REQUIREMENTS

Semmelweis University, Faculty of General Medicine – single, long-cycle medical training programme
Name of the host institution (and any contributing institutions):

Department of Pathology and Experimental Cancer Research

Name of the subject: Pathology II.

in English: Pathology II.

in German:

Credit value: 8

Semester: 1
(as defined in the curriculum)

Total number of classes per week: 7	**lectures: 3**	**practical lessons: 5**	**seminars: 0**

Type of subject: <u>compulsory</u> optional elective
(PLEASE UNDERLINE AS APPLICABLE)

Academic year: 2024/2025. II.

Language of instruction, for optional or elective subjects: english

Course code: AOKPTK1109_2A

Course coordinator: Dr. András Matolcsy

Place of work, phone number: Department of Pathology and Experimental Cancer Research, +36-1-317-1074

Position: professor, director

Date and number of habilitation: 118-6/1997

Objectives of the course and its place in the medical curriculum:
The aim of teaching the pathology subject is to familiarize the students with pathological changes and the pathomechanism of diseases. In the course of the training, students get to know the examination methods and diagnostic procedures of pathology and gain insight into clinicopathological thinking. The training takes place in the form of classroom lectures, histological, dissection and organ demonstration exercises.

Place of instruction (address of lecture hall or seminar room etc.):
Department of Pathology and Experimental Cancer Research

Competencies acquired through the completion of the course:
Knowledge of the development and course of diseases, knowledge of the nomenclature of diseases, recognition and knowledge of basic histopathological and macroscopic changes, knowledge of clinicopathological correlations.

Prerequisites for course registration and completion:
Pathology I.

Conditions for concurrent course registration and permission thereof in the case of a multi-

semester subject: CV course: it is possible in specially justified cases, with the director's approval

Student headcount conditions for starting the course (minimum, maximum) and method of student selection: maximum 180 students, groups 10, 11, 12, 13, 14, 15, 16, 17, 18

Detailed course description:

		Hematopathology
10.02	Matolcsy	Methods of hematology diagnostics. Classification of Anemia
12.02	Matolcsy	Diseases of the Myeloid system
14.02	Mózes	Clinicopathological discussion of CML
17.02	Matolcsy	Diseases of the Lymphoid system I.
19.02	Matolcsy	Diseases of the Lymphoid system II.
21.02	Bödör	Clinicopathological discussion of CLL
		Pathology of the liver and biliary tract
24.02	Nagy	Infectious and inflammatory disorders. Hepatic failure. Liver cirrhosis.
26.02	Nagy	Toxic injuries of the liver. Liver tumors. Disorders of the gallbladder.
28.02	Dezső	Clinicopathological discussion of Hemangioendothelioma
		Gastrointestinal pathology
03.03	Fintha	Pathology of the oral cavity, salivary gland, oesophagus
05.03	Fintha	Pathology of stomach and small intestine
07.03	Jákob	Clinicopathological discussion of Head-Neck tumor
10.03	Fintha	Pathology of the large intestine and the peritoneum
12.03	Zalatnai	Pathology of the pancreas. Diabetes mellitus
14.03	Fintha/Zalatnai	Clinicopathological discussion of Pancreatitis
		Pathology of the Endocrine System
17.03	Zalatnai	Hypophysis, thyroid gland
19.03	Zalatnai	Parathyroid gland, adrenals, MEN
21.03	Zalatnai	Clinicopathological discussion of GH-secreting pituitary adenoma
		Pathology of the kidney and the urinary tract
24.03	Matolcsy	Malformations. Clinical manifestations of renal disease. Glomerular diseases
26.03	Matolcsy	Diseases affecting tubules and interstitium. Diseases involving blood vessels
28.03	Kuthi	Clinicopathological discussion of Glomerular diseases
31.03	Kuthi	Urinary outflow obstruction. Renal tumors.
02.04	Kuthi	Pathology of the urinary bladder
04.04	Zalatnai	Clinicopathological discussion of Renal tumor
		Pathology of the female genital tract
07.04	Rókusz	Pathology of the female genital tract
09.04	Rókusz	Pathology of the uterus and pregnancy
11.04	Marton	Pathology of pregnancy. Clinicopathological discussion of endometriosis
14.04	Fónyad	Pathology of the breast
		Pathology of the male genital tract
16.04	Rácz	Pathology of the penis, scrotum and funiculus
23.04	Rácz	Pathology of the testis, epididymis and prostate
25.04	Rácz	Clinicopathological discussion of germ cell testicular tumor
		Pathology of the nervous system
28.04	Scheich	Malformations, cerebrovascular diseases, edema, herniation, and hydrocephalus. CNS tumors
30.04	Scheich	Diseases of myelin, neurodegenerative disorders. Infections
		Pathology of the skin
05.05	Fónyad	Non-neoplastic diseases of the skin
07.05	Fónyad	Neoplastic skin diseases
09.05	Scheich	Clinical and pathological differential diagnostics of CNS diseases
12.05	Sápi	***Pathology of musculoskeletal system***
14.05	Rácz	Consultation
16.05	Matolcsy	***Pathology competition discussion, consultation***

