

SYLLABUS

Katedra i Zakład
Patomorfologii i Klinicznej
Pathomorphology and Clinical
Faculty of Medicine MUL
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The academic year when the cycle of instruction is commenced 2019-2025

Module/course name:	Pathomorphology		Module code	LK.36.003
Faculty:	Faculty of Medicine MUL			
Major:	Medical			
Specialty:				
Level of study:	I (Bachelor studies) <input type="checkbox"/> II (Master studies) <input type="checkbox"/> Integrated Master studies X Doctoral studies <input type="checkbox"/>			
Mode of study:	full-time X			
Year of study:	I <input type="checkbox"/> II X III <input type="checkbox"/> IV <input type="checkbox"/> V <input type="checkbox"/> VI <input type="checkbox"/>	Semester:	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 X 4 X 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10 <input type="checkbox"/> 11 <input type="checkbox"/> 12 <input type="checkbox"/>	
Module/course type:	obligatory X elective <input type="checkbox"/>			
Language of instruction:	Polish <input type="checkbox"/> English X			
Form of education	Hours			
Lecture	30			
Seminar				
Laboratory class	140			
E-learning				
Practical class				
Internship				
Other				
TOTAL	170			
Student's work input (participation in class, preparation, evaluation, etc.)	Student's hourly workload			
1. In class	170			
2. Student's own work including: 1 Preparation for class 2 Preparation for partials and finals	130			
Summary of the student's workload	300			
ECTS points for module/course	12			

Educational objectives: By the end of the course of pathomorphology students should know the basics of pathology, ie. the etiology, pathogenesis, macro- and microscopic picture of the most common diseases in the context of clinical data. Students should be acquainted with the English medical nomenclature referring to pathology, with basic definitions of pathological lesions, with the most important methods used in the morphological and molecular diagnosis and with the principles of proper cooperation between clinicians and pathologists.

The matrix of learning outcomes for module/ subject with reference to verification methods of the intended educational outcomes and forms of instruction:

Learning outcome code	A student who has obtained a credit for the module/course has the knowledge/skill to:	Methods of verifying the achievement of the intended learning outcomes:	Form of instruction * provide the symbol
W01 (B.W18)	knows such processes as: cell cycle, proliferation, differentiation and aging of cells, apoptosis and necrosis and their significance for the body functions;	MCQ, SSQ, oral exam	L,LC
W02 (B.W22)	knows the course and control of reproductive functions in males and females;	MCQ, SSQ, oral exam	L,LC
W03 (B.W23)	knows the body aging mechanisms;	MCQ, SSQ, oral exam	LC
W04 (C.W18)	recognizes symptoms of iatrogenic infections, their paths of spread, and pathogens responsible for changes in respective organs;	MCQ, SSQ, oral exam	LC
W05 (C.W24)	knows issues in the scope of cancer immunology;	MCQ, SSQ, oral exam	L,LC
W06 (C.W26)	knows pathology terminology;	MCQ, SSQ, oral exam	L,LC
W07 (C.W27)	knows basic cell and tissue damage mechanisms;	MCQ, SSQ, oral exam	L,LC
W08 (C.W28)	describes clinical course of specific and non-specific inflammatory processes and tissue and organ regeneration;	MCQ, SSQ, oral exam	L,LC
W09 (C.W29)	knows the definition and pathophysiology of shock, with special consideration to differentiation of shock causes, and multiorgan failure;	MCQ, SSQ, oral exam	L,LC
W10 (C.W30)	knows the etiology of hemodynamic disorders, regressive and progressive changes;	MCQ, SSQ, oral exam	L,LC
W11 (C.W31)	knows the issues of organ specific pathology, macro and microscopic images and the clinical course of pathomorphological changes in respective organs;	MCQ, SSQ, oral exam	L,LC
W12 (C.W32)	describes the consequences of developing pathological changes for the neighboring organs;	MCQ, SSQ, oral exam	L,LC
W13 (C.W33)	can name internal and external, modifiable and non-modifiable pathogenic factors;	MCQ, SSQ, oral exam	L,LC
W14 (C.W34)	knows the clinical manifestations of the most common diseases of systems and organs, metabolic diseases and water-electrolyte and acid-base balance;	MCQ, SSQ, oral exam	L,LC
W15 (C.W9)	knows fundamentals of diagnosing gene and chromosomal mutations responsible for inherited and acquired diseases, including cancers;	MCQ, SSQ, oral exam	L,LC
U01 (C.U7)	recognizes the most common human parasites on the basis of their structure, life cycles and disease symptoms;	practical exam, oral exam	L,LC
U02 (C.U8)	makes use of the antigen-antibody reaction in current modifications and techniques for diagnostics of infectious, allergic, autoimmune, blood and malignant diseases;	practical exam, oral exam	LC
U03 (C.U9)	can make a preparation and identify pathogens under a microscope;	practical exam, oral exam	LC
U04 (C.U11)	can associate pictures of tissue and organ damage with clinical symptoms of disease, interview and results of laboratory tests;	practical exam, oral exam	L,LC

