

## REQUIREMENTS

<b>Semmelweis University, Faculty of General Medicine – single, long-cycle medical training programme</b> <b>Name of the host institution (and any contributing institutions):</b> Department of Pathology and Experimental Cancer Research			
<b>Name of the subject: Pathology I.</b> <b>in English: Pathology I.</b> <b>in German:</b> <b>Credit value: 7</b> <b>Semester: 1</b>			
<b>Total number of classes per week:</b> 7	<b>lectures:</b> 3	<b>practical lessons:</b> 4	<b>seminars:</b> 0
<b>Type of subject:</b> <u>compulsory</u> optional      elective			
<b>Academic year: 2024/2025. I.</b>			
<b>Language of instruction, for optional or elective subjects: english</b>			
<b>Course code: AOKPTK1109_1A</b>			
<b>Course coordinator:</b> Dr. András Matolcsy <b>Place of work, phone number:</b> Department of Pathology and Experimental Cancer Research, 06-1-317-1074 <b>Position: professor, director</b> <b>Date and number of habilitation:</b> 118-6/1997			
<b>Objectives of the course and its place in the medical curriculum:</b> 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.			
<b>Place of instruction (address of lecture hall or seminar room etc.):</b> Department of Pathology and Experimental Cancer Research			
<b>Competencies acquired through the completion of the course:</b> 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.			
<b>Prerequisites for course registration and completion:</b> Macroscopic anatomy and development I-II, Microscopic anatomy and development I-II, Medical physiology, Medical biochemistry II.			

**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:**

Practical topics:

1. week Introduction
2. week Necrosis I.
3. week Necrosis II.
4. week Adaptation, degeneration
5. week Adaptation, calcification, stone formation
6. week Circulation I.
7. week Circulation II.
8. week Acute inflammation
9. week Chronic inflammation
10. week Immunology
11. week Oncology I.
12. week Oncology II.
13. Cardiology
14. Pulmonology

Practical instructors:

1. Dr. Judit Pápay
2. Dr. Ildikó Krencz
3. Dr. Attila Fintha
4. Dr. Anna Jakab
5. Dr. Réka Mózes
6. Dr. Péter Nagy
7. Dr. Gertrud Forika
8. Dr. Márton Sági
10. Dr. Tamás Micsik
11. Dr. Balázs Csernus
12. Dr. Katalin Pálos
13. Dr. Alex Jenei
14. Dr. Attila Zalatnai
15. Dr. Richárd Kiss
16. Dr. László Fónyad
17. Dr. Eszter Regős
18. Dr. Tamás Székely
19. Dr. Gergely Rác

**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 strongly recommended, the lectures are part of the material that can be counted in the exams. We keep a random attendance sheet at the lectures. 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 dissection room, three absences in more than three histology-organ demonstration practical sessions, and 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. Anatomy 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.

**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 and lectures. In the course of a semester, you can miss the three dissection room, three histology-organ demonstration exercises 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:**

Semi-final exam

**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

REVERSIBLE CELL INJURY, PATHOLOGIC ACCUMULATION, 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. Characteristics 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 autoimmune diseases
- A/39. Systemic Lupus Erythematoses, 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. Pathogenesis 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 characteristics of neoplasms (benign, malignant tumors)
- B/02. Classification of neoplasms on histology basis
- B/03. Characteristics 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 telomere in carcinogenesis
- B/12. Epigenetic changes (DNA methylation, MicroRNAs) and role in carcinogenesis
- B/13. Inherited cancer syndromes (autosomal dominant, recessive and familial)
- B/14. Viral and microbial oncogenesis
- B/15. Chemical and radiation carcinogenesis
- B/16. Tumor antigens
- B/17. Tumor immunity and immune surveillance

- B/18. Epidemiology of neoplasms
- B/19. Characteristics 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

Practical exam: Recognition and demonstration of the sections and macropreparations presented in the histological practice.

Autopsy exam: none during the end-term examination.

Theoretical exam: Description of a general pathology (A), an oncology and cardiology (B) item.

**Method and type of grading:**

*(Share of theoretical and practical examinations in the overall evaluation. Inclusion of the results of the end-of-term assessment. Possibilities of and conditions for offered grades.)*

The colloquium is a combined exam consisting of a combination of practical (performance of practical tasks) and theoretical (oral performance evaluation) exam tasks, both are oral exams. The practical exam consists of a demonstration of a digital histological section and a preserved preparation. The student receives a separate ticket for each practical exam section. A successful practical exam is obligatory to follow the theoretical exam part. The theoretical part of the exam 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 colloquium 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) and an oncology and cardiology themed item (item line B). 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 exam 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:**