Practical topics:
1. week Hematology I.
2. week Hematology II.
3. week Hepatology
4. week Gastroenterology I.
5. week Gastroenterology II.
6. week Nephrology
7. week Female genital organs, breast
8. week Male genital organs, pregnancy
9.week Endocrinology
10. week Dermatology
11. week Soft tissue
12. week CNS
13. week Consultation
14. week Consultation

Practical instructors:
1.Dr. Judit Pápay
2. Dr. Ildikó Krencz
3. Dr. Attila Fintha
4. Dr. Anna Jakab
5. Dr. Réka Mózes
6. Dr. Ágnes Nagy
8. Dr. Péter Nagy
9. Dr. Márton Sághi
11. Dr. Noémi Jákob
12. Dr. Balázs Csernus
13. Dr. Katalin Pálos
14. Dr. Alex Jenei
15. Dr. Attila Zalatnai
16. Dr. Tamás Székely
17. Dr. Richárd Kiss
18. Dr. László Fónyad
19. Dr. Gertrud Forika
20. Dr. Vanda Téglási
21. Dr. Eszter Regős
22. Dr. Tamás Micsik
23. Dr. Gergely Racz

Related subjects due to interdisciplinary fields (both compulsory and elective) and potential overlaps between subjects:
Overlap with almost all chapters of the pathophysiology subject, except ECG.

Attendance requirements; conditions under which students can make up for absences and the method of absence justification:
Attendance of the lectures is not mandatory, but the lectures are part of the material that can be counted in the exams. At least 75% attendance and participation in practical sessions is mandatory. The practice leaders fill out an attendance form at the beginning of each practice. Over the course of the semester, absences that exceed three practical sessions in the autopsy room, three absences in histology/organ demonstration practical sessions, three absences in clinicopathology practice, one absence in more than one consultation practical session must be made up in the semester. A histology-organ demonstration exercise can only be replaced with an exercise on the same topic, in Hungarian or English. Autopsy and consultation practice can be replaced at any time, with any group, in both Hungarian and English. Absences from more than three dissection and histology-organ demonstration sessions, as well as one consultation practice session, must be confirmed in writing by the practice supervisors or the person in charge of studies. The clinicopathology lectures in Fridays are practices!

Form of assessment in the study period:
During the hard work period, we do not hold mandatory subject partial performance evaluations, there are no practical marks. During the semesters, the supervisors are constantly informed about the students' preparation. In consultation with the students of the group and the demonstrator, the supervisors can carry out a mid-year competence and subject knowledge level assessment of various forms (oral report, presentation, test, essay, demonstration, homework, project task), however, the result of this is not followed by a practical mark, and the semester is not a condition signature and cannot be taken into account in the results of the colloquium exam.