U05 (C.U12)	analyses the reactive, defense and adaptation response and control disorders caused by an etiological factor;	MCQ, SSQ, practical exam, oral exam	LLC
K01	participates actively in lab classes and in diagnostic process, thinks creatively, participates in discussions on given topics, can prepare well-documented study from the results gained in laboratory classes	an extended observation by a supervisor/tutor	LC
K02	can work in a team and group taking different roles for the task fulfillment – is responsible for his/ her own safety at work and other colleagues	an extended observation by a supervisor/tutor	LC
K03	prepares himself for classes	an extended observation by a supervisor/tutor	LC

EXAMPLES OF METHODS VERIFYING THE ACHIEVEMENT OF THE INTENDED LEARNING OUTCOMES:

In terms of knowledge: Oral exam (*non-standardized, standardized, traditional, problem-based*).

Written exam – the student produces/identifies answers (*essay, report; structured short-answer questions /SSQ/; multiple choice questions /MCQ/; multiple response questions /MRQ/; matching test; true/false test; open cloze test*)

In terms of skills: practical exam; Objective Structured Clinical Examination /OSCE/; Mini-CEX (mini – clinical examination); completion of a given assignment; project, presentation.

In terms of social competences:

A reflective essay; an extended observation by a supervisor/tutor; 360-degree assessment (feedback from teachers, peers, patients, other co-workers); self-assessment (portfolio included).

Course content: (use keywords referring to the content of each class following the intended learning outcomes):

VII semester

Lectures:

1-2. Introduction to pathology. Cellular reaction to injury. Hemodynamic disorders. (2h)

3-4. Inflammation. (part 1-2) (2h)

5. Diseases of immunity.(1h)

6. Nutritional pathology. Environmental pathology. (1h)

7-8. Neoplasia.(2h)

9-10. Respiratory system pathology.(2h)

11. Cardiovascular system pathology. (1h)

12. Endocrine glands pathology.(1h)

13. Alimentary system pathology (part 1).(1h)

14-15. Alimentary system pathology. (part 2-3) (2h)

Laboratory class:

1-2. Cellular reaction to injury (part 1 and 2). (8h)

3-4. Hemodynamic disorders (part 1 and 2). (8h)

5. Inflammation (part 1). (4h)

Test 1(lecture 1-2& labs 1-4). (2h)

6. Inflammation (part 2). (4h)

7. Infectious diseases. (4h)

8. Diseases of immunity. (4h)

9. Healing and repair. Disorders of growth. (4h)

Test 2 (lectures 3 -5 & labs 5-8). (2h)

10-11. Neoplasia (part 1 and 2). (8h)

12. Respiratory system pathology (part 1). (4h)

Test 3 (lectures 6-8 & labs 9-11). (2h)

1-2. Introduction to pathology. Definition and classifications of pathology/pathomorphology. Basic terms applied in pathology/pathomorphology. Tissue sampling and basic techniques used in pathomorphology. The most important fixative agents and staining methods. The rules of good cooperation between pathologist and clinician. **Cellular reaction to injury.** Main causes and mechanisms of cell injury. Morphology of reversible cell injuries. Necrosis – definition, types, morphology, examples. Apoptosis – definition, mechanisms, morphology, examples. Intracellular accumulation of proteins, polysaccharides, lipids, pigments – classification, pathogenesis, examples, morphology, special staining methods. Pathologic calcification – definition, classification, pathogenesis, examples, morphology.

