2 K. Matušan-Ilijaš (E. Babarović)* S2 E2	Pathology lecture room Pathology seminar room/laboratories/autopsy room/library
L3 20.10.2021. 12:00-13:00	G1, G2 20.10.2021. 13:00-16:00	G1, G2 22.10.2021. 13:00-16:00	L3 I. Hadzisejdic (E. Babarović)* S3 E3	Pathology lecture room Pathology seminar room/laboratories/autopsy room/library
L4 27.10.2021. 12:00-13:00	G1, G2 27.10.2021. 13:00-16:00	G1, G2 29.10.2021. 13:00-16:00	L4 E. Babarović (I. Hadžisejdić)* S4 E4	Pathology lecture room Pathology seminar room/laboratories/autopsy room/library
L5 3.11.2021. 12:00-13:00	G1, G2 3.11.2021. 13:00-16:00	G1, G2 5.11.2021. 13:00-16:00	L5 K. Jurinović (I. Seili -Bakafigo)* S5 E5	Pathology lecture room Pathology seminar room/laboratories/autopsy room/library
L6 10.11.2021. 12:00-13:00	G1, G2 10.11.2021. 13:00-16:00	G1, G2 12.11.2021. 13:00-16:00	L6 I. Hadzisejdić (E. Babarović)* S6 E6	Pathology lecture room Pathology seminar room/laboratories/autopsy room/library
L7 17.11.2021. 16:00-17:00	G1, G2 17.11.2021. 13:00-16:00	G1, G2 19.11.2021. 16:00-19:00	L7 D. Kovač (L. Kovač)* S7 E7	Pathology lecture room Pathology seminar room/laboratories/autopsy room/library
L8 24.11.2021. 12:00-13:00	G1, G2 24.11.2021. 13:00-16:00	G1, G2 26.11.2021. 13:00-16:00	L8 D. Vrdoljak-Mozetič (A. Savić Vuković)* S8 E8	Pathology lecture room Pathology seminar room/laboratories/autopsy room/library
L9 01.12.2021. 12:00-13:00	G1, G2 01.12.2021. 13:00-16:00	G1, G2 03.12.2021. 13:00-16:00	L9 E. Babarović (I. Seili -Bakafigo)* S9 E9	Pathology lecture room Pathology seminar room/laboratories/autopsy room/library
			General Pathology test (part I) 08.12.2021. 12:00	
L10 15.12.2021. 12:00-13:00	G1, G2 15.12.2021. 13:00-16:00	G1, G2 17.12.2021. 13:00-16:00	L10 E. Babarović (L. Kovac)* S10 E10 E11 (G1; 15.12.2021. 16:00-19:00/ G2; 17.12.2021. 16:00-19:00)	Pathology lecture room Pathology seminar room/laboratories/autopsy room/library
L11 22.12.2021. 12:00-13:00	G1, G2 22.12.2021. 13:00-16:00	G1, G2 22.12.2021. 16:00-19:00	L11 I. Hadzisejdić (K. Matušan-Ilijaš)* S11 E12 E13 (G1; 23.12.2021. 12:00-15:00/ G2; 23.12.2021. 15:00-18:00)	Pathology lecture room Pathology seminar room/laboratories/autopsy room/library

L12 12.01.2022. 12:00-13:00	G1, G2 12.01.2022. 13:00-16:00	G1, G2 14.01.2022. 13:00-16:00	L12 K. Jurinović (C. Štemberger)* S12 E14 E15 (G1; 12.01.2021. 16:00-19:00/ G2; 14.01.2021. 16:00-19:00)	Pathology lecture room Pathology seminar room/laboratories/autopsy room/library
L13 19.01.2022. 12:00-13:00	G1, G2 19.01.2022. 13:00-16:00	G1, G2 21.01.2022. 13:00-16:00	L13 K. Jurinović (C. Štemberger)* S13 E16 E17 (G1; 19.01.2021. 16:00-19:00/ G2; 21.01.2021. 16:00-19:00)	Pathology lecture room Pathology seminar room/laboratories/autopsy room/library
L14 26.01.2022. 12:00-13:00	G1, G2 26.01.2022. 13:00-16:00	G1, G2 28.01.2022. 13:00-16:00	L14 D. Kovac (A. Savić Vuković)* S14 E18 E19 (G1; 26.01.2021. 16:00-19:00/ G2; 28.01.2021. 16:00-19:00)	Pathology lecture room Pathology seminar room/laboratories/autopsy room/library
L15 04.03.2022. 12:00-13:00	G1, G2 03.03.2022. 13:00-16:00	G1, G2 04.03.2022. 13:00-16:00	L15 D. Fučkar Čupić (R. Rubeša Mihaljević)* S15 E20	Pathology lecture room Pathology seminar room/laboratories/autopsy room/library
L16 11.03.2022. 12:00-13:00	G1, G2 10.03.2022. 13:00-16:00	G1, G2 11.03.2022. 13:00-16:00	L16 D. Kovač (L. Kovač)* S16 E21	Pathology lecture room Pathology seminar room/laboratories/autopsy room/library
L17 25.03.2022. 12:00-13:00	G1, G2 24.03.2022. 13:00-16:00	G1, G2 25.03.2022. 13:00-16:00	L17 G. Đorđević (E. Babarović)* S17 E22	Pathology lecture room Pathology seminar room/laboratories/autopsy room/library
L18 01.04.2022. 12:00-13:00	G1, G2 31.03.2022. 13:00-16:00	G1, G2 01.04.2022. 13:00-16:00	L18 G. Đorđević (E. Babarović)* S18 E23	Pathology lecture room Pathology seminar room/laboratories/autopsy room/library
L19 08.04.2022. 12:00-13:00	G1, G2 07.04.2022. 13:00-16:00	G1, G2 08.04.2022. 13:00-16:00	L19 G. Đorđević (C. Štemberger)* S19 E24	Pathology lecture room Pathology seminar room/laboratories/autopsy room/library
L20 15.04.2022. 12:00-13:00	G1, G2 14.04.2022. 13:00-16:00	G1, G2 15.04.2022. 13:00-16:00	L20 S. Eminović (D. Vrdoljak-Mozetič)* S20 E25	Pathology lecture room Pathology seminar room/laboratories/autopsy room/library
L21 22.04.2022. 12:00-13:00	G1, G2 21.04.2022. 13:00-16:00	G1, G2 22.04.2022. 13:00-16:00	L21 S. Eminović (R. Rubeša Mihaljević)* S21 E26	Pathology lecture room Pathology seminar room/laboratories/autopsy room/library
L22 29.04.2022. 12:00-13:00	G1, G2 28.04.2022. 13:00-16:00	G1, G2 29.04.2022. 13:00-16:00	L22 M. Avirović (A. Savić Vuković)* S22 E27	Pathology lecture room Pathology seminar room/laboratories/autopsy room/library
L23 06.05.2022. 12:00-13:00	G1, G2 05.05.2022. 13:00-16:00	G1, G2 06.05.2022. 13:00-16:00	L23 M. Avirović (E. Babarović)* S23 E28	Pathology lecture room Pathology seminar room/laboratories/autopsy room/library
L24 13.05.2022. 12:00-13:00	G1, G2 12.05.2022. 13:00-16:00	G1, G2 13.05.2022. 13:00-16:00	L24 K. Matušan-Ilijaš (M. Murković)* S24 E29	Pathology lecture room Pathology seminar room/laboratories/autopsy room/library

L25 20.05.2022. 12:00-13:00	G1, G2 19.05.2022. 13:00-16:00	G1, G2 20.05.2022. 13:00-16:00	L25 I. Hadžisejdić (P. Madžar)* S25 E30	Pathology lecture room Pathology seminar room/laboratories/autopsy room/library
L26 27.05.2022. 12:00-13:00	G1, G2 26.05.2022. 13:00-16:00	G1, G2 27.05.2022. 13:00-16:00	L26 A. Dekanić (E. Babarović)* S26 E31	Pathology lecture room Pathology seminar room/laboratories/autopsy room/library
L27 03.06.2022. 12:00-13:00	G1, G2 02.06.2022. 13:00-16:00	G1, G2 03.06.2022. 13:00-16:00	L27 A. Dekanić (E. Babarović)* S27 E32	Pathology lecture room Pathology seminar room/laboratories/autopsy room/library
			Systemic Pathology test (part II) 06.06.2022. 12:00	

	FINAL EXAM DATES
1.	14.06.2022.
2.	30.06.2022.
3.	14.07.2022.
4.	02.09.2022.
5.	16.09.2022.