Number and type of assignments for individual work and the deadline for submission:
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Requirements to obtain the teacher's signature:
At least 75% attendance and participation in practical sessions. In the course of a semester, you can miss the three autopsy room, three histology-organ demonstration exercises, three clinicopathology practice and one consultation exercise without a certificate. The other internships must be replaced, the head of the replaced internship will provide a certificate. (Histology and organ demonstration practice can only be replaced with the same practice. Dissection room and consultation practice can be replaced at any time, with any group).

Type of assessment:
comprehensive examination

Examination requirements:

GENERAL PATHOLOGY TOPICS „A"

NECROSIS, APOPTOSIS
A/01. Causes, morphology and mechanism of cell necrosis
A/02. Reperfusion injury
A/03. Mechanisms of apoptosis and its pathological characteristics
A/04. Coagulative necrosis and its organ manifestation
A/05. Colliquative necrosis and its organ manifestation
A/06. Hemorrhagic infarction and its organ manifestation
A/07. Fat, caseous and fibrinoid necrosis and its organ manifestation
A/08. Acute myocardial infarction
A/09. Cerebral infarction

REVERSIBILE CELL INJURY, PATHOLOGIC ACCUMLATION, PIGMENTS, CALCIFICATION
A/10. Reversible cell injury, types of degeneration and its organ manifestation
A/11. Types of fatty degeneration and its organ manifestation
A/12. Atherosclerosis
A/13. Amyloidosis
A/14. Cystic fibrosis
A/15. Hyaline accumulation and its organ manifestation
A/16. Anthracosis, lipofuscin, hemosiderin and melanin accumulation
A/17. Dystrophic calcification and its organ manifestation
A/18. Metastatic calcification and its organ manifestation
A/19. Stone formation; kidney and gallbladder stones

CELLULAR ADAPTATION TO STRESS
A/20. Pathomechanism of atrophy and hypertrophy, examples
A/21. Myocardial hypertrophy and its clinical forms
A/22. Pathomechanism of hyperplasia, examples
A/23. Pathomechanism of metaplasia and dysplasia, examples

HEMODYNAMIC DISORDERS, THROMBOSIS, HEMORRHAGE
A/24. Pathomechanism of cardiac insufficiency
A/25. Congestion and its organ manifestation
A/26. Causes and types of shock
A/27. Causes and types of edema
A/28. Causes and types of thrombosis
A/29. DIC
A/30. Types of emboli
A/31. Types of hemorrhages and their clinical presentation
A/32. Intracranial hemorrhages

INFLAMMATION
A/33. Caracteristics of acute inflammation (cellular events, chemical mediators, systemic effects according to the exudate, organic example)
A/34. Pathomechanism and types of chronic inflammation, organic example

DISEASES OF THE IMMUNE SYSTEM
A/35. Type I. and Type II. Hypersensitivity reactions and their pathological presentations
A/36. Type III. and Type IV. Hypersensitivity reactions and their pathological presentations
A/37. Rejection of transplants
A/38. Pathomechanism of autoimmume diseases
A/39. Systemic Lupus Erythematodes, Rheumatoid Arthritis
A/40. Sjögren Syndrome, Scleroderma, Polyarteritis Nodosa
A/41. Inherited and Acquired immunodeficiencies
A/42. AIDS

GENETIC DISEASES
A/43. Diagnostics of genetic disorders
A/44. Autosomal dominant disorders
A/45. Familial hypercholesterinemia
A/46. Autosomal recessive and X-linked inheritance disorders
A/47. Cytogenetic disorders caused by chromosomal aberrations
A/48. Single-gene disorders with atypical patterns of inheritance

PEDIATRIC DISEASES
A/49. Pathogeneis of congenital anomalies
A/50. Disorders associated with prematurity (IRDS, NEC, Sudden Infant Death)
A/51. Fetal Hydrops