3-4. Hemodynamic disorders. Edema – definition, pathophysiologic categories, morphology, clinical consequences. Definition of hydrothorax, hydropericardium, ascites, anasarca. Hyperemia and congestion – definition, morphology, typical examples. Hemorrhage – definition, classifications, examples, clinical consequences. Definition of hematoma, hemorrhagic focus, petechiae, purpura, ecchymoses, hemothorax, hemopericardium, hemoperitoneum, hemarthrosis. Thrombosis – definition, pathogenesis, common hypercoagulable states. Venous and arterial thrombi – morphology, clinical consequences, fate of thrombus. Embolism – definition, types, examples. Infarction – definition, types, examples, morphology, clinical consequences. Shock – pathogenesis, main types, morphology, clinical course.

Test 1 (lectures 1- 2 & labs 1-4)

5-6. Inflammation. Inflammation – definition, causative agents, cardinal signs, systemic manifestations. Acute inflammation – phases (major components), cells engaged in the process, chemical mediators, outcome. Morphologic classification (patterns) of inflammation. Classification of exudative inflammation. Serous and catarrhal inflammation – definition, examples, morphology. Fibrinous and purulent inflammation – definition, classification, examples, morphology. Definition and examples of pyorrhea, empyema, phlegmon, abscess. Destructive and gangrenous inflammation – definition, examples. Generalized infections – ways of spread of infections; definition of sepsis, pyemia, bacteriemia, toxemia; morphology of sepsis and pyemia. Chronic inflammation – causative agents, cells engaged in the process, chemical mediators, morphology, outcome; types of macrophages. Differences between acute and chronic inflammation. Proliferative inflammation – definition, examples. Granulomatous inflammation – definition, morphology, examples.

7. Infectious diseases. Definition, types, host barriers to infections, general mechanisms of host tissue damage by infective agents. Special techniques in diagnosis of infectious agents. Opportunistic infections – definition, susceptible populations, examples. Selected bacterial diseases i.e., tuberculosis, leprosy, syphilis, rhinoscleroma (scleroma), actinomycosis – causative agent, pathogenesis, stages of disease, morphology, clinical course. Morphological features of viral infections. Selected viral infections i.e., *Cytomeglovirus*, *Herpes virus*, *Human papillomavirus* – causative agent, pathogenesis, morphology. Selected fungal infections i.e., candidiasis, aspergillosis, cryptococcosis, pneumocystosis – causative agent, pathogenesis, morphology. Selected parasitic infections i.e., malaria, trichinellosis, schistosomiasis, oxyuriasis – causative agent, life cycle, pathogenesis, morphology.

8. Diseases of immunity. Main cells of immune system. Hypersensitivity reactions – definition, classification, mechanism, examples of diseases. Autoimmune diseases – definition, mechanisms, examples. Selected autoimmune diseases i.e., systemic lupus erythematosus, systemic sclerosis (scleroderma), polyarteritis nodosa, inflammatory myopathies – pathogenesis, morphology, clinical course. Acquired Immunodeficiency Syndrome (AIDS) – pathogenesis, clinical course including AIDS-related opportunistic infections and neoplasms. Amyloidosis – definition, classification, pathogenesis, morphology, methods of amyloid detection, clinical course

9. Tissue renewal and repair. Disorders of growth. Basis of normal cell proliferation and tissue growth. Regeneration and repair (healing) – definition, mechanisms, examples. Cutaneous wound healing – types, steps,

influencing factors. Hyperplasia, hypertrophy, atrophy – definition, mechanisms, examples. Metaplasia – definition, mechanisms, examples, significance. Dysplasia/intraepithelial neoplasia – definition, grades, examples, significance.

Test 2 (lectures 3-5 & labs 5-8)

10-11. Neoplasia. Definition of atypia, neoplasia, anaplasia. Nomenclature and classifications of neoplasms. Gross and microscopic features of benign and malignant neoplasms. Modes of tumor growth and spread. Semimalignant tumors – definition, examples. *In situ* neoplasia (carcinoma) – definition, examples, morphology. Grading and staging of malignant tumors – definition, systems, clinical significance. Genetic factors and nonhereditary conditions predisposing to cancer; carcinogenic agents; essential alterations in cell physiology for malignant transformation; molecular basis of multistep carcinogenesis; host defense against tumors. Effects of neoplasms on the host on the clinical level (local and hormonal, cachexia, paraneoplastic syndromes) – pathogenesis, examples of syndromes and related tumors. Classic and modern laboratory diagnosis of neoplasms.

