

PATHOLOGY

Master's studies

2nd year, winter semester 2026, compulsory course (2-0-2) 5 credits

Educational period: 21.09.2026 - 18.12.2026
Examination period: 04.01.2027 - 19.02.2027
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 6th and 12th week of semester.**
 - Passing grades will be entered in AIS in the last week of semester 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 21.9.-25.9. 2026	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 28.9.-2.10. 2026	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 5.10.-9.10. 2026	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 12.10.-16.10. 2026	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 19.10.-23.10. 2026	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. Local circulation disorders (arteries, veins, varices).	5. PRACTICE Dr. Kaločayová Selected disorders of the musculoskeletal system. • osteoporosis, osteoarthritis • rheumatoid arthritis, gout • myasthenia gravis, muscular dystrophy, rhabdomyolysis Practical Task: Case studies

6. WEEK 26.10.-30.10. 2026	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. Disorders of circulation in arteries,	6. 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
7. WEEK 2.11.-6.11. 2026	7. LECTURE assoc.prof. Rajtík Heart rhythm disorders. Cardiomyopathies. Endocarditis. Definition, type/form/clinical picture, etiopathogenesis, symptomatology, compensatory mechanisms, complications.	7. PRACTICE Dr. Bartošová Selected inflammatory, bacterial, viral, and autoimmune diseases with manifestations on the skin. • skin lesions, dermatitis • herpes, psoriasis, acne Practical task: Case studies.
8. WEEK 9.11.-13.11. 2026	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 & histamine intolerance • food allergy Practical task: Case studies. Special diets (hypertension, diabetes, obesity, gout). SCORE calculation.

9. WEEK 16.11.-20.11. 2026	9. LECTURE Dr. Bartošová 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. 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.
10. WEEK 23.11.-27.11. 2026	10. 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).	10. 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.
11. WEEK 30.11.-4.12. 2026	11. 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.	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 7.12.-11.12. 2026	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. Bartošová Selected diseases of the endocrine system. • hyperthyroidism, hypothyroidism • diabetes mellitus • Cushing's disease Practical task: Case studies. 2. PRE-TEST
13.WEEK 14.12.-18.12. 2026	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 Summary of learning outcomes CORRECTION, RESIT PRE-TESTS.

In Bratislava, 13.9.2026

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

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 6

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

Practice 7

Physiology of skin, skin Appendages, and the skin protective barrier

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

Practice 11

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

Practice 12

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).

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