ENVIRONMENTAL DISEASES
A/52. Pathology of smoking-related disorders
A/53. Pathology of alcohol-related disorders
A/54. Pathomechanism of obesity and its consequences; examples

ONCOLOGY AND CARDIOLOGY TOPICS „B”

NEOPLASIA
B/01. General caracteristics of neoplasms (benign, malignant tumors)
B/02. Classification of neoplasms on histiolgy basis
B/03. Caracteristics of neoplasms rate growth
B/04. Invasion and metastasis of neoplasms
B/05. Promotion mechanisms of oncogenes and role in carcinogenesis
B/06. Inhibitory mechanisms of tumor suppressor genes and role in carcinogenesis
B/07. EGFR, ABL and BCL2 genes and their roles in tumor development
B/08. RB, p53 and APC genes and their roles in tumor development
B/09. BRCA1, BRCA2 and ATM genes and their roles in tumor development
B/10. DNA repair genes and role in carcinogenesis
B/11. Cytogenetic aberrations and the role of telomer in carcinogenesis
B/12. Epigenectic changes (DNA methylaton, MicroRNAs) and role in carcinogenesis
B/13. Inherited cancer syndromes (autosomal dominant, recessive and familiar)
B/14. Viral and microbal oncogenesis
B/15. Chemical and radiation carcinogenesis
B/16. Tumor antigenes
B/17. Tumor immunity and immune surveillance
B/18. Epidemiology of neoplasms
B/19. Caracteristics and morphology of preneoplastic disorders
B/20. Grading and staging of cancer
B/21. Effects of tumor on host (cancer cachexia, paraneoplastic syndromes)
B/22. Tumors of childhood and their characteristics (neuroblastoma, retinoblastoma, Wilms tumor)
B/23. Pathological, genetic, immunological and molecular diagnostics of tumors

B/24. Tumor therapy (surgical, radiation, chemo, target molecular and immunotherapy)

PATHOLOGY OF CARDIOVASCULAR SYSTEM
B/25. Left-sided heart failure
B/26. Right-sided heart failure
B/27. Congenital heart diseases
B/28. Myocardial infarction, sudden cardiac death
B/29. Angina pectoris, chronic ischemic heart disease
B/30. Hypertensive heart disease
B/31. Rheumatic fever and rheumatic myocarditis
B/32. Degenerative valvular heart disease (calcific aorta stenosis, mitral prolapse)
B/33. Infective endocarditis (acute and subacute)
B/34. Noninfective endocarditis (thrombotic endocarditis, Libman-Sacks endocarditis)
B/35. Valvular vitiums and their consequences
B/36. Myocarditis and Cardiomyopathies
B/37. Cor pulmonale
B/38. Arteriolosclerosis
B/39. Aneurysms and Aortic Dissection
B/40. Arteritis and Phlebitis
B/41. Varices, varicosities and disorders of the lymphatic vessles
B/42. Cardiac and vascular tumors

SYSTEMIC PATHOLOGY TOPICS„C”

PATHOLOGY OF HEMATOPOETIC AND LYMPHOID SYSTEM
C/1. Diagnostic methods of hematology (biopsy, flow cytometry, histochemical, cytogenetic, molecular diagnosis)
C/2. Anemias of dimished erythropoesis
C/3. Anemia of blood loss
C/4. Non-neoplastic disorders of myeloid and lymphoid system
C/5. CML and chronic myelofibrosis
C/6. Polycythemia vera, essential thrombocythemia
C/7. Disorders of the spleen and thymus
C/8. Myelodysplastic syndromes
C/9. Acute myeloid leukemia, lymphoplasmocytic lymphoma
C/10. Precurzor T- and B-cell lymphoblastic leukemia/lymphoma
C/11. CLL hairy cell leukemia
C/12. Multiple myeloma and related plasma cell disorders
C/13. Follicular lymphoma, mantle cell lymphoma, extranodal marginal zone lymphoma
C/14. Diffuse large B cell lymphoma, Burkitt lymphoma
C/15. Mycosis fungoides, Sezary syndrome, Peripherial T-cell lymphoma
C/16. Hodgkin lymphoma