Environmental pathology. Tobacco use – carcinogens of tobacco-smoke, smoking-related tumors, other consequences. Alcohol abuse – pathogenesis, consequences of acute and chronic intake. Ionizing radiation exposure – pathogenesis of lesions, clinical manifestations. Oral contraceptives and hormone replacement therapy – adverse and beneficial effects. **Nutritional pathology.** Protein-energy malnutrition (marasmus, kwashiorkor) – definition, causes, morphologic features. Vitamin deficiency – causes, physiological role of each vitamin, clinical features. Obesity – definition, mechanisms, clinical complications.

12. Respiratory system pathology (part 1). Atelectasis – definition, types, causes, clinical significance. Pulmonary edema and congestion – morphology, clinical features. Adult respiratory distress syndrome – pathogenesis, clinical associations, morphology, clinical course. Chronic obstructive pulmonary diseases – definition, examples, common features. Emphysema – definition, pathogenesis, types, morphology, consequences. Bronchial asthma – pathogenesis, types, morphology, consequences. Bronchiectasis – definition, types, morphology, complications. Diffuse interstitial (restrictive) diseases of lungs – examples, common features . Selected pneumoconioses i.e., coal workers' pneumoconiosis, silicosis, asbestosis – pathogenesis, morphology, clinical course. Pulmonary embolism and infarction – causes, morphology, consequences. Pneumonia – predisposing factors, classification, morphology, stages of lobar pneumonia, clinical course, complications. Lung abscess – morphology, complications. Tuberculosis of the lung – classification, morphology, clinical course. Sarcoidosis of the lung – morphology, clinical course.

Test 3 (lectures 6-8 & labs 9-11).

Midterm I (general pathology) and additional tests for student with justified absence for regular partials

VIII semester

Lectures:

16-17. Urinary system pathology. (2h)

18-19. Nervous system pathology. (2h)

20. Skin pathology. (1h)

21. Lymphoid system pathology. (1h)

22. Bone marrow pathology. (1h)

23-24. Bones and joints pathology. (2h)

25. Male genital system pathology. (1h)

26-28. Female genital system pathology (part 1 and 2). (3h)

29. Breast pathology. (1h)

30. Diseases of infancy and childhood. (1h)

Laboratory class:

13. Respiratory system pathology (part 2). (4h)

14-15 Cardiovascular system pathology (part 1 and 2). (8h)

16-17-18. Alimentary system pathology (part 1, 2 and 3). (12h)

Test 4 (lectures 9-11 & labs 12-15). (2h)

19. Urinary system pathology. (4h)

20. Endocrine glands pathology. (4h)

21. Diseases of infancy and childhood. (4h)

22. Breast pathology. (4h)

Test 5 (lectures 12-17 & labs. 16-20). (2h)

23. Female genital system pathology (part 1). (4h)

24. Female genital system pathology (part 2). (4h)

25. Male genital system pathology. (4h)

26. Nervous system pathology. (4h)

Test 6 (lectures 25-30 & labs 21-25). (2h)

27. Skin pathology. (4h)

28. Bones and joints pathology. Soft tissue tumors. (4h)

29. Lymphoid system pathology. (4h)

30. Bone marrow pathology. (4h)

Test 7 (lectures 18-24 & labs 26-30). (2h)

13. Respiratory system pathology (part 2). Primary malignant tumors of the lung – classification, predisposing factors, origin, precursor lesions, anatomical location, morphology, clinical course. Carcinoid – origin, anatomical location, morphology, clinical course. Pulmonary hamartoma – definition, morphology, significance. Secondary (metastatic) tumors of the lung – anatomical location of primary tumors, morphology. Methods of pathological examination of pulmonary tumors. Pleural effusion – types, Tumors of the pleura – types, morphology, clinical course. Inflammations of upper airways – clinical course. Reactive nodules of the larynx – predisposing factors, anatomical location, morphology, clinical features. Tumors of upper airways – classification, risk factors, predisposing lesions, morphology, clinical course.

14-15. Cardiovascular system pathology. Cardiac hypertrophy – patterns, relation to heart failure. Left - and right-sided heart failure – causative agents, pathogenesis, morphology, consequences. Ischemic heart disease – definition, causative agents, pathogenesis, clinical syndromes. Myocardial infarction – definition, risk factors, pathogenesis, anatomical location, morphology (sequences of gross and microscopic changes), clinical features, consequences, complications. Systemic and pulmonary (cor pulmonale) hypertensive heart disease – pathogenesis, morphology, disorders predisposing to cor pulmonale, complications. Valvular heart disease – types, morphology, clinical features. Main types of congenital heart disease – categories, description of malformations with direction of blood flow. Rheumatic fever and rheumatic heart disease – pathogenesis, morphology, clinical course, consequences. Cardiomyopathy – definition, types, pathogenesis, consequences. Myocarditis – types, morphology, clinical course. Endocarditis – types, morphology, consequences. Pericarditis – types, morphology, consequences. Tumors of the heart – incidence, classification, morphology, clinical significance. Atherosclerosis – risk factors, pathogenesis, typical lesions and their distribution, complications. Hypertensive vascular disease – morphology, consequences. Aneurysm and dissections – definition, classifications, complications. Inflammatory disorders of blood vessels (vasculitides) – pathogenesis, classification, morphology, clinical significance. Varicose veins – definition, distribution, complications. Tumors of blood vessels – classification, morphology, clinical significance.

Test 4 (lectures 9-11 & labs 12-15)

16-17-18 Alimentary system pathology. Inflammations of the oral cavity – morphology, clinical course. Tumors of the oral cavity – classification, precursor lesions, morphology, clinical course. Odontogenic tumors and cysts – general division; ameloblastoma – morphology, clinical course. Sialadenitis – morphology. Sjogren syndrome – pathogenesis, morphology, clinical course. Tumors of the salivary glands – classification, anatomical location, morphology, clinical course. Esophagitis – morphology, complications. Achalasia, hiatal hernia, diverticula, Mallory-Weiss syndrome and esophageal varices – pathogenesis, clinical course. Barrett esophagus – definition, morphology, clinical significance. Tumors of the esophagus – classification, risk factors, morphology, clinical course. Gastritis – types, pathogenesis, morphology, clinical course. Acute gastric ulceration and chronic peptic ulcer – pathogenesis, anatomical location, morphology, complications. *Helicobacter pylori* infection – significance in pathology. Tumors of the stomach – classification, predisposing factors, morphology, early gastric cancer, clinical course. Enterocolitis – morphology, clinical features. Malabsorption syndromes – definition, types, pathogenesis of celiac disease, clinical features. Idiopathic inflammatory bowel disease – pathogenesis, distribution of lesions, morphology, clinical features, differences between Crohn disease and ulcerative colitis. Ischemic bowel disease – predisposing factors, anatomical location, morphology, clinical features. Diverticular disease – definition, anatomical location, morphology, clinical course. Intestinal obstructions – causes, clinical features. Hirschsprung disease – pathogenesis, morphology, clinical course. Tumors of the large and small intestine – classification, epidemiology, predisposing factors, morphology, anatomical location, staging of colorectal cancer, clinical course. Intestinal polyps – definition, classification, morphology, significance. Appendicitis – morphology, complications. Peritonitis – morphology, complications. Morphologic patterns of hepatic injury. Hepatic failure – causes, clinical manifestations. Liver cirrhosis – pathogenesis, classifications, morphology, consequences, main causes of liver cirrhosis in children. Portal hypertension – causes, clinical course. Viral hepatitis – characteristics of viruses, clinicopathologic syndromes, morphology, consequences. Metabolic liver diseases – examples, pathogenesis, clinical significance. Primary and secondary biliary cirrhosis, primary sclerosing cholangitis – causes, morphology, consequences. Circulatory disorders of the liver – types, causes, morphology, clinical manifestations. Tumors and tumor-like lesions of the liver – classification, predisposing factors, morphology, clinical signs. Cholelithiasis and cholecystitis – predisposing factors, pathogenesis, morphology, clinical course. Carcinoma of the gallbladder – predisposing factors, morphology, clinical course. Acute and chronic pancreatitis – pathogenesis, morphology, clinical course. Tumors of the pancreas – classification, risk factors, precursor lesions, morphology, anatomical location, clinical course.

19. Urinary system pathology. Clinical manifestations of renal diseases. Congenital anomalies of the kidney including cystic diseases – pathogenesis, morphology, clinical course. Glomerulonephritis – classification, pathogenesis, morphology including immunofluorescence microscopy and electron microscopy, clinical course. Systemic diseases with glomerular involvement i.e., systemic lupus erythematosus, diabetes mellitus and amyloidosis – morphology, clinical course. Acute tubular necrosis – pathogenesis, morphology, clinical course. Tubulointerstitial nephritis – and types. Pyelonephritis – pathogenesis, types, morphology, clinical course. Renal transplantation – indications, types of rejection, drug toxicity, clinical course. Tumors of the kidney – classification, predisposing factors, morphology, clinical signs. Urinary tract obstruction – causes, morphology, consequences. Cystitis – morphology, clinical course. Tumors of the urinary bladder – classification, predisposing factors, morphology, clinical signs.

20. Endocrine glands pathology. Pituitary adenoma – classification, morphology, clinical signs. Hypopituitarism – definition, clinical features. Posterior pituitary syndromes – clinical signs. Hyper- and hypothyroidism – definitions, clinical course. Goiter, toxic goiter, non-toxic-goiter, parenchymatous goiter, multinodular goiter – definitions. Graves disease and multinodular goiters – pathogenesis, morphology, clinical course. Thyroiditis – morphology, clinical course. Tumors of the thyroid gland – classification, genetic and environmental factors, morphology, clinical course. Hyper- and hypoparathyroidism – definitions, morphology, clinical course. Hyperadrenalinism – clinical syndromes, morphology, clinical course. Adrenal insufficiency – classification, causes, morphology, clinical course. Tumors of the adrenal cortex and the medulla – classification, morphology, clinical course. Diabetes mellitus – types, pathogenesis of main forms of diabetes and its complications, morphology, clinical course, complications. Tumors of pancreatic islet cells – types, morphology, clinical signs. Multiple endocrine neoplasia (MEN) syndromes – classification, clinical course.

Test 5 (lectures 12-17 & labs 16-20)

21. Diseases of infancy and childhood. Congenital anomalies – definition, types. Prematurity and fetal growth restriction – definition, risk factors, complications. Perinatal infections – routes of transmission, causes, morphology, consequences. Neonatal respiratory distress syndrome – pathogenesis, predisposing factors, morphology, clinical signs, consequences. Hydrops fetalis – definition, pathogenesis, morphology, clinical features. Sudden infant death syndrome – epidemiology, pathogenesis, morphology. Cystic fibrosis (mucoviscidosis) – pathogenesis, morphology,

clinical course. Tumors and tumor-like lesions of infancy and childhood – histological types, incidence, pathogenesis, morphology, anatomical location, prognostic factors, clinical course.

22. Breast pathology. Clinical manifestation of breast diseases. Inflammations of the breast – morphology, consequences. Benign epithelial lesions – pathogenesis, types, morphology, clinical significance. Benign epithelial and stromal-epithelial tumors of the breast – incidence, morphology, clinical signs.

27-28. Female genital system pathology. Infections of lower female genital tract – clinical course. Pelvic inflammatory disease – morphology, complications. Non-neoplastic epithelial disorders of vulva – types, morphology, consequences. Tumors of the vulva – classification, risk factors, precursor lesions, morphology, clinical course. Tumors of the vagina – classification, risk factors, precursor lesions, morphology, clinical course. Tumors of the uterine cervix – classification, epidemiology, risk factors, precursor lesions, morphology, staging system, diagnosis, clinical course. Adenomyosis and endometriosis – definition, pathogenesis, distribution, morphology, clinical course. Endocervical and endometrial polyps – definitions, morphology, consequences. Endometrial hyperplasia (endometrial intraepithelial neoplasia) – predisposing factors, types, morphology, consequences. Tumors of the uterine corpus – classification, epidemiology, predisposing factors, morphology, staging system of adenocarcinoma, clinical course. Gestational trophoblastic disease – pathogenesis, types, morphology, clinical course. Non-neoplastic and functional ovarian cysts – morphology, clinical significance. Tumors of the ovary – classification, risk factors, epidemiology, morphology, clinical course. Inflammations of fallopian tubes – morphology, consequences. Cysts and tumors of fallopian tubes – incidence, examples, clinical signs. Ectopic pregnancy – definition, anatomical location, morphology, consequences.

26. Male genital system pathology. Congenital malformations of male genital system – examples, significance. Inflammations of the penis – clinical features. Tumors of the penis – classification, precursor lesions, morphology, clinical course. Atrophy of the testis – morphology, clinical significance. Vascular disturbances of testis and surrounding tissues – causes, morphology. Orchitis and epididymitis – morphology, significance. Tumors of the testis – classification, risk factors, morphology, diagnosis, clinical course. Prostatitis – morphology, clinical course. Benign prostatic hyperplasia – pathogenesis, morphology, consequences. Carcinoma of the prostate – epidemiology, anatomical location, morphology, grading system, clinical course.

21. Nervous system pathology. Increased intracranial pressure and herniations – causes, morphology, types of herniation, clinical signs, consequences. Cerebral oedema nad hydrocephalus – definition, types, causes, consequences. Traumatic vascular injuries – types, causes, morphology, clinical signs, consequences. Cerebral infarction – causes, types, morphology, clinical signs. Subarachnoid hemorrhage – causes, common locations of saccular aneurysms, morphology, clinical signs, consequences. Intracerebral hemorrhage – causes, morphology, clinical signs, consequences. Meningitis and brain abscess – morphology, clinical signs, consequences. Meningoencephalitis – morphology, clinical course. Transmissible spongiform encephalopathies (prion diseases) – examples, causative agents, pathogenesis, morphology, consequences.

Test 6 (lectures 25-30 & labs 21-25).

22. Skin pathology. The basic macro- and microscopic terms used in dermatopathology. Classification of skin tumors. Disorders of pigmentation and benign tumors of melanocytes – types, morphology, significance. Malignant melanoma – epidemiology, predisposing factors, types, morphology, staging systems, clinical signs, prognostic factors. Benign epithelial tumors of the skin – typical location, morphology, clinical course. Malignant epithelial tumors of the skin – predisposing factors, morphology, clinical course. Non-epithelial tumors of the skin – examples, morphology, clinical course. Blistering diseases – pathogenesis, morphology, clinical course.

25. Bones and joints pathology. Soft tissue tumors. Healing of bone fractures. Osteoporosis – definition, types, pathogenesis, morphology, clinical course. Paget disease (osteitis deformans) – pathogenesis, morphology, clinical course, significance. Osteomyelitis – types, causes, morphology, complications. Tumors and tumor-like lesions of bones – classification, predisposing factors, anatomical locations, morphology, clinical course. Fibrous dysplasia – pathogenesis, types, anatomical location, morphology, clinical signs, consequences. Osteoarthritis – pathogenesis, anatomical location, morphology, clinical course. Rheumatoid arthritis – pathogenesis, anatomical location, morphology, clinical course, consequences. Gout and gouty arthritis – types pathogenesis, predisposing factors, anatomical location, morphology, clinical course. Tumors and tumor-like lesions of joints – examples, morphology, clinical features. Tumors and tumor-like lesions of soft tissue – classification, general features, origin, morphology, clinical features.

23. Lymphoid system pathology. Acute and chronic non-specific lymphadenitis – morphology, clinical course. Basic rules of WHO classification of lymphoid neoplasms. Hodgkin lymphoma – definition, pathogenesis, types,

clinical course, prognosis. Selected non-Hodgkin lymphomas i.e., chronic lymphocytic leukemia/small lymphocytic lymphoma, follicular lymphoma, mantle cell lymphoma, marginal zone B-cell lymphoma, diffuse large B-cell lymphoma, Burkitt lymphoma, mycosis fungoides/ Sezary syndrome – incidence, morphology, typical cytogenetic and molecular features, clinical course, prognosis. Splenomegaly – definition, causes, morphology. Thymomas – definition, classification, morphology, clinical course.

24. Bone marrow pathology. Acute myelogenous leukemia – definition, pathophysiology, FAB classification, morphology, clinical course. Myelodysplastic syndromes – definition, morphology, clinical course. Chronic myeloproliferative disorders – pathophysiology, morphology, laboratory data, clinical course. Anemias – definition, classification, pathogenesis, morphology, clinical features. Acute lymphoblastic leukemia/lymphoma – incidence, morphology, typical cytogenetic and molecular features, laboratory data, clinical features, prognosis. Multiple myeloma – definition, pathogenesis, morphology, laboratory data, clinical course.

Test 7 (lectures 18-24 & labs 26-30).

Midterm II (systemic pathology) and additional tests for student with justified absence for regular partials

Obligatory literature:

1. Kumar V, Abbas AK, Aster JC: Robbins Basic Pathology. 9th ed. Elsevier Saunders 2013. ISBN 978-0-8089-2432-6
2. Young B, O'Dowd G, Stewart W. Wheater's Basic Pathology: A Text, atlas & review of histopathology. 5th ed. Churchill Livingstone 2010. ISBN 978-0-443-06797-6
3. <http://www.patomorfologia.lublin.pl/>

Complementary literature for lectures and labs:

1. Kumar V, Abbas AK, Aster JC: Robbins & Cotran Pathologic Basis of Diseases. 9th ed., Elsevier Saunders 2015. ISBN 978-1-4557-2613-4
- Goljan EF: Rapid Review Pathology. 2 ed. Mosby 2007. ISBN 978-0-323-04414-1

Requirements for didactic aids (e.g. laboratory, multimedia projector, others...)

Laboratory room adapted to using microscopes, light microscopes for students, light microscope with camera for teacher use, laptop, multimedia projector, microscopic slides.

Conditions for obtaining a credit for the subject:

Lectures:

1. Presence at lecture is obligatory.

Laboratory classes:

1. Presence at labs is obligatory, according to the rules.
 - only possible justification of absence is a note from the doctor or from the Dean's or rector's Office; the original note should be presented to the teacher, the copy should be provided and attached to the student's files.
 - in the case of justified absences, the content of classes the student missed has to be made up according to the schedule given by the teacher
 2. Preparation for labs.
 - student is obligated to be prepared for each lab (according to the schedule), be familiar with histological slides,
to participate in discussion and to make appropriate notes (schemes, drawings, reprints from an atlas, etc.)
 3. Partial tests.
- there are seven written partial tests during the whole course. They are composed of practical and theoretical parts

based on material presented during labs and lectures as well as recommended literature. In the practical part the student has to identify 10 selected slides and answer short structuralized open questions from given section. The theoretical part is 20 written multiple choice questions. It is possible to obtain maximum 30 points from each test (1.0 for each correctly answered question regardless from practical and theoretical part).

- presence at the partial tests is obligatory. There is no opportunity to take the test on different dates. The student with justified absence at the partial can have additional term set up by the Coordinator at the end of the course. The form of additional terms is different: the practical part consists in identification of 5 selected histopathological slides with the microscope and answering basic questions referring to recognized lesions, concerning mainly their most important diagnostic features and differential diagnosis. The theoretical part is 10 short open questions. It is possible to obtain maximum 2 points for each correctly answered question from either parts.

Conditions for obtaining a credit for the subject:

- attendance at the labs
- student has to attain all required skills, present appropriate attitude and obtain at least 55% of points available in the semester from partial exams
- student who does not obtain adequate score can take the midterm exam. The term is set up by the Coordinator at the end of each semester. It consists of 30 (fall) or 40 (spring) short questions concerning general (III or VII – fall semester) and systemic pathology (IV or VIII - spring semester). To pass the midterm the student has to obtain at least 55% of points. Students who fail midterm will take oral semester exam with a teacher designated by the Head of Department.
- The only justification for absence at the midterm or oral retakes is a note from the doctor or from the Dean's or rector's Office; the original note should be presented to the teacher; the copy should be provided and attached to the student's files.

Final examination:

- to take the final exam the student has to obtain a credit for pathomorphology
- the student who will obtain at least 80% of points during semester (but only at partial exams – not at midterm) will get 20 points at the practical exam.
- the student who obtains at least 90% of points can take oral final exam with the Head of the Department before the term of the regular one.
- the final exam consists of two parts: practical and the theoretical. Practical is based on identification of 20 selected histological slides (the list is available on the website) and answering short structuralized open questions referring to presented lesions. The theoretical part is 100 written multiple choice questions. It is possible to obtain maximum 120 points (1.0 for each correctly answered question regardless from practical and theoretical part). To pass the student has to obtain at least 60% of point (72 points) from the sum of both parts.
- presence at the exam is obligatory. Student who fails the final exam has two possible retakes, their dates and form will be fixed by the Coordinator with the Head of the Department and the Dean Office.
- the only justification for absence at final exam is a note from the doctor or from the Dean's or Rector's Office; the original note should be presented to the Coordinator, the copy should be provided and attached to the student's files.
- the student has the right to have an insight into his/her answer form and test within 7 days from the release of examination results.
- the final grade depends on the score obtained, as presented below:

Grade	%
very good (5.0)	95-100
better than good (4.5)	87-94
good (4.0)	78-86
satisfactory (3.5)	70-77
pass (3.0)	60-69
unsatisfactory/fail (2.0)	0-59

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Signature of the head of the department/clinic

KIEROWNIK
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Uniwersytetu Medycznego w Lublinie
prof. dr hab. n. med. Justyna Szumiło

Dean's signature

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Date of submission:

