PATHOLOGY
Master's studies
2nd year, winter semester 2025, compulsory course (2-0-2) 5 credits

Educational period: **22.09.2025 - 19.12.2025**
Examination period: **02.01.2026 - 20.02.2026**
Lecture: **Tuesday at 13.00 - 14.40 at Kalinčiakova K236**
Practice: **Wednesday at 14.50-16.30 at Kalinčiakova K236**

- **Form of teaching of the course is attendance study and will take place within the timetable for the course.**
- Moodle and Microsoft Teams are used as an e-learning tool for teaching.
- Technical support: Assoc. Prof. PharmDr. T. Rajtík, PhD., technical staff: V. Haššová, S. Kolembusová
- **Pre-tests will be written in paper form from the topics covered by the test date in the 7th and 12th week of semester.**
- Passing grades will be entered in AIS in the last week of semester (**15.12.2025 – 19.12.2025**) by the teacher listed in syllabi after the prerequisites have been met. Information about retake tests and exams will be posted in Moodle.
- The final exam is held in the attendance form on a computer via the Moodle system

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Recommended study literature

- MOHAN, Harsh. 2014. *Textbook of pathology*. 7th edition. New Delhi, India: Jaypee Brothers Medical Publishers, ISBN 9789351523697
- KUMAR Vinay, Abul ABBAS, Jon ASTER. 2017. *Robbins Basic Pathology.* 10th edition. Philadelphia, ISBN 9780323353175
- PORTH, Carol, Kathryn J. GASPARD a Kim A. NOBLE. 2011. *Essentials of pathophysiology: concepts of altered health states*. 3rd ed. Philadelphia: Wolters Kluwer, ISBN 9781582557243
- GREENE, Russell J. HARRIS, Norman D. 2008. *Pathology and Therapeutics for Pharmacists. A basis for clinical pharmacy practice.* 3rd ed. London: Pharmaceutical Press, ISBN 9780853696902
- RIEDE, Ursus-Nikolaus and Martin WERNER. 2004. *Color Atlas of Pathology.* 1st ed. Stuttgart: Thieme, ISBN 9783131277817
- UNDERWOOD, James C.E. 2004. *General and Systemic Pathology*, 4th ed. NY: Churchill Livingstone, ISBN 9780443073342
- KOSÍROVÁ, Stanislava et al. 2022. *Selected questions for the pathology exam for pharmacy students*. Bratislava. ISBN 9788022355087

WEEK	LECTURE K236 TUE 13.00 – 14.40	PRACTICE K236 WED 14.50-16.30
1. WEEK **22.9.-26.9. 2025**	**1. LECTURE assoc.prof. Kosírová** **Introduction to pathology.** Disease and its characterization, etiology of diseases, symptomatology. Nomenclature and classification of diseases. **Inflammation** - causes, course (acute, chronic), local (rubor, calor, tumor, dolor, functio laesa) and global manifestations (fever, vascular changes), inflammatory cells, mediators, types of inflammatory response. Specific granulomatous inflammation (TBC, syphilis, leprosy). Pain - origin, meaning, characterization, pain pathways.	**1. PRACTICE assoc.prof. Kosírová** **Mechanisms of adaptation. Progressive changes.** • hypertrophy, hyperplasia • metaplasia, dysplasia, neoplasia • reparation and regeneration, healing **Practical task:** Histological preparations of tissue changes.
2. WEEK **29.9.-3.10. 2025**	**2. LECTURE assoc.prof. Kosírová** **Genetic diseases**, molecular basis, mutations, autosomal dominant and recessive disorders of gene expression, gonosomal, multifactorial. **Developmental and differentiation disorders** - teratology, congenital defects of selected systems (CNS - hydrocephalus, spina bifida).	**2. PRACTICE assoc.prof. Rajtík** **Causes and mechanisms of cellular damage. Regressive changes.** • atrophy, hypoplasia • dystrophy (steatosis, lipomatosis, amyloidosis), • concrements, pigmentations • apoptosis, necroptosis, necrosis, gangrene, decubitus **Practical Task:** Histological preparations of regressive changes in tissues.