PATHOLOGY OF THE RESPIRATORY TRACT
C/18. Atelectasis and acute respiratory distress syndrome
C/19. Obstructive lung diseases- COPD
C/20. Obstructive lung diseases- bronchial asthma and bronchiectasis
C/21. Chronic interstitial (restrictive) lung diseases
C/22. Pulmonary diseases of vascular origin - pulmonary embolism, hemorrhage, and infarction
C/23. Pulmonary hypertension
C/24. Pulmonary infections (except tuberculosis)
C/25. Granulomatous diseases of the lung
C/26. Primer and metastatic tumors of the lung
C/27. Pathology of the pleura and pericardium
C/28. Lesions of the upper respiratory tract
C/29. Tumors of nasal passages, nasopharynx and larynx

PATHOLOGY OF THE ORAL CAVITY AND THE GASTROINTESTINAL TRACT
C/30. Pathology of lips, oral cavity and pharynx

C/31. Salivary gland diseases
C/32. Pathology of esophagus
C/33. Gastritis
C/34. Peptic ulcers
C/35. Gastric tumors
C/36. Developmental anomalies and vascular disorders of the GI tract
C/37. Malabsorbtion
C/38. Enterocolitis
C/39. Colonic diverticulosis and bowel obstruction
C/40. Inflammatory bowel diseases (ulcerative colitis, Crohn disease)
C/41. Pathology of the appendix and peritoneum
C/42. Tumors of the small and large intestines

PATHOLOGY OF THE LIVER, BILIARY TRACT, AND PANCREAS
C/43. Liver failure
C/44. Cholestatic liver syndromes (PBC, PSC)
C/45. Pathophysiology of jaundice, defects of bilirubin and bile formation. Cholelithiasis
C/46. Circulatory disorders of liver
C/47. Acute and chronic hepatitis
C/48. Alcohol- and drug-induced liver diseases
C/49. Metabolic and inherited liver diseases
C/50. Liver cirrhosis
C/51. Tumors and tumor-like lesions of the liver
C/52. Inflammations and tumors of the biliary system and gallbladder
C/53. Pancreatitis
C/54. Diabetes mellitus
C/55. Tumors of the exocrine and endocrine pancreas

PATHOLOGY OF THE KIDNEY AND ITS COLLECTING SYSTEMS
C/56. End-stage kidney and renal failure
C/57. Developmental abnormalities and cystic diseases of the kidney
C/58. Pathogenesis of glomerular diseases
C/59. The nephritic syndrome
C/60. The nephrotic syndrome
C/61. Rapidly progressive glomerulonephritis
C/62. Systemic diseases associated glomerular damage
C/63. Vascular diseases of the kidney
C/64. Diabetic nephropathy
C/65. Acute tubular necrosis (ATN)
C/66. Acute and chronic pyelonephritis
C/67. Urolithiasis and urinary outflow obstructions
C/68. Tumors of kidney
C/69. Tumors of the urinary bladder and collecting system

PATHOLOGY OF THE FEMALE GENITAL SYSTEM AND BREAST
C/70. Diseases of the vulva and vagina
C/71. Pathology of the uterine cervix
C/72. Endometritis, endometrial hyperplasia, endometriosis
C/73. Tumors of the endometrium and myometrium
C/74. Non-neoplastic diseases of the ovary and fallopian tube
C/75. Ovarian tumors
C/76. Pathology of pregnancy
C/77. Benign epithelial lesions and benign tumors of the breast
C/78. Malignant tumors of the breast

PATHOLOGY OF THE MALE GENITAL SYSTEM
C/79. Diseaeses of the penis, scrotum and epididymis
C/80. Inflammatory lesions of the testis and epididimys. Cryptorchidism and testicular atrophy.
C/81. Tumors of the testis