3. WEEK 6.10.-10.10. 2025	**3. LECTURE assoc.prof. Kosírová** **CNS Disorders.** Neurodegenerative diseases (dementia, Alzheimer's disease, Parkinson's disease). Tests of cognitive abilities - MMSE, MOCA, Clock test. Demyelinating diseases (multiple sclerosis). Excitation and transmission disorders (epilepsy). Sudden impairment of brain function (haemorrhage - sudden stroke).	**3. PRACTICE Dr. Kráľová** **Selected disorders of vascular circulation.** • hyperaemia, hemorrhage • oedema • thrombosis, embolism, ischemia, hypoxia, infarction **Practical Task:** Histological preparations. Case studies.
4. WEEK 13.10.-17.10. 2025	**4. LECTURE Dr. Kráľová** **Mental and behavioural disorders**: psychotic illnesses (schizophrenia, affective disorders, post-traumatic stress disorder), non-psychotic illnesses (anxiety disorders, fear).	**4. PRACTICE Dr. Ferenczyová** **Selected comorbidities of psychiatric diseases** • headache and sleep disorders **Selected inflammatory diseases of the CNS** • encephalitis, meningitis, Lyme disease **Practical task**: Case studies.
5. WEEK 20.10.-24.10. 2025	**5. LECTURE Dr. Kráľová** **Blood pressure and circulatory disorders.** Hypertension - Definition, type/ form/ clinical picture, etiopathogenesis, symptomatology, complications. Pulmonary arterial hypertension. Hypotension, collapse, shock, compensatory mechanisms.	**5. PRACTICE Dr. Dingová** **Selected local (local) blood circulation disorders.** • Disorders of circulation in the arteries (Raynaud's phenomenon, aneurysms, vasculitis). • Circulatory disorders in the veins of the lower limbs (chronic venous insufficiency, ulcus cruris). • Varices, other localisations of varices (GIT - haemorrhoids). **Practical Task**: Case studies

6. WEEK 27.10.-31.10. 2025	**6. LECTURE Dr. Kráľová** **Disorders of coronary circulation.** Atherosclerosis. Ischemic heart disease, myocardial infarction, angina pectoris. Heart failure. Definition, type/form/clinical picture, etiopathogenesis, symptomatology, compensatory mechanisms, complications.	**6. PRACTICE Dr. Kaločayová** **Selected disorders of the musculoskeletal system.** • osteoporosis, osteoarthritis • rheumatoid arthritis, gout • myasthenia gravis, muscular dystrophy, rhabdomyolysis **Practical task:** Case studies.
7. WEEK 3.11.-7.11. 2025	**7. LECTURE assoc.prof. Rajtík** **Heart rhythm disorders.** Cardiomyopathies. Endocardititis. Definition, type/form/clinical picture, etiopathogenesis, symptomatology, compensatory mechanisms, complications.	**7. PRACTICE Dr. Kráľová** **Selected blood and blood clotting disorders.** • anaemia (iron, folic acid and vitamin B12 deficiency anaemia). • leukaemia (lymphoma, chronic lymphocytic leukaemia CLL) • bleeding conditions from disorders of haemostasis and haemocoagulation, blood elements and the blood vessel wall • blood clotting disorders (haemophilia) **Practical Task:** Case studies. **1. PRE-TEST**
8. WEEK 10.11.-14.11. 2025	**8. LECTURE Dr. Kiliánová** **Liver and gallbladder disorders**. Hepatopathies, inflammatory (hepatitis), metabolic diseases (steatosis, cirrhosis), tumours, hepatic failure, portal hypertension. Jaundice, gallstones. Pancreatitis.	**8. PRACTICE assoc.prof. Kosírová** **Selected disorders of nutrient absorption.** • overweight, obesity, dyslipidaemia • Celiac disease, lactose intolerance, histamine intolerance • food allergy **Practical task:** Case studies. Special diets (hypertension, diabetes, obesity, gout). SCORE calculation.

9. WEEK 17.11.-21.11. 2025	**9. LECTURE assoc.prof. Rajtík** **Disorders of the gastrointestinal system.** Diseases of the oral cavity, oesophagus (reflux disease). Irritable bowel syndrome, sudden abdominal episodes, ileus, hernia, polyps, colorectal cancer.	**9. PRACTICE Dr. Bartošová** **Selected diseases of the endocrine system.** • hyperthyroidism, hypothyroidism • diabetes mellitus • Cushing's disease **Practical task:** Case studies.
10. WEEK 24.11.-28.11. 2025	**10. LECTURE Dr. Kráľová** **Disorders of the excretory system.** Disorders of renal circulation (nephrosclerosis, glomerulosclerosis). Nephrosis (acute and chronic). Renal insufficiency and renal failure. Tumours. Inflammatory diseases (pyelonephritis, glomerulonephritis). Diseases of the urinary tract (inflammation, cystitis, urolithiasis). Congenital disorders of the urinary tract. Nephrotic and nephritic syndrome. Disorders in the composition and production of urine.	**10. PRACTICE Dr. Dudík** **Selected diseases and symptoms of the digestive system.** • ulcer disease of the stomach, duodenum • Crohn's disease, ulcerative colitis, • dyspepsia, nausea, vomiting • diarrhoea, constipation **Practical task:** Case studies. Investigative techniques for GIT, examination of gastric juice.
11. WEEK 1.12.-5.12. 2025	**11. LECTURE assoc.prof. Rajtík** **Diseases of the reproductive system.** Tumours of the genital organs (prostate, testicular, cervical, ovarian, breast, endometriosis). Infectious (venereal) diseases (gonorrhoea, syphilis).	**11. PRACTICE assoc.prof. Rajtík** **Selected disorders of the sensory system.** • conjunctivitis • glaucoma, cataract • otitis • vertigo, Meniere's syndrome, kinetosis **Practical task:** Case studies.

12. WEEK **8.12.-12.12. 2025**	**12. LECTURE assoc.prof. Kosírová** **Pathology of the respiratory system.** Basic pathological processes in the lung parenchyma - inflammation, bronchitis, pneumonia. Disorders of respiratory regulation, ventilation, perfusion and diffusion. Obstructive and restrictive diseases - COPD, asthma, emphysema, atelectasis, pulmonary fibrosis. Respiratory insufficiency, ARDS, IRDS.	**12. PRACTICE Dr. Dudík** **Selected diseases of the upper respiratory tract.** • rhinitis, influenza • covid-19, SARS • tonsillitis, whooping cough **Practical task:** Case studies. Video demonstrations. Analysis of pathologically altered spirometric records. **2. PRE-TEST**
13. WEEK **15.12.-19.12. 2025**	**13. LECTURE assoc.prof. Rajtík** **Cancer.** Nomenclature, classification, division of true, false, predisposing factors, molecular concept of carcinogenesis, oncogenes, angiogenesis, sequelae, metastasis, cysts.	**13. PRACTICE assoc.prof. Kosírová** Summary of learning outcomes **CORRECTION, RESIT PRE-TESTS**.

In Bratislava, 13.9.2023

Assoc. Prof. PharmD. S. Kosírová, PhD.
guarantor of the subject

Assoc. Prof. PharmD. P. Křenek, PhD.
head of the department

TOPICS FOR HOME PREPARATION FOR THE PRACTICES ACCORDING TO THE TIMETABLE

Practice 1 and 2

Basic tissue characteristics. Epithelial tissue, connective tissue - structural and functional characteristics, localization, function, properties, common characteristics, differences. Fibroblasts, intercellular mass.

Practice 3

Structure and structure of blood vessels. Microcirculation and its specific features. Mechanisms of smooth muscle control of arterioles. Pressure relations in the vascular system.

Practice 4

Neuronal signalling and neurotransmitter systems in the CNS (synapse, neurotransmission, neurotransmitters, neuromodulators and receptors of the nervous system. Sleep, circadian rhythms, memory. Brain anatomy, brain envelope.

Practice 5

Structure and structure of blood vessels. Physiology of circulation. Blood circulation. Microcirculation and its specific features. Mechanisms of smooth muscle control of arterioles.

Practice 6

Anatomy and physiology of bone and skeletal muscle. Ligaments - fibroblasts, fibres, intercellular mass, (fibrous, reticular, jelly-like mesenchymal). Connective and supporting tissue - cartilage, bone tissue - structure, growth, formation and remodelling. Skeletal muscle - excitation-contraction junction. Neuromuscular disc.

Practice 7

Composition of blood, blood elements. Blood clotting, factors, haemostasis, haemocoagulation.

Practice 8

Nutrition, rational diet. Micronutrients and macronutrients, their function, representation in the diet. Absorption of nutrients.

Practice 9

Anatomy and physiology of the gastrointestinal system. Stomach, small intestine - structure, musculature, movement, digestion and absorption. HCl formation - its origin, control of formation, effects. Internal factor. Regulation of digestion.

Practice 10

Anatomy and physiology of the endocrine system. Pancreas. Thyroid gland, adrenal glands. Origin, function, release, mechanism of action and regulation of hormones (insulin, glucagon, thyroxine, triiodothyronine, cortisol).

Practice 11

Anatomy and physiology of the sense organs. Sight, hearing, balance sense.

Practice 12

Anatomy and physiology of the respiratory system. Structure, structure and function of the upper respiratory tract. Exchange of respiratory gases. Regulation of acid-base balance by the respiratory system.

Topics for self-study according to materials in Moodle

- Dermatitis (atopic, diaper, contact, allergic, solar). Epicutaneous tests.
- Allergies (allergic rhinitis, allergy to lepidopteran insects, food allergy).
- Childhood infectious diseases measles, smallpox, mumps, rubella. Vaccinations.
- Pathology of skin and infectious diseases. Bacterial, viral, mycotic and parasitic skin diseases: pyoderma, furunculitis, warts, herpes (simplex, zoster), smallpox, eczema, aphthae, acne. Nosocomial infections.
- Autoimmune diseases (psoriasis)
- Ageing