C/82. Prostatitis, benign prostatic hyperplasia
C/83. Carcinoma of the prostate

PATHOLOGY OF THE ENDOCRINE SYSTEM
C/84. Hypo- and hyperfunctions of the hypothalamic-hypophysial system
C/85. Thyreoiditis, hypo- and hyperfunctions of the thyreoid gland
C/86. Tumors of thyreoid gland
C/87. Pathology of the parathyroid glands
C/88. Hypo- and hyperfunctions and tumors of the adrenal gland
C/89. Multiple endokrine neoplasia (MEN) and carcinoid syndrome

PATHOLOGY OF THE MUSCULOSCELETAL SYSTEM
C/90. Congenital diseases of bone
C/91. Acquired diseases of bone development (osteoporosis, rickets, osteomalacia)
C/92. Osteomyelitis. Paget's disease
C/93. Tumors and tumor-like lesions of the bone
C/94. Degenerative and inflammatory joint diseases
C/95. Muscular atrophy, dystrophies and myositis
C/96. Tumors of skeletal and smooth muscles
C/97. Fibroblast-myofibroblast differentiated soft tissue tumors
C/98. Tumors of adipose tissue
C/99. Soft tissue tumors of uncertain origin

PATHOLOGY OF THE SKIN
C/100. Blistering skin disorders (pemphigus, bullous pemphigoid, dermatitis herpetiformis)
C/101. Inflammatory skin diseases
C/102. Melanocytic tumors
C/103. Non-melanocytic skin tumors

PATHOLOGY OF THE NERVOUS SYSTEM
C/104. Pathology of increased intracranial pressure (edema, herniation and hydrocephalus)
C/105. Congenital malformations of the central nervous system
C/106. Cerebrovascular diseases (hypoxia, ischemia, infarction)
C/107. Neurodegenerative and prion diseases
C/108. Intracranial haemorrhages
C/109. Infections of the central nervous system (meningitis, encephalitis)
C/110. Diseases of myelin
C/111. Tumors of central and peripheral nervous system

Practical exam: Recognition and demonstration of the sections and macropreparations presented in the histological practice.
Autopsy exam: demonstrating the organ complexes presented in the autopsy room exercises and answering questions related to the changes seen.
Theory exam: Description of a general pathology (A), an oncology and cardiology (B), and a detailed pathology (C) item.

Method and type of grading:

The test consists of a practical and a theoretical part, both of which are oral exams. The practical exam consists of an autopsy exam, two digital histological sections and a demonstration of a preserved preparation. The student receives a separate mark for each practical exam section. An insufficient practical exam partial mark is deterrent, i.e. in this case the student can't attempt the theoretical exam part. The successful practical exam is followed by the theoretical part of the exam. It takes place at the theoretical examination boards, the chairpersons of which are appointed by the head of the department. Another member of the committee, usually a resident physician, is appointed by the study supervisor. The rigorous oral exam takes place based on the exam items announced at the beginning of the academic year. The student draws a general pathology item (item line A), an oncology and cardiology themed item (item line B), and a detailed pathology (C). The student receives a separate ticket for each theoretical exam section. An insufficient theoretical exam transcript is in itself a disqualification. At the end of the theoretical part, the chairman of the examination board determines

the final grade based on the practical and oral exam partial marks, which is usually - but not necessarily - the weighted average of the practical and theoretical exam partial marks.
List of course books, textbooks, study aids and literature facilitating the acquisition of knowledge to complete the course and included in the assessment, precisely indicating which requirement each item is related to (e.g., topic by topic) as well as a list of important technical and other applicable study aids: Robbins: Fundamentals of Pathology 10th Edition Medicina, 2019 Dr. András Matolcsy: The basics of pathology - in a Socratic manner. Medicine, 2011
Signature of habilitated instructor (course coordinator) announcing the course:
Signature of the director of the host institution:
Date of submission: