

University of Pécs  
Medical School

GENERAL MEDICINE  
Major

STUDY PROGRAM  
2019/2020

Subjects of the  
Pre-clinical module  
(obligatory subjects and  
criterion requirements)

**5<sup>th</sup> semester**

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**6<sup>th</sup> semester**

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## OAP-BPR-T INTERNAL MEDICINE: PROPAEDEUTICS

Course director:

DR. ISTVÁN WITTMANN, professor

2nd Department of Internal Medicine and Nephrology Centre, istvan.wittmann@aok.pte.hu

4 credit ▪ semester exam ▪ Pre-clinical subject for the module ▪ autumn semester ▪ recommended semester: 5

Number of hours/semester: 28 lectures + 28 practices + 0 seminars = total of 56 hours

Course headcount limitations (min.-max.): 5 – 100 Prerequisites: see your [Recommended Curriculum](#)

**The subject can only be registered in case of a PASSED and valid health aptitude test!**

### Topic

Introducing into internal medicine is the first step toward clinical practice. The main aim of this topic to develop skills in history taking and physical examinations.

### Conditions for acceptance of the semester

Maximum of 25 % absence allowed

### Mid-term exams

### Making up for missed classes

The maximum permitted number of absences is 2 lectures and 3 practices. Each further missed practice has to be made up for during the semester period.

### Reading material

- *Obligatory literature*
- *Literature developed by the Department*
- *Notes*
- *Recommended literature*

Bickley L. S.: Bates's Guide to Physical Examination and History Taking, 9th edition, Lippincott Williams and Wilkins 2007.

### Lectures

- 1 Introduction. Interviewing and the case history taking. Techniques of questioning. Medical interview in special situations. Symptoms and approaches to them.  
Dr. Wittmann István
- 2 Introduction. Interviewing and the case history taking. Techniques of questioning. Medical interview in special situations. Symptoms and approaches to them.  
Dr. Wittmann István
- 3 The principles and techniques of physical examination. Recording information of interviews and physical examination.  
Dr. Wittmann István
- 4 The principles and techniques of physical examination. Recording information of interviews and physical examination.  
Dr. Wittmann István
- 5 History taking in chest and lung diseases.  
Dr. Nagy Lajos
- 6 History taking in chest and lung diseases.  
Dr. Nagy Lajos
- 7 Physical examination of the chest and lung. The related abnormalities.  
Dr. Nagy Lajos
- 8 Physical examination of the chest and lung. The related abnormalities.  
Dr. Nagy Lajos
- 9 Introduction to cardiology. Case history taking of the cardiovascular system. Epidemiology of cardiovascular diseases. Risk factor assessment for cardiovascular diseases.  
Dr. Faludi Réka
- 10 Introduction to cardiology. Case history taking of the cardiovascular system. Epidemiology of cardiovascular diseases. Risk factor assessment for cardiovascular diseases.  
Dr. Faludi Réka
- 11 Physical examination of the cardiovascular system. Blood pressure measurement, examination of peripheral vessels.  
Dr. Gaszner Balázs
- 12 Physical examination of the cardiovascular system. Blood pressure measurement, examination of peripheral vessels.  
Dr. Gaszner Balázs

- 13 History taking in abdominal diseases. Physical examination of the abdomen. Rectal digital examination. The related abnormalities.  
Dr. Fábián György
- 14 History taking in abdominal diseases. Physical examination of the abdomen. Rectal digital examination. The related abnormalities.  
Dr. Fábián György
- 15 Diagnosis of common abdominal syndromes. Examination of the liver, spleen and the bile duct system.  
Dr. Fábián György
- 16 Diagnosis of common abdominal syndromes. Examination of the liver, spleen and the bile duct system.  
Dr. Fábián György
- 17 History taking and physical examination in common haematological syndromes. Blood smear taking and examination.  
Dr. Bekő Viktória
- 18 History taking and physical examination in common haematological syndromes. Blood smear taking and examination.  
Dr. Bekő Viktória
- 19 Diagnosis of endocrine diseases, diabetes mellitus and metabolic disorders.  
Dr. Wittmann István
- 20 Diagnosis of endocrine diseases, diabetes mellitus and metabolic disorders.  
Dr. Wittmann István
- 21 History taking in renal diseases. Examination of the kidney and genitalia.  
Dr. Laczy Boglárka
- 22 History taking in renal diseases. Examination of the kidney and genitalia.  
Dr. Laczy Boglárka
- 23 History taking and physical examination in angiological diseases.  
Dr. Wittmann István
- 24 History taking and physical examination in angiological diseases.  
Dr. Wittmann István
- 25 Immunological diseases. Complaints and clinical signs.  
Dr. Kumánovics Gábor
- 26 Immunological diseases. Complaints and clinical signs.  
Dr. Kumánovics Gábor
- 27 Summary.  
Dr. Wittmann István
- 28 Summary.  
Dr. Wittmann István

#### Practices

- 1 Introduction. History taking. Techniques of questioning.
- 2 Introduction. History taking. Techniques of questioning.
- 3 The principles and techniques of physical examination. The medical record.
- 4 The principles and techniques of physical examination. The medical record.
- 5 Vital signs. Examination of skin. Examination of the head and neck.
- 6 Vital signs. Examination of skin. Examination of the head and neck.
- 7 Pulmonary history taking.
- 8 Pulmonary history taking.
- 9 Physical examination of the chest and lung.
- 10 Physical examination of the chest and lung.
- 11 Cardiovascular history taking. Epidemiology and risk factor assessment in cardiovascular diseases.
- 12 Cardiovascular history taking. Epidemiology and risk factor assessment in cardiovascular diseases.
- 13 Physical examination of the cardiovascular system. Blood pressure measurement.
- 14 Physical examination of the cardiovascular system. Blood pressure measurement.
- 15 History taking in angiology. Peripheral artery disease. Deep vein thrombosis. Examination of the peripheral vessels.
- 16 History taking in angiology. Peripheral artery disease. Deep vein thrombosis. Examination of the peripheral vessels.
- 17 Gastrointestinal history taking.
- 18 Gastrointestinal history taking.
- 19 Physical examination of the abdomen. Examination of the liver, spleen and the bileduct system. Rectal digital examination.
- 20 Physical examination of the abdomen. Examination of the liver, spleen and the bileduct system. Rectal digital examination.
- 21 Haematological history taking. Physical examination in hematological diseases. Bloodsmear taking and examination.
- 22 Haematological history taking. Physical examination in hematological diseases. Bloodsmear taking and examination.
- 23 History taking and physical examination in endocrine diseases. Leading symptoms of diabetes.

- 24 History taking and physical examination in endocrine diseases. Leading symptoms of diabetes.
- 25 History taking and physical examination in kidney diseases. Urinalysis.
- 26 History taking and physical examination in kidney diseases. Urinalysis.
- 27 History taking in immunological and rheumatological diseases. Examination of the muscles and joints.
- 28 History taking in immunological and rheumatological diseases. Examination of the muscles and joints.

#### Seminars

#### Exam topics/questions

The exam is at the bedside and focus on the skill of student about history taking and physical examinations.

Information – The following skills of the Booklet for Clinical Skills shall be accomplished in the framework of the subject

Internal Medicine history taking and physical examination, case history (inspection of the patient, examination of the nose, pharynx and the oral cavity, inspection of the mucous membranes, palpation of the salivary glands, palpation of the lymph nodes, inspection and palpation of the skin, examination of turgor and edema, examination of the thorax, examination of apical beat, percussion of cardiac boundaries, auscultation of the heart sounds, murmurs, palpation, percussion, auscultation of the abdomen, palpation of the liver and the spleen, rectal digital examination, palpation of thyroid gland, pectoral fremitus, examination of the pulse, lung boundaries, excursion of the diaphragm, auscultation, percussion of the lungs, measurement of blood pressure, palpation of the kidneys, measurement of somatometric data, assessment of genital developmental condition, assessment of psychological and social health condition)

#### Participants

Dr. Bekő Viktória (Y79LQ1), Dr. Csiky Botond (BLK53B), Dr. Kovács Tibor József (CMIKNF), Dr. Laczy Boglárka (E0GYMS), Dr. Molnár Gergő Attila (GH1COA), Dr. Sági Balázs (JU7193), Dr. Sebők Judit (GLM10L), Dr. Sütő Gábor (QLDFDD)

## OAP-KO1-T PATHOPHYSIOLOGY 1

Course director:

DR. MÁRTA BALASKÓ, associate professor  
Institute for Translational Medicine, marta.balasko@aok.pte.hu

5 credit ▪ semester exam ▪ Pre-clinical subject for the module ▪ autumn semester ▪ recommended semester: 5

Number of hours/semester: 42 lectures + 8 practices + 20 seminars = total of 70 hours

Course headcount limitations (min.-max.): 5 – 180 Prerequisites: see your [Recommended Curriculum](#)

### Topic

Pathophysiology-1 connects basic functional and clinical subjects. Together with other preclinical subjects, it deals mainly with etiology, time-course, clinical symptoms and possible pharmacological or other interventions related to abnormalities of the cardiovascular, respiratory, hematological and renal systems, as well as with disorders of salt/water and pH balance.

### Conditions for acceptance of the semester

Maximum of 15 % absence allowed

### Mid-term exams

A compulsory multiple choice midterm test is organized during the second half of the first semester. In case of absence or lower than 34% score, a 4th exam question is added to the semester exam. The Midterm Test can not be retaken.

### Making up for missed classes

Students can make up for their absence by participating at the seminar of another group on the same week. Students may be absent from 2 seminars (4 times 45 minutes).

### Reading material

- *Obligatory literature*
- *Literature developed by the Department*  
Koller Á.: 606 minimum-questions, PTE ÁOK, 2010  
M. Székely (ed.): Basic Concepts in Pathophysiology, ÁOK PTE, 2007  
Lecture slides will also be uploaded to Neptun.
- *Notes*  
M. Székely (ed.): Basic Concepts in Pathophysiology, ÁOK PTE, 2007
- *Recommended literature*  
S. Silbernagl, F. Lang: Color Atlas of Pathophysiology, Thieme Stuttgart - New York, 2000

### Lectures

- 1 Basic concepts of translational medicine.  
Dr. Hegyi Péter
- 2 Circulatory failures  
Dr. Székely Miklós
- 3 Heart failure: causes, forms  
Dr. Székely Miklós
- 4 Heart failure: clinical manifestations  
Dr. Székely Miklós
- 5 Hypertension: definition, forms  
Dr. Szekeres-Solymár Margit
- 6 Hypertension: causes, consequences  
Dr. Szekeres-Solymár Margit
- 7 Peripheral circulatory failure. Syncope  
Dr. Székely Miklós
- 8 Circulatory shock: forms, pathophysiology, hemodynamics  
Dr. Székely Miklós
- 9 Organ manifestations of circulatory shock  
Dr. Székely Miklós
- 10 Tissue ischemia, reperfusion  
Dr. Garai János
- 11 Pathophysiology of coronary circulation  
Dr. Garai János

- 12 Pathophysiology of pulmonary circulation  
Dr. Garai János
- 13 Characteristics of brain blood flow  
Dr. Garai János
- 14 Pathophysiology of brain blood flow  
Dr. Garai János
- 15 Abnormalities of renal and splanchnic blood flow  
Dr. Garai János
- 16 Disorders of the regulation of breathing  
Burzáné Dr. Pétervári Erika
- 17 Mechanics of respiration: abnormalities  
Dr. Balaskó Márta
- 18 Work of respiration and its disorders  
Dr. Balaskó Márta
- 19 Ventilation and its abnormalities  
Dr. Balaskó Márta
- 20 Disorders of diffusion  
Dr. Balaskó Márta
- 21 Pulmonary perfusion, V/Q mismatching  
Dr. Balaskó Márta
- 22 Disorders of oxygen transport  
Dr. Balaskó Márta
- 23 Hypoxia, respiratory failure  
Dr. Balaskó Márta
- 24 Mechanisms of dyspnea  
Dr. Balaskó Márta
- 25 Erythropoiesis. General pathophysiology of anemias  
Dr. Balaskó Márta
- 26 Deficiency anemias  
Dr. Balaskó Márta
- 27 Hemolytic anemias  
Dr. Balaskó Márta
- 28 Polycythemia, polyglobulia  
Dr. Balaskó Márta
- 29 Leukocyte dysfunctions  
Dr. Balaskó Márta
- 30 Disorders of hemostasis  
Dr. Balaskó Márta
- 31 Thrombosis. DIC  
Dr. Balaskó Márta
- 32 Excretory and non-excretory renal functions  
Dr. Garami András
- 33 Glomerular functions and their disorders  
Dr. Garami András
- 34 Tubular dysfunctions  
Dr. Garami András
- 35 Disorders of the amount and composition of urine  
Dr. Garami András
- 36 Failure of renal excretory function, uremia  
Dr. Garami András
- 37 Chronic renal failure, ESRF  
Dr. Garami András
- 38 Acute renal failure  
Dr. Garami András
- 39 Peripheral neuropathies. Pathophysiology of pain  
Dr. Garami András
- 40 Tissue damage, reactive responses, inflammation, lymphatic circulation  
Dr. Garai János

- 41 Trauma/sepsis: definitions, causes  
Dr. Garai János
- 42 Trauma/sepsis: pathophysiology  
Dr. Garai János

#### Practices

- 1 Methods of ECG recording
- 2 ECG recording and analysis
- 3 Analysis of pH-parameters I
- 4 Analysis of pH-parameters II
- 5 Metabolic/respiratory acidosis/alkalosis I
- 6 Metabolic/respiratory acidosis/alkalosis II
- 7 Tests of respiratory functions
- 8 Evaluation of lung function tests

#### Seminars

- 1 Place, connections of pathophysiology. Basic ideas in pathophysiology
- 2 Basics of ECG abnormalities, methods of analysis
- 3 Abnormalities of axis, rhythm and rate I
- 4 Abnormalities of axis, rhythm and rate II
- 5 Disorders of impulse formation I
- 6 Disorders of impulse formation II
- 7 Disorders of impulse conduction I
- 8 Disorders of impulse conduction II
- 9 Disorders of oxygen supply to the myocardium I
- 10 Disorders of oxygen supply to the myocardium II
- 11 Hypertrophy, complex ECG disorders
- 12 ECG signs of abnormalities of ionic balance
- 13 Analysis of case reports connected with disorders of the cardiovascular system
- 14 Analysis of case reports connected with disorders of the respiratory system
- 15 Metabolic/respiratory acidosis and alkalosis I
- 16 Metabolic/respiratory acidosis and alkalosis II
- 17 Pathophysiology of salt- and water-balance I
- 18 Pathophysiology of salt- and water-balance II
- 19 Disorders of volume regulation
- 20 Disorders of osmoregulation

#### Exam topics/questions

Basic concepts of pathophysiology  
Cardiovascular adaptation in health and disease.  
Distribution of cardiac output and its disorders in the young and the elderly.  
Causes and forms of heart failure.  
Forward failure symptoms (left- and right-sided) in heart failure.  
Backward failure symptoms (left- and right-sided) in heart failure.  
High output cardiac failure.  
Cardiomyopathies.  
Acute heart failure.  
Pathophysiology of the lymphatic circulation .  
Vasovagal syncope.  
Definition and classification of circulatory shock. Pathophysiology of development, phases and characteristics of microcirculation.  
Hypovolemic shock: causes and hemodynamics.  
Cardiogenic shock: causes and hemodynamics.  
Distributive shock: causes and hemodynamics.  
Organ manifestations of shock.  
Tissue hypoxia, ischemia, reperfusion and tissue metabolism.  
Pathogenesis of coronary insufficiency. Risk factors.  
Pathomechanism and consequences of acute myocardial infarction.  
Mechanisms and consequences of chronic ischemic heart disease.  
Regulation of cerebral circulation in health and disease.  
Cerebral hypoxia, ischemia, stroke.



Characteristics and disorders of splanchnic blood flow.  
Pulmonary circulation, pulmonary hypertension.  
General pathophysiology and classification of systemic hypertension - age and blood pressure.  
Role of the kidneys in the development of hypertension. Effects of hypertension on the kidneys.  
Hypertension and the adrenal gland.  
Primary hypertension: characteristics and etiological factors.  
Consequences of hypertension.  
Orthostatic hypotension in the young and the elderly.  
Active heterotopic abnormalities (premature beats).  
Passive heterotopy: causes, forms and consequences.  
Supraventricular and a-v junctional blocks.  
Forms and importance of intraventricular conduction abnormalities.  
Pre-excitation syndromes.  
Forms and consequences of paroxysmal tachycardia.  
Signs of chronic or acute overload in the ECG (hypertrophy, strain).  
Primary and secondary repolarization abnormalities in the ECG.  
ECG in acute myocardial infarction.  
Atrial or ventricular flutter, atrial or ventricular fibrillation.  
Principles/evaluation of respiratory function tests. Characteristics and parameters of abnormal breathing mechanics.  
Disorders of the control of breathing. Age-dependent changes. Sleep-apnea syndrome.  
The work of breathing. Abnormalities of elastic resistance, restrictive disorders.  
Alveolar hypoventilation: causes and consequences.  
Acute and chronic alveolar hyperventilation.  
Ventilation-perfusion mismatch (V/Q): causes and consequences.  
Disorders of alveolo-capillary diffusion. Hepatopulmonary syndrome.  
Disorders of oxygen transport (abnormal hemoglobin, CO-poisoning, methemoglobinemia).  
Forms and mechanisms of hypoxia. Ways of compensation - cyanosis.  
Causes and consequences of increased airway resistance - causes and consequences of chronic obstructive pulmonary disease (COPD) - emphysema.  
Partial or complete respiratory failure.  
Dyspnea.  
Forms, general pathophysiology and consequences of anemia.  
Aplastic anemia and anemias of complex etiology in disease states.  
Deficiency anemias.  
Hemolytic anemias.  
Polycythemias, polyglobulias.  
Bleeding abnormalities due to platelet or vascular factors.  
Congenital and acquired coagulopathies.  
Thrombosis: causes and consequences.  
Disseminated intravascular coagulation (DIC).  
Granulocytes in inflammatory processes.  
Pathophysiology of glomerular filtration.  
Disorders of tubular functions.  
Proteinuria.  
Hypothenuria, asthenuria, osmotic diuresis.  
Oliguria, polyuria. Renal functions in the elderly.  
Non-excretory kidney functions and their abnormalities.  
Chronic renal failure: causes, characteristics and progression.  
Metabolic disorders and organ dysfunctions in uremia.  
Uremic coma.  
Acute renal failure: occurrence, general features - extrarenal uremia. Prerenal azotemia. Postrenal failure.  
Renal circulation. Cardiorenal syndrome.  
Acute tubular nephropathy.  
Acute diffuse glomerulonephritis.  
Compensation of pH-abnormalities (plasma and intracellular buffers, respiration, kidney) and their disturbances.  
Metabolic acidosis: causes, compensation, consequences.  
Metabolic alkalosis: causes, compensation, consequences.  
Respiratory acidosis and alkalosis: causes, compensation, consequences.  
Disorders of potassium balance. Hypo- and hyperkalemia.

States of decreased extracellular volume, and their consequences.  
States of elevated extracellular volume: causes, mechanisms and consequences.  
Hyperosmolarity, hypertonicity. Forms, causes, consequences.  
Hypotonicity: pathogenesis and consequences.  
Tissue injury, inflammation, lymphatic circulation.  
The pathophysiology of pain.  
Definitions and causes of sepsis and trauma.

Oral exam. Occasionally, assorted questions from the „606 minimum-questions” booklet may be asked on the semester exam: from 5 minimum questions students have to give correct answers to at least 4, to be able to continue the oral exam. At the oral exam students take a card of 3 questions and they have to analyze 1 ECG record.

Information – The following skills of the Booklet for Clinical Skills shall be accomplished in the framework of the subject

#### Participants

Dr. Balaskó Márta (KVU1V2), Dr. Garai János (ZUFUFE), Dr. Garami András (JHG YAO), Dr. Hegyi Eszter (A3GCFK), Dr. Márta Katalin (GRO90N), Dr. Pécsi Dániel (P0YHU5), Dr. Szakács Zsolt (BMUR59), Dr. Szekeres-Solymár Margit (E6UVQB), Dr. Tinusz Benedek (S6U7G9)

## OAP-MO1-T MICROBIOLOGY 1

Course director:

DR. ISTVÁNNÉ BÁTAI (DR. MONIKA KERÉNYI), associate professor  
Department of Medical Microbiology and Immunology, kerenyi.monika@pte.hu

5 credit ▪ semester exam ▪ Pre-clinical subject for the module ▪ autumn semester ▪ recommended semester: 5

Number of hours/semester: 42 lectures + 28 practices + 0 seminars = total of 70 hours

Course headcount limitations (min.-max.): 1 – 200 Prerequisites: see your [Recommended Curriculum](#)

**The subject can only be registered in case of a PASSED and valid health aptitude test!**

### Topic

During introduction the subject and history of medical microbiology and its place in medicine is discussed. The morphology, physiology and genetics of microbes, as well as the methods of disinfection and the theoretical aspects of antimicrobial therapy are the subjects of lectures on general microbiology. The host-parasite interactions involved in the pathogenesis of various infections, as well as the mechanisms of host defense, the possibilities of immunoprophylaxis, the pathways of allergies, tolerance, autoimmunity, the basics of neuroimmunology and the immunology of pregnancy will be described. The first semester also includes the course on systematic virology dealing with infections of viral and prion etiology in details.

The objective the first semester is to provide solid knowledge and view to students preparing them to understand the the subsequent systematic bacteriology, mycology, parasitology and clinical microbiology courses as well as clinical subjects relating to infections.

### Conditions for acceptance of the semester

Maximum of 15 % absence allowed

### Mid-term exams

### Making up for missed classes

The Department insists on the active participation in all the practices, since necessary knowledge and skills to take and handle microbiological samples can only be mastered there. In order to have the grade book signed, the student missing any practicals is expected to make arrangements with groups other than his/her own to cover the subject of that particular practical.

### Reading material

#### - *Obligatory literature*

Dr. Patrick R. Murray, Dr. Ken S. Rosenthal, and Dr. Michael A. Pfaller (eds.): Medical Microbiology, 8th edition, Elsevier Saunders 2016 ISBN:9780323299565

#### - *Literature developed by the Department*

Lectures on the Neptun

#### - *Notes*

Department's website

#### - *Recommended literature*

Michael Barer, Will Irving (eds.): Medical Microbiology 19e, Elsevier Churchill Livingstone, 2018, ISBN: 9780702072000

Carroll KC, Butel JS, Morse SA, Mitzner T. Jawetz, Melnick, and Adelberg's: Medical Microbiology, 27th edition, Lange Medical Book, McGraw-Hill Education - Europe 2015, ISBN:9780071824989

F.H. Kayser, K.A. Bienz, J. Eckert, R.M. Zinkernagel: Medical Microbiology, Thieme Stuttgart 2005, ISBN: 3-13-131991-7

A.K. Abbas, A.H. Lichtman, S. Pillai: Cellular and Molecular Immunology, 7th edition, Elsevier Saunders, 2015, ISBN 978-1-43777-1528-6

Galdwinn M, Trattler W.: Clinical Microbiology Made Ridiculously Simple, 6th edition, MedMaster Inc. 2011, ISBN: 978-1-935660156

### Lectures

- 1 Introduction I.: The subject and history of microbiology, taxonomy  
Dr. Reuter Gábor
- 2 Introduction II.: Earth and human microbiome  
Dr. Reuter Gábor
- 3 Essential bacterial cell components,  
Dr. Emódy Levente
- 4 Accessorial bacterial cell components  
Dr. Emódy Levente
- 5 The physiology of bacteria. Nutrition types and growth of bacteria  
Dr. Kocsis Béla

- 6 Microbial genetics II  
Dr. Tigyí Zoltán
- 7 Microbial genetics II  
Dr. Tigyí Zoltán
- 8 Pathogenicity and virulence  
Dr. Emódy Levente
- 9 Endotoxin  
Dr. Kocsis Béla
- 10 Exotoxin  
Dr. Emódy Levente
- 11 Sterilization  
Dr. Bátaí Istvánné (Dr. Kerényi Mónika)
- 12 Disinfection  
Dr. Bátaí Istvánné (Dr. Kerényi Mónika)
- 13 Anti-microbial drugs general introduction  
Dr. Kocsis Béla
- 14 Chemotherapy: sulphonamides, quinolons, nitrofurans  
Dr. Kocsis Béla
- 15 Inhibitors of cell wall biosynthesis; penicillins, cephalosporins, glycopeptides, carbapenems  
Dr. Kocsis Béla
- 16 Inhibitors of protein synthesis; aminoglycosides, chloramphenicol, tetracyclines  
Dr. Kocsis Béla
- 17 Macrolides, lincomycin, clindamycin, polypeptides, polymyxin, methronidaz  
Dr. Kocsis Béla
- 18 Molecular mechanisms of antibiotic resistance  
Dr. Emódy Levente
- 19 Characteristics of viruses (basic concepts, chemical composition, structure, classification); viral replication  
Dr. Reuter Gábor
- 20 Pathogenesis of viral infections (transmission modes and types of infection, acute and chronic viral infections)  
Dr. Reuter Gábor
- 21 Adenoviruses (serotypes, diseases); parvoviruses (parvovirus B19, bocavirus, bufavirus, parvovirus 4); anelloviruses  
Dr. Reuter Gábor
- 22 Herpesviruses I (HHV1, HHV2; HHV6, HHV7, HHV8)  
Dr. Szereday László
- 23 Herpesviruses II (VZV/HHV3, EBV/HHV4, CMV/HHV5)  
Dr. Szereday László
- 24 Papillomaviruses (HPV); polyomaviruses (JC, BK,MC, WU, and KI); poxviruses; slow virus infections (SSPE, PML); prion and prion diseases (Kuru, CJD, vCJD, GSS, FFI, MSA)  
Dr. Reuter Gábor
- 25 Hepatitis viruses (HAV, HBV, HCV, HDV, HEV, HGV)  
Dr. Reuter Gábor
- 26 Picornaviruses (enteroviruses, cardiovirus, cosavirus, kobuvirus, parechovirus, salivirus)  
Dr. Reuter Gábor
- 27 Orthomyxoviruses (Influenza A, B,C, and D viruses)  
Dr. Szereday László
- 28 Paramyxoviruses: parainfluenza, mumps, morbilli, respiratory syntitial virus (RSV), human metapneumovirus (hMPV), Nipah and Hendra viruses  
Dr. Reuter Gábor
- 29 Coronaviruses (SARS, MERS and diseases); rubella virus (congenital rubella syndrome)  
Dr. Reuter Gábor
- 30 Viral gastroenteritis: rotaviruses, caliciviruses and astroviruses  
Dr. Reuter Gábor
- 31 Arenaviruses (LCM, Lassa, Junin, Machupo, Guanarito, Sabia, Lujo); Bunyaviruses (Hantaviruses, CCHF, Rift Valley, SFTS, Sandfly fever)  
Dr. Reuter Gábor
- 32 Filoviruses (Marburgvirus, Ebolavirus); Flaviviruses (tick-borne encephalitis, West-Nile virus, yellow fever, Dengue and Zika virus); Togaviruses (chikungunya); Rhabdoviruses (rabies)  
Dr. Reuter Gábor

- 33 HIV/AIDS and other human retroviruses (HTLV-I, HTLV-II)  
Dr. Reuter Gábor
- 34 Antiviral therapy  
Dr. Reuter Gábor
- 35 Defence mechanisms on the body surfaces, skin and mucosal immunity, lymphocyte homing  
Dr. Polgár Beáta
- 36 Defence against viruses and bacteria  
Dr. Polgár Beáta
- 37 Defence against fungi and parasites  
Dr. Polgár Beáta
- 38 Immunoprophylaxis, active and passive immunization, vaccines I.  
Dr. Szereday László
- 39 Immunoprophylaxis, active and passive immunization, vaccines II  
Dr. Szereday László
- 40 Hypersensitivity, autoimmunity  
Dr. Polgár Beáta
- 41 Immunological tolerance  
Dr. Szereday László
- 42 Probiotics, prebiotics - immunity  
Dr. Polgár Beáta

#### Practices

- 1 Introduction, safety regulations. The microscope, native and stained preparations
- 2 Introduction, safety regulations. The microscope, native and stained preparations
- 3 Introduction, safety regulations. The microscope, native and stained preparations
- 4 Introduction, safety regulations. The microscope, native and stained preparations
- 5 Cultivation of bacteria, media
- 6 Cultivation of bacteria, media
- 7 Cultivation of bacteria, media
- 8 Cultivation of bacteria, media
- 9 Biochemical reaction in the identification
- 10 Biochemical reaction in the identification
- 11 Biochemical reaction in the identification
- 12 Biochemical reaction in the identification
- 13 Antibiotic sensitivity tests, MIC, antibiotic concentration in body fluids
- 14 Antibiotic sensitivity tests, MIC, antibiotic concentration in body fluids
- 15 Antibiotic sensitivity tests, MIC, antibiotic concentration in body fluids
- 16 Antibiotic sensitivity tests, MIC, antibiotic concentration in body fluids
- 17 Serology I
- 18 Serology I
- 19 Serology I
- 20 Serology I
- 21 Serology II, Molecular diagnostics
- 22 Serology II, Molecular diagnostics
- 23 Serology II, Molecular diagnostics
- 24 Serology II, Molecular diagnostics
- 25 Diagnostic virology
- 26 Diagnostic virology
- 27 Diagnostic virology
- 28 Diagnostic virology

#### Seminars

#### Exam topics/questions

THE WRITTEN EXAM CONSISTS OF MULTIPLE CHOICE QUESTIONS covering 4 separate topics. A minimum score of each individual topic must be achieved for passing.

Information – The following skills of the Booklet for Clinical Skills shall be accomplished in the framework of the subject

Participants

Dr. Bártai Istvánné (Dr. Kerényi Mónika) (A6M8OA), Dr. Kocsis Béla (TDMDDX), Dr. Mestyán Gyula (DNCE8M), Dr. Polgár Beáta (T5D0ZX), Dr. Schneider György (Y295EC), Dr. Szereday László (QN9T0F), Dr. Tigyi Zoltán (IMRVFK)

## OAP-MT5-T BEHAVIOURAL SCIENCE 5 (MEDICAL PSYCHOLOGY)

Course director:

DR. JÁNOS KÁLLAI, professor

Department of Behavioural Sciences, janos.kallai@aok.pte.hu

2 credit ▪ final exam ▪ Pre-clinical subject for the module ▪ autumn semester ▪ recommended semester: 5

Number of hours/semester: 14 lectures + 14 practices + 0 seminars = total of 28 hours

Course headcount limitations (min.-max.): 1 – 160 Prerequisites: see your [Recommended Curriculum](#)

**The subject can only be registered in case of a PASSED and valid health aptitude test!**

### Topic

The course is an introduction to the psychological aspects of medicine, care, and doctor-patient relationship. Understanding the role of personality, the impact of communication and relationship will provide a more effective therapy and care in medical practice. Main issues: subject of medical psychology, its place in the sciences and medicine. Theories on personality and personality development, concept of mental health. Stress, anxiety, adjustment. Communication and its disorders in the doctor-patient relationship; empathy, interview. Psychology of doctor-patient relationship. Reactions to illness. Coping, risk factors, psychosomatics. Medical psychology in clinical disciplines. Death and dying, grief reactions. Health of the healers, prevention of burn out.

### Conditions for acceptance of the semester

According to the Code of Studies and Examinations.

### Mid-term exams

### Making up for missed classes

Additional practices and homework.

### Reading material

#### - *Obligatory literature*

Csabai, M., Molnar, P.: Health, Illness and Care. A Textbook of Medical Psychology, Springer Orvosi Kiadó, Budapest, 2000.

#### - *Literature developed by the Department*

Handout of lectures and practices, available on Neptun Meet Street.

#### - *Notes*

#### - *Recommended literature*

Kaptein, A., Weinman, J. (eds.): Health Psychology, BPS Blackwell Publishing, 2004.

John L. Coulehan and Marian R. Block: The Medical Interview, 5th edition, 2006.

Feldman, M. D., Christensen, J.F. (eds.): Behavioral Medicine: A Guide for Clinical Practice, Forth Edition, McGraw-Hill, 2014.

Ayers, S.; de Visser, R.: Psychology for Medicine, SAGE, 2011.

### Lectures

- 1 Introduction to medical psychology. Its place in the sciences and in the medicine  
Dr. Birkás Béla
- 2 Critical stages of personality development regarding health and illness  
Dr. Birkás Béla
- 3 Health protective and risk factors of personality.  
Dr. Varga József
- 4 Doctor-patient communication.  
Hartung István
- 5 Models of doctor-patient relationship  
Dr. Varga József
- 6 Stress, stress management, coping  
Dr. Tiringér István
- 7 Pain and pain management  
Gács Boróka
- 8 Psychosomatics  
Dr. Tiringér István
- 9 Psychoimmunology, psychooncology  
Dr. Tiringér István
- 10 Psychosocial factors in cardiovascular diseases  
Dr. Varga József

- 11 Case study approach in the medicine  
Dr. Kállai János
- 12 Death, dying, grief  
Dr. Varga József
- 13 Health of the healers. Prevention of burn out.  
Dr. Varga József
- 14 Overview, summary.  
Dr. Birkás Béla

#### Practices

- 1 Approaches of personality. Process and disorders of socialisation. Mental health.
- 2 Approaches of personality. Process and disorders of socialisation. Mental health.
- 3 Affective and cognitive functions of personality. Stress, frustration and their impact. Adjustment.
- 4 Affective and cognitive functions of personality. Stress, frustration and their impact. Adjustment.
- 5 Disorders of communication. Interview, supportive techniques, empathy.
- 6 Disorders of communication. Interview, supportive techniques, empathy.
- 7 Doctor-patient communication, first encounter, history taking.
- 8 Doctor-patient communication, first encounter, history taking.
- 9 Anxiety, its sources and symptoms. Psychological factors in somatic illness, psychosomatic diseases.
- 10 Anxiety, its sources and symptoms. Psychological factors in somatic illness, psychosomatic diseases.
- 11 Psychological reactions to illness. Dynamics, management. Cognitive and supportive techniques of behavioral change
- 12 Psychological reactions to illness. Dynamics, management. Cognitive and supportive techniques of behavioral change
- 13 Psychological aspects of fatal illness, grief, pathological grief reactions.
- 14 Psychological aspects of fatal illness, grief, pathological grief reactions.

#### Seminars

##### Exam topics/questions

Final exam:

A) Written test: it consists 60 questions. AND

B) Oral exam: a theoretical question and a problem based complex case study analysis. A patient's case history is presented as a question. The student should to explain the possible bio-psycho-social context of the case history and demonstrate the possible alternatives of the management of the given problems.

Grade construction:

The final grade is the average of the grades of written and oral exam parts.

Further details about the exam can be found at the Neptun.

Information – The following skills of the Booklet for Clinical Skills shall be accomplished in the framework of the subject

##### Participants

Dr. Tiringner István (MSUBAC), Dr. Varga József (Q1NPAT), Gács Boróka (WU93EU), Hartung István (N2UTC0)



## OAP-MUA-T BASIC SURGICAL TECHNIQUES

Course director:

DR. GÁBOR JANCSÓ, associate professor

Department of Surgical Research and Techniques, jancsogabor@hotmail.com

2 credit ▪ midsemester grade ▪ Pre-clinical subject for the module ▪ autumn semester ▪ recommended semester: 5

Number of hours/semester: 6 lectures + 22 practices + 0 seminars = total of 28 hours

Course headcount limitations (min.-max.): 5 – 200 Prerequisites: see your [Recommended Curriculum](#)

**The subject can only be registered in case of a PASSED and valid health aptitude test!**

### Topic

The aim of the subject is to practice the basic surgical techniques, to present hygienic approach, which attainments are indispensable for clinical doctors working in the manual field of medicine. This subject provides the basics about special behaviour in the operating theatre, preparation of the patient and surgical team before operation, surgical tools and instruments, wound management, laparoscopic instruments and techniques.

### Conditions for acceptance of the semester

According to the Code of Studies and Examinations.

### Mid-term exams

there is no mid-term examination

### Making up for missed classes

Attendance is obligatory at every practice. Because of the limited capacity of our operating theatre absence cannot be solved by joining another group. One missed practice can be repeated in the 11th week of the semester. The exact time will be on the website of the institute (<http://soki.aok.pte.hu>).

### Reading material

- *Obligatory literature*
- *Literature developed by the Department*  
<http://aok.pte.hu/hu/egyseg/oktatasianyagok/130>
- *Notes*
- *Recommended literature*

### Lectures

- 1 Presentation of the Department and the curriculum. The history of surgery.  
Dr. Jancsó Gábor
- 2 Demonstration of the operating room and technical background, sterilisation, disinfection.  
Dr. Takács Ildikó
- 3 Basic surgical tools and surgical materials, wound closure techniques.  
Dr. Hardi Péter
- 4 Classification and managements of wounds, principle of wound-healing, haemorrhage and bleeding control  
Dr. Koreny Tamás
- 5 The operation (acute, elective, patient preoperative management, surgical explorations)  
Dr. Nagy Tibor Aladár
- 6 Basics of laparoscopic surgery  
Dr. Juhász Árpád Imre

### Practices

- 1 The basic rules of the behavior in the operating theatre; scrubbing-gowning-gloving, preparation of the operation area (disinfection, isolation).
- 2 The basic rules of the behavior in the operating theatre; scrubbing-gowning-gloving, preparation of the operation area (disinfection, isolation).
- 3 Demonstration of the basic surgical tools, practicing their use.
- 4 Demonstration of the basic surgical tools, practicing their use.
- 5 Knot tying.
- 6 Knot tying.
- 7 Sutures and suture materials, suture removal.
- 8 Sutures and suture materials, suture removal.

- 9 Practicing of basic sutures on skill models.
- 10 Practicing of basic sutures on skill models.
- 11 Practicing of basic sutures on skill models.
- 12 Practicing of basic sutures on skill models.
- 13 Repetation of previous learned techniques.
- 14 Repetation of previous learned techniques
- 15 Basics of laparoscopic surgery: demonstration of laparoscopic surgical tools, training of eye-hand coordination.
- 16 Basics of laparoscopic surgery: demonstration of laparoscopic surgical tools, training of eye-hand coordination.
- 17 Laparoscopic training in boxtrainer.
- 18 Laparoscopic training in boxtrainer.
- 19 Laparoscopic training in boxtrainer.
- 20 Laparoscopic training in boxtrainer.
- 21 Practical exam, skill assessment.
- 22 Practical exam, skill assessment.

#### Seminars

##### Exam topics/questions

<http://aok.pte.hu/hu/egyseg/oktatasianyagok/130>

Information – The following skills of the Booklet for Clinical Skills shall be accomplished in the framework of the subject

#### Laparoscopic operation

Preoperative preparation, hand disinfection, preparation of the operative field, dressing up for operation, assisting

Surgical history taking and physical examination, preparation of a diagnostic and therapeutic plan, evaluation of test results, compilation of patient documentation

Wound evaluation, care and dressing of a wound

Wound treatment with surgical suture

#### Participants

dr. Bognár Laura (XVGSYL), Dr. Gasz Balázs Zoltán (BI3N05), Dr. Hardi Péter (AKE71H), Dr. Jancsó Gábor (V382Q9), Dr. Juhász Árpád Imre (G43NLK), Dr. Koreny Tamás (AK08QQ), Dr. Nagy Tibor Aladár (VREE09), Dr. Petrovics Laura (MNZPKC), Dr. Takács Ildikó (V6M8LJ)

## OAP-NEP-T BEHAVIORAL SCIENCE 4 (NEUROPSYCHOLOGY)

Course director:

DR. KÁZMÉR KARÁDI, associate professor  
Department of Behavioural Sciences, kazmer.karadi@aok.pte.hu

2 credit ▪ semester exam ▪ Pre-clinical subject for the module ▪ autumn semester ▪ recommended semester: 5

Number of hours/semester: 14 lectures + 0 practices + 14 seminars = total of 28 hours

Course headcount limitations (min.-max.): 1 – 300 Prerequisites: see your [Recommended Curriculum](#)

**The subject can only be registered in case of a PASSED and valid health aptitude test!**

### Topic

Neuropsychology curriculum aims to demonstrate the behavioral, mental and psychological effect and consequences of central nervous system lesion, dysfunctions and diseases. Prior to dysfunctions, the semester teaches and demonstrates psychophysiological and neurobiological mechanisms of perception, attention, memory, language, motivation, emotion, social and other behavioral phenomena related to the healthy, normal brain and CNS. Client and patient case studies will be demonstrated and analysed about dysfunctions and illnesses, thereby providing important and indispensable contribution and preparation for later neurological, psychiatric, neurosurgical studies, as well as for behavioral and psychosomatic medicine.

### Conditions for acceptance of the semester

Rules of education.

### Mid-term exams

The semester examination will be oral. Attendance of the lectures and seminars is mandatory and essential to complete the preparation. The recommended books contain 60% of the required material.

### Making up for missed classes

Absences must be validated and certified. Subsequently absentees must present actively a contribution that they prepared for and acquired the missed parts of the curriculum material.

### Reading material

- *Obligatory literature*
- *Literature developed by the Department*  
Syllabi on the Neptun.
- *Notes*
- *Recommended literature*  
J. Sterling: *Introducing Neuropsychology*, Psychology Press, 2002  
B. Kolb, I.Q. Whishaw: *Fundamentals of Human Neuropsychology*, 3rd or any later edition  
J. R. Hodges: *Cognitive Assessment for Clinicians*, Oxford University Press, 1996 (paperback)

### Lectures

- 1 Introduction to neuropsychology: clinical background of neuropsychological disorders  
Dr. Karádi Kázmér
- 2 The neuropsychology of visual perception  
Dr. Csathó Árpád István
- 3 Normal and pathological attentional processes and their neuropsychology  
Dr. Csathó Árpád István
- 4 The neuropsychology of developing brain  
Dr. Csathó Árpád István
- 5 The neuropsychology of memory  
Dr. Karádi Kázmér
- 6 The neuropsychology of dementias  
Dr. Karádi Kázmér
- 7 Neuropsychology of Parkinson's disease.  
Dr. Karádi Kázmér
- 8 Neuropsychology of Internal medicine  
Dr. Csathó Árpád István
- 9 Normal and pathological language, neuropsychology of their disorders  
Dr. Karádi Kázmér
- 10 Neuropsychology of human emotions  
Dr. Feldmann Ádám

- 11 The neuropsychology of consciousness  
Dr. Feldmann Ádám
- 12 Neuropsychology of depression  
Dr. Feldmann Ádám
- 13 Neuropsychology of schizophrenia  
Dr. Feldmann Ádám
- 14 Neuropsychology of higher cognitive functions  
Dr. Kállai János

#### Practices

#### Seminars

- 1 The concept of neuropsychology. Research and practical methods of psychology.
- 2 The concept of neuropsychology. Research and practical methods of psychology.
- 3 Phenomena of normal and pathological perception. Agnosias.
- 4 Phenomena of normal and pathological perception. Agnosias.
- 5 Neuropsychology of attention.
- 6 Neuropsychology of attention.
- 7 Neuropsychology of memory and memory disturbances.
- 8 Neuropsychology of memory and memory disturbances.
- 9 Neuropsychology of aphasia.
- 10 Neuropsychology of aphasia.
- 11 Neuropsychology of emotions.
- 12 Neuropsychology of emotions.
- 13 Neuropsychology of higher cognitive and social behaviours.
- 14 Neuropsychology of higher cognitive and social behaviours.

#### Exam topics/questions

1. Clinical background of neuropsychology: neuropsychology of Traumatic Brain Injury
2. Neuropsychological background of visual perception.
3. Apperceptive, associative and other agnosias.
4. Comparison of lesion of dorsal and ventral visual stream (case of DF and VK).
5. Neural background of the attention and its neuropsychological roles.
6. Neuropsychology of spatial hemineglect and Bálint syndrome.
7. Models of language information processing.
8. Main types of aphasia (Wernicke, Broca, Transcortical).
9. Basic theories of emotions.
10. Neural background of emotions.
11. Neuropsychology of Alzheimer's disease.
12. Neuropsychology of Parkinson's disease.
13. Neuropsychology of Autism.
14. Neuropsychology of ADHD.
15. Neuropsychological background of internal medicine.
16. Kinds of memory: sensory, short-term and long-term memory.
17. Bilateral medial temporal lobectomy and the memory: case of H.M. patient.
18. Neural background of working memory: symptoms of executive dysfunction.
19. Neuropsychology of depression
20. Neuropsychology of schizophrenia

Information – The following skills of the Booklet for Clinical Skills shall be accomplished in the framework of the subject

#### Participants

Dr. Csathó Árpád István (D7HZFF), Dr. Feldmann Ádám (GLNQKN), Dr. Karádi Kázmér (IAU80J)

## OAP-PA1-T PATHOLOGY 1 - GENERAL PATHOLOGY

Course director:

DR. BÉLA KAJTÁR, assistant professor  
Department of Pathology, belakajtar@yahoo.com

8 credit ▪ semester exam ▪ Pre-clinical subject for the module ▪ autumn semester ▪ recommended semester: 5

Number of hours/semester: 56 lectures + 28 practices + 28 seminars = total of 112 hours

Course headcount limitations (min.-max.): 5 – 999 Prerequisites: see your [Recommended Curriculum](#)

**The subject can only be registered in case of a PASSED and valid health aptitude test!**

### Topic

Basic pathological cellular responses underlying the various disease processes are taught during this course. These are discussed in the following chapters: cell death, degeneration, intra- and extracellular accumulation, growth disturbances, acute and chronic inflammatory changes, disorders of circulation, genetic disorders, diseases of immunity and neoplasia (general oncology). The most important and frequent diseases in the various chapters are going to be discussed in detail in order to provide students with comprehensive knowledge to understand autopsy practices as soon as possible. Cardiovascular pathology and pathology of the respiratory tract are two chapters of specific pathology that are also discussed during the course.

The driving principle behind this course is to have the students understand the disease concepts as the unity of macroscopy, microscopy, clinical symptoms and laboratory changes; factors that shape the clinicopathological thinking about diseases.

The main educational task of the subject:

The general pathology course will form the very basis for the systemic / organ pathology as well as the subsequent clinical studies by teaching the etiology, pathogenesis and pathomechanism together with the gross morphological and microscopical changes of the various diseases. During this activity the principal and methodology of the diagnostic pathology will be covered.

### Conditions for acceptance of the semester

Absences exceeding 15% of each the histopathology and autopsy practical classes (two absences are allowed of each) in either semester will result in not signing the gradebook. Maximum absence: two (2x45 min.) Histology and two (2x45min.) Autopsy practises.

### Mid-term exams

There will be no interim tests or exams during the course. One macropreparation, one histological preparation and a theoretical question will be given to the students at the examination by the end of the first semester.

### Making up for missed classes

Each missed seminar has to be made up for with another group in the same week.

### Reading material

#### - *Obligatory literature*

Reading material

V. Kumar: Robbins Basic Pathology, 9th edition, Saunders Company, 2012

#### - *Literature developed by the Department*

Lecture handouts are available on the webpage of the department.

#### - *Notes*

#### - *Recommended literature*

### Lectures

- 1 The objectives of pathology. Autopsy and surgical pathology. Pathology as a subject.  
Dr. Tornóczki Tamás
- 2 Postmortal changes. Cell injury and cell death. Causes of cell injury. Necrosis. Ultrastructural, light microscopical and gross changes  
Dr. Tornóczki Tamás
- 3 Patterns of necrosis: coagulation and liquefactive necrosis. Organ examples.  
Dr. Tornóczki Tamás
- 4 Clinicopathology of AMI  
Dr. Tornóczki Tamás
- 5 Caseous necrosis and adiponecrosis. Apoptosis: morphology, pathomechanism.  
Dr. Tornóczki Tamás
- 6 Degeneration and accumulation I  
Dr. Vida Livia
- 7 Degeneration and accumulation II  
Dr. Vida Livia

- 8 Degeneration and accumulation III  
Dr. Vida Livia
- 9 Degeneration and accumulation IV  
Dr. Vida Livia
- 10 Degeneration and accumulation V  
Dr. Vida Livia
- 11 Exogenous and endogenous pigments I  
Dr. Vida Livia
- 12 Exogenous and endogenous pigments II  
Dr. Vida Livia
- 13 Calcification and lithiasis  
Dr. Vida Livia
- 14 Classification of cells according to the mitotic capacity  
Dr. Kereskai László
- 15 Progressive changes I: hyperplasia. Prostatic hyperplasia. Glandular cystic hyperplasia of the endometrium  
Dr. Kereskai László
- 16 Progressive changes II: hypertrophy. Left and right ventricular hypertrophy and their hemodynamic significance  
Dr. Kereskai László
- 17 Edema  
Dr. Kajtár Béla
- 18 Hyperemia, congestio  
Dr. Kajtár Béla
- 19 Haemorrhages  
Dr. Kajtár Béla
- 20 Thrombosis and embolisation  
Dr. Kajtár Béla
- 21 Hypertension  
Dr. Kajtár Béla
- 22 Shock  
Dr. Kajtár Béla
- 23 Definition of acute inflammation, cellular and vascular reactions  
Dr. Kajtár Béla
- 24 Mediators of acute inflammation  
Dr. Kajtár Béla
- 25 Resolution of acute inflammation, reparation  
Dr. Kajtár Béla
- 26 Clinicopathological forms of acute inflammation Kajtár Béla Dr.  
Dr. Kajtár Béla
- 27 Chronic inflammation Kajtár Béla Dr.  
Dr. Kajtár Béla
- 28 Granuloma, granulomatous inflammation Kajtár Béla Dr.  
Dr. Kajtár Béla
- 29 Tuberculosis Kajtár Béla Dr.  
Dr. Kajtár Béla
- 30 Type I-IV. hypersensitivities and related disorders  
Dr. Kereskai László
- 31 Transplantation immunity  
Dr. Kereskai László
- 32 Pathogenesis of autoimmune diseases  
Dr. Kereskai László
- 33 Systemic lupus erythematoses (SLE)  
Dr. Kereskai László
- 34 Acquired immunodeficiency syndrome (AIDS)  
Dr. Kereskai László
- 35 Benign and malignant behaviour of tumours. Terminology (nomenclature) of neoplasms. Definition of metaplasia, dysplasia and their relation to neoplasia. Organ examples. Hamartoma and choristoma.  
Dr. Tornóczki Tamás
- 36 General characteristics of benign and malignant tumours. Anaplasia. Rate of tumour cell growth. Local spread and metastasis of malignant neoplasms. Types of metastases. Epidemiology of tumors. Incidence and mortality. Changes in cancer related death.

- Dr. Tornóczki Tamás
- 37 Oncogenes, protooncogenes, oncoproteins. Growth factor and growth factor receptor oncogenes (RET, KIT, PDGFR). Overexpression of normal growth factor receptors (ERBB1, ERBB2). Organ examples.  
Dr. Tornóczki Tamás
- 38 Oncogenes and oncoproteins in signal transduction: RAS and RASsignal proteins. Examples for oncogene with nonreceptor tyrosine kinase function.  
Dr. Tornóczki Tamás
- 39 The myc oncogene. Types and their changes and role in tumours (cmyc, nmyc). Cell cycle regulators: p16 gene.  
Dr. Tornóczki Tamás
- 40 Tumour suppressor genes: RB and p53. Their role in tumorigenesis. Organ examples.  
Dr. Tornóczki Tamás
- 41 Tumour suppressor genes: NF1, NF2, VHL, WT1 and WT2. Related syndromes.  
Dr. Tornóczki Tamás
- 42 Chemical and radiation cancerogenesis. The multistep carcinogenesis of colorectal adenocarcinoma.  
Dr. Tornóczki Tamás
- 43 Microbial carcinogenesis: RNA and DNA viruses. Helicobacter pylori.  
Dr. Tornóczki Tamás
- 44 Clinical aspects of neoplasia. Paraneoplastic syndromes, tumour markers. Grading and staging. Laboratory diagnosis of cancer.  
Dr. Tornóczki Tamás
- 45 Ischemic heart diseases, sudden cardiac death, angina pectoris, chronic ischemic heart disease  
Dr. Tornóczki Tamás
- 46 Pathology of heart valves, myocarditides  
Dr. Tornóczki Tamás
- 47 Cardiomyopathies, tumours of the heart and pericardial disorders  
Dr. Tornóczki Tamás
- 48 Congenital heart diseases  
Dr. Tornóczki Tamás
- 49 Vasculitides. Vascular tumours. Aneurysms.  
Dr. Tornóczki Tamás
- 50 Pathology of upper airways  
Dr. Smuk Gábor
- 51 Congenital anomalies of the lung, pulmonary edema, atelectasis, acute lung injury  
Dr. Smuk Gábor
- 52 Lower airway infections  
Dr. Smuk Gábor
- 53 Chronic obstructive lung diseases  
Dr. Smuk Gábor
- 54 Chronic restrictive lung diseases  
Dr. Smuk Gábor
- 55 Tumours of the lung  
Dr. Smuk Gábor
- 56 Pleural and mediastinal disorders  
Dr. Smuk Gábor

#### Practices

- 1-28 One autopsy case per week, with detailed clinicopathological discussion

#### Seminars

- 1 Week 1: Introduction, postmortal changes -  
Preparations: Postmortem emphysema of the liver;  
Slides: Normal and postmortal pancreas
- 2 Week 1: Introduction, postmortal changes -  
Preparations: Postmortem emphysema of the liver;  
Slides: Normal and postmortal pancreas
- 3 Week 2: Necrosis 1 -  
Preparations: Anaemic infarct of the heart, Anaemic infarct of the spleen and splenomegaly, Haemorrhagic infarct of the small intestine;

- Slides: Apoptosis in a reactive lymph node (follicular hyperplasia), Recent infarct of the heart, Hemorrhagic infarct of the lung, Encephalomalacia alba
- 4 Week 2: Necrosis 1 -  
 Preparations: Anaemic infarct of the heart, Anaemic infarct of the spleen and splenomegaly, Haemorrhagic infarct of the small intestine;  
 Slides: Apoptosis in a reactive lymph node (follicular hyperplasia), Recent infarct of the heart, Hemorrhagic infarct of the lung, Encephalomalacia alba
- 5 Week 3: Necrosis 2, Degeneration -  
 Preparations: Phthisis renalis (caseation), Gangraena sicca of the toes, Cerebral abscess, Acute pancreatitis with adiponecrosis, Steatosis hepatis, Aortic atherosclerosis with aneurysm;  
 Slides: Acute pancreatitis - adiponecrosis, Parenchymal degeneration in kidney, Steatosis hepatis
- 6 Week 3: Necrosis 2, Degeneration -  
 Preparations: Phthisis renalis (caseation), Gangraena sicca of the toes, Cerebral abscess, Acute pancreatitis with adiponecrosis, Steatosis hepatis, Aortic atherosclerosis with aneurysm;  
 Slides: Acute pancreatitis - adiponecrosis, Parenchymal degeneration in kidney, Steatosis hepatis
- 7 Week 4: Accumulation, lithiasis -  
 Preparations: Haemochromatosis, Systemic amyloidosis, Cholelithiasis, chronic cholecystitis and empyema, Table of frequent bilestones, Nodular calcified aortic stenosis;  
 Slides: Brown induration of the lung, Haemosiderosis of liver, Anthracosis of lymph node, Amyloidosis of the liver, Calcification in breast cancer (Kossa reaction), Gauchers disease
- 8 Week 4: Accumulation, lithiasis -  
 Preparations: Haemochromatosis, Systemic amyloidosis, Cholelithiasis, chronic cholecystitis and empyema, Table of frequent bilestones, Nodular calcified aortic stenosis;  
 Slides: Brown induration of the lung, Haemosiderosis of liver, Anthracosis of lymph node, Amyloidosis of the liver, Calcification in breast cancer (Kossa reaction), Gauchers disease
- 9 Week 5: Growth abnormalities -  
 Preparations: Cerebral atrophy, Concentric hypertrophy of the left ventricle of the heart, Dilatative hypertrophy of the left ventricle of the heart, Chronic cor pulmonale, Prostatic hyperplasia;  
 Slides: Normal and hypertrophic cardiac muscle, Prostatic hyperplasia, Glandular cystic hyperplasia of the endometrium
- 10 Week 5: Growth abnormalities -  
 Preparations: Cerebral atrophy, Concentric hypertrophy of the left ventricle of the heart, Dilatative hypertrophy of the left ventricle of the heart, Chronic cor pulmonale, Prostatic hyperplasia;  
 Slides: Normal and hypertrophic cardiac muscle, Prostatic hyperplasia, Glandular cystic hyperplasia of the endometrium
- 11 Week 6: Pathology of circulation -  
 Preparations: Cerebral apoplexy, Cerebral purpura, Abdominal aortic aneurysm - parietal thrombosis, Left atrial „ball” thrombus;  
 Slides: Pulmonary edema, Thrombus and postmortem blood clot, DIC (fibrinthrombi in kidney) (fibrin stain), Central hemorrhagic necrosis
- 12 Week 6: Pathology of circulation -  
 Preparations: Cerebral apoplexy, Cerebral purpura, Abdominal aortic aneurysm - parietal thrombosis, Left atrial „ball” thrombus;  
 Slides: Pulmonary edema, Thrombus and postmortem blood clot, DIC (fibrinthrombi in kidney) (fibrin stain), Central hemorrhagic necrosis
- 13 Week 7: Acute inflammation -  
 Preparations: Fibrinous pericarditis - cor villosum, Pseudomembranous colitis, Lobar pneumonia, Bronchopneumonia, Purulent meningitis, Pulmonary abscess;  
 Slides: Fibrinous pericarditis - cor villosum, Pseudomembranous colitis, Bronchopneumonia, Lobar pneumonia, Purulent meningitis, Acute appendicitis
- 14 Week 7: Acute inflammation -  
 Preparations: Fibrinous pericarditis - cor villosum, Pseudomembranous colitis, Lobar pneumonia, Bronchopneumonia, Purulent meningitis, Pulmonary abscess;



- Slides: Fibrinous pericarditis - cor villosum, Pseudomembranous colitis, Bronchopneumonia, Lobar pneumonia, Purulent meningitis, Acute appendicitis
- 15 Week 8: Chronic inflammation -  
Preparations: Chronic cholecystitis, Sarcoidosis - BHL, Miliary tuberculosis of the lungs, Phtisis cavernosa;  
Slides: Chronic cholecystitis, Sarcoidosis in lymph node, Foreign body granuloma, Miliary tuberculosis of the lung, Myocardial infarct with organisation
- 16 Week 8: Chronic inflammation -  
Preparations: Chronic cholecystitis, Sarcoidosis - BHL, Miliary tuberculosis of the lungs, Phtisis cavernosa;  
Slides: Chronic cholecystitis, Sarcoidosis in lymph node, Foreign body granuloma, Miliary tuberculosis of the lung, Myocardial infarct with organisation
- 17 Week 9: Oncopathology 1 -  
Slides: Squamous metaplasia in bronchus, Cervical intraepithelial neoplasia CIN III, Polypus adenomatosus coli (p53), Squamous carcinoma of lower lip, Adenocarcinoma metastasis in lymph node, Anaplastic carcinoma (brain metastasis)
- 18 Week 9: Oncopathology 1 -  
Slides: Squamous metaplasia in bronchus, Cervical intraepithelial neoplasia CIN III, Polypus adenomatosus coli (p53), Squamous carcinoma of lower lip, Adenocarcinoma metastasis in lymph node, Anaplastic carcinoma (brain metastasis)
- 19 Week 10: Oncopathology 2 -  
Preparations: Fibroadenoma of breast, Carcinoma of the breast, Leiomyoma of uterus, Cysta dermoides, Rectal polyp, Rectal adenocarcinoma, Pulmonary metastases, Lymphangitis carcinomatosa
- 20 Week 10: Oncopathology 2 -  
Preparations: Fibroadenoma of breast, Carcinoma of the breast, Leiomyoma of uterus, Cysta dermoides, Rectal polyp, Rectal adenocarcinoma, Pulmonary metastases, Lymphangitis carcinomatosa
- 21 Week 11: Cardiovascular pathology 1 -  
Preparations: Aneurysma thrombotisatum ventriculi sinistri cordis, Endocarditis septica, Endocarditis chronica - mitral stenosis, Loeffler's endocarditis, Congestive cardiomyopathy, Hypertrophic cardiomyopathy;  
Slides: Viral myocarditis, Hypertrophic cardiomyopathy
- 22 Week 11: Cardiovascular pathology 1 -  
Preparations: Aneurysma thrombotisatum ventriculi sinistri cordis, Endocarditis septica, Endocarditis chronica - mitral stenosis, Loeffler's endocarditis, Congestive cardiomyopathy, Hypertrophic cardiomyopathy;  
Slides: Viral myocarditis, Hypertrophic cardiomyopathy
- 23 Week 12: Cardiovascular pathology 2 -  
Preparations: Foramen ovale late apertum, Rogers disease, Ductus Botalli persistens, Dissecting aortal aneurysm, Luetic aortitis, Cavernous hemangioma of the liver;  
Slides: Arteritis temporalis, Haemangioma cavernosum hepatis, Kaposi sarcoma
- 24 Week 12: Cardiovascular pathology 2 -  
Preparations: Foramen ovale late apertum, Rogers disease, Ductus Botalli persistens, Dissecting aortal aneurysm, Luetic aortitis, Cavernous hemangioma of the liver;  
Slides: Arteritis temporalis, Haemangioma cavernosum hepatis, Kaposi sarcoma
- 25 Week 13: Pathology of the respiratory tract 1 -  
Preparations: Supraglottic carcinoma of the larynx, NRDS, Bronchiectasis (foreign body in the bronchus);  
Slides: NRDS, Aspergillois of the lung, CMV lung, Bronchial asthma
- 26 Week 13: Pathology of the respiratory tract 1 -  
Preparations: Supraglottic carcinoma of the larynx, NRDS, Bronchiectasis (foreign body in the bronchus);  
Slides: NRDS, Aspergillois of the lung, CMV lung, Bronchial asthma
- 27 Week 14: Pathology of the respiratory tract 2 -  
Preparations: Sliciosis, Bronchial carcinoma, Mesothelioma;

Slides: Silicosis, Microcellular carcinoma of the lung, Planocellular carcinoma of the lung, Lepidic adenocarcinoma

28 Week 14: Pathology of the respiratory tract 2 -

Preparations: Silicosis, Bronchial carcinoma, Mesothelioma;

Slides: Silicosis, Microcellular carcinoma of the lung, Planocellular carcinoma of the lung, Lepidic adenocarcinoma

#### Exam topics/questions

#### PREPARATIONS

##### I. POSTMORTEM CHANGES, NECROSIS

1. Postmortem emphysema of the liver
2. Anaemic infarct of the heart
3. Anaemic infarct of the spleen and splenomegaly
4. Haemorrhagic infarct of the small intestine
5. Phthisis renalis (caseation)
6. Gangraena sicca of the toes
7. Cerebral abscess
8. Acute pancreatitis with adiponecrosis

##### II. DEGENERATION, ACCUMULATION, PIGMENTS, CALCIFICATION

9. Steatosis hepatis
10. Aortic atherosclerosis with aneurysm
11. Haemochromatosis
12. Systemic amyloidosis
13. Cholelithiasis, chronic cholecystitis and empyema
14. Table of frequent bilestones
15. Nodular calcified aortic stenosis

##### III. GROWTH DISTURBANCES

16. Cerebral atrophy
17. Concentric hypertrophy of the left ventricle of the heart
18. Dilatative hypertrophy of the left ventricle of the heart
19. Chronic cor pulmonale
20. Prostatic hyperplasia

##### IV. PATHOLOGY OF CIRCULATION

21. Cerebral apoplexy
22. Abdominal aortic aneurysm, parietal thrombosis
23. Left atrial ball thrombus

##### V. INFLAMMATIONS

24. Fibrinous pericarditis - cor villosum
25. Pseudomembranous colitis
26. Lobar pneumonia
27. Bronchopneumonia
28. Purulent meningitis
29. Pulmonary abscess
30. Chronic cholecystitis
31. Sarcoidosis - BHL
32. Miliary tuberculosis of the lungs
33. Phthisis cavernosa

##### VI. ONCOPATHOLOGY

34. Fibroadenoma of breast
35. Carcinoma of the breast
36. Leiomyoma of uterus
37. Cysta dermoides
38. Rectal polyp
39. Rectal adenocarcinoma

40. Pulmonary metastases

VII. CARDIOVASCULAR PATHOLOGY

41. Aneurysma thrombotisatum ventriculi sinistri cordis
42. Endocarditis septica
43. Endocarditis chronica - mitral stenosis
44. Löffler's endocarditis
45. Congestive cardiomyopathy
46. Hypertrophic cardiomyopathy
47. Foramen ovale late apertum
48. Ventricular septal defect
49. Ductus Botalli persistens
50. Aortic dissection
51. Luetic aortitis
52. Cavernous hemangioma of the liver

VIII. PATHOLOGY OF THE RESPIRATORY TRACT

53. Supraglottic carcinoma of the larynx
54. NRDS
55. Bronchiectasis (foreign body in the bronchus)
56. Silicosis
57. Bronchial carcinoma
58. Mesothelioma

SLIDES

I. POSTMORTEM CHANGES, NECROSIS

1. Normal and postmortal pancreas
2. Apoptosis in a reactive lymph node (follicular hyperplasia)
3. Recent infarct of the heart
4. Hemorrhagic infarct of the lung
5. Encephalomalacia alba
6. Acute pancreatitis, adiponecrosis

II. DEGENERATION, ACCUMULATION, PIGMENTS, CALCIFICATION

7. Parenchymal degeneration in kidney
8. Steatosis hepatis
9. Brown induration of the lung
10. Hemosiderosis of liver
11. Anthracosis of lymph node
12. Amyloidosis of the liver
13. Calcification in breast cancer (Kossa reaction)
14. Gaucher's disease

III. GROWTH DISTURBANCES

15. Normal and hypertrophic cardiac muscle
16. Prostatic hyperplasia
17. Glandular cystic hyperplasia of the endometrium

IV. PATHOLOGY OF CIRCULATION

18. Pulmonary edema
19. Thrombus and postmortem blood clot
20. DIC (fibrinthrombi in kidney) (fibrin stain)
21. Central hemorrhagic necrosis

## V. INFLAMMATIONS

22. Acute pericarditis
23. Pseudomembranous colitis
24. Bronchopneumonia
25. Lobar pneumonia
26. Purulent meningitis
27. Acute appendicitis
28. Chronic cholecystitis
29. Sarcoidosis in lymph node
30. Foreign body granuloma
31. Miliary tuberculosis of the lung
32. Myocardial infarct with organisation

## VI. ONCOPATHOLOGY

33. Squamous metaplasia in bronchus
34. Cervical intraepithelial neoplasia CIN III
35. Polypus adenomatosus coli (p53)
36. Squamous carcinoma of lower lip
37. Adenocarcinoma metastasis in lymph node
38. Anaplastic carcinoma (brain metastasis)

## VII. CARDIOVASCULAR PATHOLOGY

39. Viral myocarditis
40. Hypertrophic cardiomyopathy
41. Arteritis temporalis
42. Hemangioma cavernosum hepatis
43. Kaposi sarcoma

## VIII. PATHOLOGY OF RESPIRATORY TRACT

44. NRDS
45. Aspergillosis of the lung
46. CMV lung
47. Bronchial asthma
48. Silicosis
49. Microcellular carcinoma of the lung
50. Plasmocellular carcinoma of the lung
51. Lepidic adenocarcinoma

## THEORETICAL QUESTIONS

### I. POSTMORTEM CHANGES, NECROSIS

1. The objectives of pathology. Autopsy and surgical pathology. Pathology as a subject.
2. Postmortal changes. Cell injury and cell death. Causes of cell injury.
3. Necrosis. Ultrastructural, light microscopical and gross changes.
4. Patterns of necrosis: coagulation type. Organ examples.
5. Patterns of necrosis: liquefactive type. Organ examples.
6. Caseous necrosis and adiponecrosis.
7. Apoptosis: morphology, pathomechanism.

### II. DEGENERATION, ACCUMULATION, PIGMENTS, CALCIFICATION

8. The definition and types of degenerations. Parenchymal and fatty degeneration. Organ examples.
9. Pathomorphology, pathogenesis and complications of atherosclerosis
10. Characteristics of pigments. Exogenous pigments and accumulation
11. Hemoglobinogenic pigments I. Different forms and causes of jaundice
12. Hemoglobinogenic pigments II. Pathological forms of iron storage (types, clinicopathological characteristics)
13. Endogenous non-hemoglobinogenic pigments: lipofuscin, melanin, alkaptonuria (ochronosis)
14. Dystrophic and metastatic calcification. Organ manifestations
15. Pathomechanism and clinicopathological forms of stone formation

16. Amyloidosis
17. Pathology of obesity and diabetes

### III. GROWTH DISTURBANCES

18. Causes of atrophy; general gross morphology and microscopic characteristics. Pathomechanism of atrophy. Hypoplasia, aplasia, agenesis. Osteoporosis.
19. Definition, types and organ examples of hyperplasia
20. Definition of hypertrophy and characteristics
21. Left ventricular hypertrophy. Causes, sequential compensatory changes and functional consequences.
22. Cor pulmonale chronicum

### IV. PATHOLOGY OF CIRCULATION

23. Definition of edema, pathomechanism (Starling law), clinical forms
24. Classification of haemorrhages based on pathomechanism, clinical forms. Congestion and hyperemia.
25. Thrombosis and embolus: definitions, causes, types and clinical consequences
26. Causes, types and pathomechanisms of shock. Disseminated intravascular coagulation (DIC).
27. Clinicopathological classification of hypertension and complications

### V. INFLAMMATIONS

28. Vascular and cellular mechanisms of acute inflammations, mediators
29. Clinicopathological classification of acute inflammation. Organ examples.
30. Definition, causes, cellular and humoral mechanisms of chronic inflammation.
31. Pathogenesis and clinicopathology of tuberculosis
32. Granuloma, granulomatous inflammation

### VI. IMMUNOPATHOLOGY

33. Type I. and type II. hypersensitivity reactions, mechanisms and related disorders.
34. Type III. and type IV. hypersensitivity reactions, related disorders.
35. Pathogenesis of autoimmune disorders (rheumatoid arthritis, systemic sclerosis, Sjögren syndrome, SLE)
36. AIDS. Transplantation immunity

### VII. ONCOPATHOLOGY

37. Neoplasia, nomenclature, definitions. Terminology (nomenclature) of neoplasms.
38. Definition of metaplasia, dysplasia and their relation to neoplasia. Organ examples. Hamartoma and choristoma.
39. General characteristics of benign and malignant tumours. Anaplasia. Rate of tumour cell growth. Local spread and metastasis of malignant neoplasms. Types of metastases.
40. Epidemiology of cancers. Incidence and mortality. Changes in death rates of cancers in the last decades.
41. Oncogenes, protooncogenes, oncoproteins. Growth factor and growth factor receptor oncogenes (RET, KIT, PDGFR). Overexpression of normal growth factor receptors (ERBB1, ERBB2). Organ examples.
42. Oncogenes and oncoproteins in signal transduction: RAS and RAS-signal proteins. Examples for oncogene with non-receptor tyrosine kinase function.
43. The myc oncogene. Types and their changes and role in tumours (c-myc, n-myc). Cell cycle regulators: p16 gene.
44. Tumour suppressor genes I: RB and p53. Their role in tumorigenesis. Organ examples.
45. Tumour suppressor genes II: NF1, NF2, VHL, WT-1 and WT-2. Related syndromes.
46. Chemical and radiation cancerogenesis. The multistep carcinogenesis of colorectal adenocarcinoma.
47. Microbial carcinogenesis: RNA and DNA viruses. Helicobacter pylori.
48. Clinical aspects of neoplasm. Paraneoplastic syndromes, tumour markers.
49. Grading and staging. Laboratory diagnosis of cancer.

### VIII. CARDIOVASCULAR PATHOLOGY

50. Angina pectoris, chronic ischemic heart disease, sudden cardiac death.
51. Clinicopathology of acute myocardial infarction.
52. Pathology of the valvular disorders (inflammatory and degenerative ones).
53. Cardiomyopathies. Tumors and tumor-like conditions of the heart.
54. Myocarditis. Pathology of the pericardium.
55. Congenital heart diseases.
56. Types and clinicopathology of the aneurysms.
57. Pathogenesis, classification and clinicopathology of vasculitides. Vascular tumours.

#### IX. PATHOLOGY OF RESPIRATORY TRACT

58. Diseases of the upper airways (inflammations, benign and malignant tumors of the sinonasal tract, inflammations and malignant tumors of the larynx)
59. Congenital anomalies of the lungs, atelectasis, acute lung injury
60. Infectious disorders of the lower airways (examples of nosocomial and community acquired pneumonia, atypical pneumonia, immunosuppression related infections)
61. General characteristics and types of chronic obstructive lung diseases
62. Chronic restrictive lung diseases I: IPF/UIP, NSIP, OP, hypersensitive pneumonitis
63. Chronic restrictive lung diseases II: pneumoconioses
64. Vascular diseases of the lung (types of pulmonary hypertension, Wegener granulomatosis, Goodpasture syndrome)
65. Malignant lung tumors
66. Pleural and mediastinal disorders

Comment: The Department of Pathology reserves the right of minor modifications in the curriculum

Information – The following skills of the Booklet for Clinical Skills shall be accomplished in the framework of the subject

#### Participants

Dr. Kajtár Béla (SOU07C), Dr. Kálmán Endre (H4MBX2), Dr. Kaszás Bálint (C6EZUZ), Dr. Kereskai László (C0HFTE), Dr. Pap Anita (DO1ZZP), Dr. Semjén Dávid (D3T05F), Dr. Smuk Gábor (YWNUZF), Dr. Vida Livia (XJJ5MJ)

## OAP-KO2-T PATHOPHYSIOLOGY 2

Course director:

DR. MÁRTA BALASKÓ, associate professor  
Institute for Translational Medicine, marta.balasko@aok.pte.hu

5 credit ▪ final exam ▪ Pre-clinical subject for the module ▪ spring semester ▪ recommended semester: 6

Number of hours/semester: 42 lectures + 4 practices + 24 seminars = total of 70 hours

Course headcount limitations (min.-max.): 5 – 180 Prerequisites: see your [Recommended Curriculum](#)

### Topic

Pathophysiology 2 deals with the etiology, time-course and clinical symptoms, as well as with possible pharmacological and other interventions in disorders of the gastrointestinal system, energy balance, intermediary metabolism and endocrine systems.

### Conditions for acceptance of the semester

Maximum of 15 % absence allowed

### Mid-term exams

A compulsory multiple choice midterm test is organized during the second half of the second semester. In case of absence or lower than 34% score, a 4th exam question is added to the final exam. The Midterm Test can not be retaken.

### Making up for missed classes

Students can make up for their absence by participating at the seminar of another group on the same week. Students may be absent from 2 seminars (4 times 45 minutes).

### Reading material

- *Obligatory literature*
- *Literature developed by the Department*  
Koller Á.: 606 minimum-questions, PTE ÁOK, 2010  
M. Székely (ed.): Basic Concepts in Pathophysiology, ÁOK PTE, 2007  
Lecture slides will also be uploaded to Neptun.
- *Notes*  
M. Székely (ed.): Basic Concepts in Pathophysiology, ÁOK PTE, 2007
- *Recommended literature*  
S. Silbernagl, F. Lang : Color Atlas of Pathophysiology, Thieme Stuttgart - New York, 2000  
Harrison: The Principles of Internal Medicine, 18th edition, (respective chapters), McGraw-Hill 2015

### Lectures

- 1 Basic concepts of gerontology  
Dr. Balaskó Márta
- 2 Swallowing and esophageal disorders  
Dr. Székely Miklós
- 3 Disorders of gastric filling and emptying. Vomiting  
Dr. Székely Miklós
- 4 Ulcer disease  
Dr. Székely Miklós
- 5 Dysmotilities. Ileus  
Dr. Székely Miklós
- 6 Maldigestion, malabsorption. Diarrhea  
Dr. Székely Miklós
- 7 Forms of pancreatitis  
Dr. Székely Miklós
- 8 Liver: metabolic functions and detoxication. Jaundice  
Dr. Székely Miklós
- 9 Portal hypertension, ascites, cirrhosis  
Dr. Székely Miklós
- 10 Hepatic coma  
Dr. Székely Miklós
- 11 Factors and changes of energy balance. Body mass  
Dr. Székely Miklós

- 12 Full starvation  
Dr. Székely Miklós
- 13 Partial starvation  
Dr. Székely Miklós
- 14 Negative energy balance, sarcopenia. Abnormalities of body composition  
Dr. Balaskó Márta
- 15 Obesity  
Dr. Balaskó Márta
- 16 Cardiorespiratory adaptation to work I  
Dr. Balaskó Márta
- 17 Cardiorespiratory adaptation to work II  
Dr. Balaskó Márta
- 18 Cardiorespiratory adaptation to work III  
Dr. Balaskó Márta
- 19 Disorders of cold defense  
Dr. Garami András
- 20 Disorders of warm defense  
Dr. Garami András
- 21 Fever and sickness behavior  
Dr. Garami András
- 22 Pathophysiology of carbohydrate metabolism  
Dr. Balaskó Márta
- 23 Diabetes mellitus (DM) syndrome  
Dr. Balaskó Márta
- 24 Type-1 DM: etiology, pathogenesis, pathomechanism  
Dr. Balaskó Márta
- 25 Type-2 DM: etiology, pathogenesis, pathomechanism  
Dr. Balaskó Márta
- 26 Acute complications of DM, diabetic coma  
Dr. Balaskó Márta
- 27 Late complications of DM  
Dr. Balaskó Márta
- 28 Hypoglycemia  
Dr. Balaskó Márta
- 29 Disorders of protein and amino acid and nucleic acid metabolism  
Burzáné Dr. Pétervári Erika
- 30 Pathophysiology of alcohol effects. Liver toxins.  
Dr. Balaskó Márta
- 31 Disorders of lipid metabolism  
Dr. Garai János
- 32 Dyslipidemias  
Dr. Garai János
- 33 Atherosclerosis  
Dr. Garai János
- 34 Disorders of the hypothalamo-pituitary system  
Dr. Garai János
- 35 Hyperprolactinemia. Disorders of growth  
Dr. Garai János
- 36 Thyroid hyperfunctions  
Dr. Garai János
- 37 Thyroid hypofunctions  
Dr. Garai János
- 38 Disorders of the adrenal medulla. M.E.N.  
Dr. Garai János
- 39 Hypofunction of the adrenal cortex  
Dr. Garai János
- 40 Hyperfunction of the adrenal cortex. Glucocorticoid treatment  
Dr. Garai János



- 41 Disorders of the gonadal hormones. Adrenogenital syndrome  
Dr. Garai János
- 42 Disorders of the parathyroid gland, Ca and bone  
Dr. Garai János

#### Practices

- 1 Complex analysis of energy balance (demonstration) I
- 2 Complex analysis of energy balance (demonstration) II
- 3 Spiroergometry demonstration I
- 4 Spiroergometry demonstration II

#### Seminars

- 1 Recommendations in human nutrition
- 2 Diet. Enteral and parenteral nutrition
- 3 Macro- and micronutrients
- 4 Vitamins
- 5 Age-related specificities of salt/water balance
- 6 Age-related specificities of acid/base balance
- 7 Physical activity, inactivity. Factors connected with lifestyle/age
- 8 Immobilisation syndrome
- 9 Disorders of consciousness, coma
- 10 Acute loss of consciousness
- 11 Case reports (ethylene glycol- or mushroom-intoxication)
- 12 Case reports (septic shock, traumatic shock)
- 13 Case reports (type-1 diabetic coma)
- 14 Case reports (type-2 diabetic coma)
- 15 Case reports (late complications of DM, aspects of therapy in DM)
- 16 Case reports (hypoglycemic coma)
- 17 Case reports (heat stroke)
- 18 Case reports (acute stress ulcer)
- 19 Case reports (pericarditis, anemia)
- 20 Case reports (pathological changes in pregnancy)
- 21 Case reports (cirrhosis)
- 22 Case reports (pancreatitis)
- 23 Case reports (complications of osteoporosis)
- 24 Case reports (hyperthyroidism in the elderly)

#### Exam topics/questions

Questions for THE final exam:

##### FROM FIRST SEMESTER

Basic concepts of pathophysiology

Cardiovascular adaptation in health and disease.

Distribution of cardiac output and its disorders in the young and the elderly.

Causes and forms of heart failure.

Forward failure symptoms (left- and right-sided) in heart failure.

Backward failure symptoms (left- and right-sided) in heart failure.

High output cardiac failure.

Cardiomyopathies.

Acute heart failure.

Pathophysiology of the lymphatic circulation .

Vasovagal syncope.

Definition and classification of circulatory shock. Pathophysiology of development, phases and characteristics of microcirculation.

Hypovolemic shock: causes and hemodynamics.

Cardiogenic shock: causes and hemodynamics.

Distributive shock: causes and hemodynamics.

Organ manifestations of shock.

Tissue hypoxia, ischemia, reperfusion and tissue metabolism.

Pathogenesis of coronary insufficiency. Risk factors.

Pathomechanism and consequences of acute myocardial infarction.

Mechanisms and consequences of chronic ischemic heart disease.  
Regulation of cerebral circulation in health and disease.  
Cerebral hypoxia, ischemia, stroke.  
Characteristics and disorders of splanchnic blood flow.  
Pulmonary circulation, pulmonary hypertension.  
General pathophysiology and classification of systemic hypertension - age and blood pressure.  
Role of the kidneys in the development of hypertension. Effects of hypertension on the kidneys.  
Hypertension and the adrenal gland.  
Primary hypertension: characteristics and etiological factors.  
Consequences of hypertension.  
Orthostatic hypotension in the young and the elderly.  
Active heterotopic abnormalities (premature beats).  
Passive heterotopy: causes, forms and consequences.  
Supraventricular and a-v junctional blocks.  
Forms and importance of intraventricular conduction abnormalities.  
Pre-excitation syndromes.  
Forms and consequences of paroxysmal tachycardia.  
Signs of chronic or acute overload in the ECG (hypertrophy, strain).  
Primary and secondary repolarization abnormalities in the ECG.  
ECG in acute myocardial infarction.  
Atrial or ventricular flutter, atrial or ventricular fibrillation.  
Principles/evaluation of respiratory function tests. Characteristics and parameters of abnormal breathing mechanics.  
Disorders of the control of breathing. Age-dependent changes. Sleep-apnea syndrome.  
The work of breathing. Abnormalities of elastic resistance, restrictive disorders.  
Alveolar hypoventilation: causes and consequences.  
Acute and chronic alveolar hyperventilation.  
Ventilation-perfusion mismatch (V/Q): causes and consequences.  
Disorders of alveolo-capillary diffusion. Hepatopulmonary syndrome.  
Disorders of oxygen transport (abnormal hemoglobin, CO-poisoning, methemoglobinemia).  
Forms and mechanisms of hypoxia. Ways of compensation - cyanosis.  
Causes and consequences of increased airway resistance - causes and consequences of chronic obstructive pulmonary disease (COPD) - emphysema.  
Partial or complete respiratory failure.  
Dyspnea.  
Forms, general pathophysiology and consequences of anemia.  
Aplastic anemia and anemias of complex etiology in disease states.  
Deficiency anemias.  
Hemolytic anemias.  
Polycythemias, polyglobulias.  
Bleeding abnormalities due to platelet or vascular factors.  
Congenital and acquired coagulopathies.  
Thrombosis: causes and consequences.  
Disseminated intravascular coagulation (DIC).  
Granulocytes in inflammatory processes.  
Pathophysiology of glomerular filtration.  
Disorders of tubular functions.  
Proteinuria.  
Hypothenuria, asthenuria, osmotic diuresis.  
Oliguria, polyuria. Renal functions in the elderly.  
Non-excretory kidney functions and their abnormalities.  
Chronic renal failure: causes, characteristics and progression.  
Metabolic disorders and organ dysfunctions in uremia.  
Uremic coma.  
Acute renal failure: occurrence, general features - extrarenal uremia. Prerenal azotemia. Postrenal failure.  
Renal circulation. Cardiorenal syndrome.  
Acute tubular nephropathy.  
Acute diffuse glomerulonephritis.  
Compensation of pH-abnormalities (plasma and intracellular buffers, respiration, kidney) and their disturbances.  
Metabolic acidosis: causes, compensation, consequences.

Metabolic alkalosis: causes, compensation, consequences.  
Respiratory acidosis and alkalosis: causes, compensation, consequences.  
Disorders of potassium balance. Hypo- and hyperkalemia.  
States of decreased extracellular volume, and their consequences.  
States of elevated extracellular volume: causes, mechanisms and consequences.  
Hyperosmolarity, hypertonicity. Forms, causes, consequences.  
Hypotonicity: pathogenesis and consequences.  
Tissue injury, inflammation, lymphatic circulation.  
The pathophysiology of pain.  
Definitions and causes of sepsis and trauma.

#### FROM SECOND SEMESTER

Disorders of chewing, swallowing and esophagus functions - the gastro-esophageal reflux disease.  
Disorders of gastric filling and emptying.  
Vomiting (acute, chronic).  
Pathophysiology of GIT-peptides.  
Peptic ulcer. Stress-ulcer in the elderly.  
Utilization of nutrients and its disorders. Maldigestions. Age-dependent features of nutrient utilization.  
Specific malabsorption syndromes (level or substrate of disorder).  
Complex malabsorption syndromes.  
Diarrhea: causes, pathophysiological forms, consequences.  
Bowel obstruction (ileus).  
Obstipation, subileus, diverticulosis. GIT motility disorders.  
Acute pancreatitis: pathophysiology and consequences.  
Pathophysiology of chronic pancreatitis.  
Disorders of intermediary metabolism in general liver cell damage.  
Jaundice.  
Cirrhosis: causes, mechanisms and consequences. Hepatic cachexia.  
Portal hypertension.  
Ascites and hepatorenal syndrome.  
Hepatic coma.  
Pathophysiology of alcohol effects.  
Gastroenterological changes in the elderly.  
Energy balance: influencing factors, pathological changes.  
Physical activity, inactivity, immobilization syndrome. Factors from lifestyle and age.  
Hypo- and hypervitaminosis, micronutrients.  
Water-soluble vitamins.  
Fat-soluble vitamins.  
Complete starvation: occurrence and process.  
Partial starvation, accelerated forms of energetic insufficiency - anorexia nervosa. Refeeding.  
Protein deficiency. Protein-calorie malnutrition. Senile sarcopenia.  
Central and peripheral factors in the regulation of food intake and body weight. Disorders.  
Obesity: criteria, classification and epidemiology.  
Etiology and pathogenesis of obesity.  
Consequences of obesity. Therapeutic possibilities.  
Metabolic syndrome.  
Cold-defense and cold-induced disorders.  
Warm-defense and heat-induced disorders.  
Heat stroke and malignant hyperthermia.  
Pathogenesis of fever.  
Fever and sickness-behavior. The biological value of fever.  
Hyperglycemia and glucose-tolerance tests. Diagnosis of diabetes mellitus.  
Basic characteristics and forms of diabetes mellitus syndrome.  
General pathobiochemistry of diabetes mellitus syndrome.  
Etiology and pathogenesis of 1DM.  
Etiology and pathogenesis of 2DM.  
Diabetic ketoacidosis (DKA) and ketoacidotic coma.  
Diabetic hyperosmolar syndrome (HHS) and coma.  
Late complications of diabetes mellitus: Diabetic micro- and macro-vascular disorders.

Pathobiochemistry of the late complications of diabetes mellitus.

Hypoglycemia.

Hypo-, hyper- and dys-proteinemia.

Disturbances of amino acid metabolism.

Disorders of nucleic acid metabolism. Gout.

Pathobiochemistry of LDL-metabolism. Primary and secondary hyperlipoproteinemia.

Atherosclerosis: its cellular and molecular pathophysiology.

Disorders of the hypothalamo-pituitary system. Pituitary insufficiency.

Hyperprolactinemia.

Pathophysiology of growth.

Hyperthyroidism. Specialities in the elderly.

Hypothyroidism. Specialities in the elderly.

Goiters.

Disturbances of the adrenal medulla and the sympathetic system - pheochromocytoma.

Adrenogenital syndrome. Disorders of gonadal hormones.

Adrenal (cortex) insufficiency.

Primary hyperaldosteronism.

Secondary hyperaldosteronism.

Glucocorticoid hyperfunctional states.

Pathophysiological aspects of glucocorticoid therapy.

Parathyroid abnormalities.

Hypocalcemia, hypercalcemia.

Mechanisms and disturbances of bone remodeling. Osteoporosis, osteomalacia.

Disturbances of consciousness, vigilance. Coma. Acute unconsciousness.

Principles of exercise testing (spiro-ergometry). Anaerobic threshold and maximal oxygen consumption during exercise.

Basic concepts of gerontology.

Age-related alterations in thermoregulation.

Oral final exam. Occasionally, assorted questions from the „606 minimum-questions” booklet also have to be answered: from 5 minimum questions students have to give correct answers to 4 at least, to be able to continue the oral exam. The final exam consists of 3 questions (one card) and the analysis of 1 ECG record as well as that of 1 case report. (Similar case-reports are discussed extensively during the course of the second semester.)

**Information – The following skills of the Booklet for Clinical Skills shall be accomplished in the framework of the subject**

#### **Participants**

Dr. Balaskó Márta (KVU1V2), Dr. Garai János (ZUFUFE), Dr. Garami András (JHG YAO), Dr. Hegyi Eszter (A3GC FK), Dr. Márta Katalin (GRO90N), Dr. Pécsi Dániel (P0YHU5), Dr. Szakács Zsolt (BMUR59), Dr. Szekeres-Solymár Margit (E6UVQB), Dr. Tinusz Benedek (S6U7G9)

## OAP-MO2-T MICROBIOLOGY 2

Course director:

DR. ISTVÁNNÉ BÁTAI (DR. MONIKA KERÉNYI), associate professor  
Department of Medical Microbiology and Immunology, kerenyi.monika@pte.hu

5 credit ▪ final exam ▪ Pre-clinical subject for the module ▪ spring semester ▪ recommended semester: 6

Number of hours/semester: 42 lectures + 28 practices + 0 seminars = total of 70 hours

Course headcount limitations (min.-max.): 4 – 200 Prerequisites: see your [Recommended Curriculum](#)

**The subject can only be registered in case of a PASSED and valid health aptitude test!**

### Topic

Systematic bacteriology, mycology and parasitology are the main subjects of the second semester. The course is completed by a block of lectures integrating the knowledge using a clinical microbiological approach, i.e. discussing microbiology from an organ system-based point of view. The objective is to provide solid knowledge on the pathophysiology of infections required to request, understand and interpret results received from the microbiology laboratory.

### Conditions for acceptance of the semester

Maximum of 15 % absence allowed

### Mid-term exams

4 written exam in exam period.

### Making up for missed classes

The student missing any of the practicals is expected to make arrangements with groups other than his/her own to cover the subject of that particular practical.

### Reading material

#### - Obligatory literature

Dr. Patrick R. Murray, Dr. Ken S. Rosenthal, and Dr. Michael A. Pfaller (eds.): Medical Microbiology, 8th edition, Elsevier Saunders 2016 ISBN:9780323299565

#### - Literature developed by the Department

lectures on the Neptun

#### - Notes

#### - Recommended literature

Michael Barer, Will Irving (eds.): Medical Microbiology 19e, Elsevier Churchill Livingstone, 2018, ISBN: 9780702072000

Carroll KC, Butel JS, Morse SA, Mitzner T, Jawetz, Melnick, and Adelberg's: Medical Microbiology, 27th edition, Lange Medical Book, McGraw-Hill Education - Europe 2015, ISBN:9780071824989

F.H. Kayser, K.A. Bienz, J. Eckert, R.M. Zinkernagel: Medical Microbiology, Thieme Stuttgart 2005, ISBN: 3-13-131991-7

A.K. Abbas, A.H. Lichtman, S. Pillai: Cellular and Molecular Immunology, 7th edition, Elsevier Saunders, 2015, ISBN 978-1-4377-1528-6

Galdwinn M, Trattler W.: Clinical Microbiology Made Ridiculously Simple, 6th edition, MedMaster Inc. 2011, ISBN: 978-1-935660156

### Lectures

- 1 Staphylococcus, pyogenic infections, Toxic Shock Syndrome, food poisoning  
Dr. Emődy Levente
- 2 Streptococci and streptococcus infections . Enterococcus  
Dr. Emődy Levente
- 3 Neisseria spp. Moraxella  
Dr. Tigyí Zoltán
- 4 Properties of Enterobacteriaceae, Enteropathogenic Escherichia coli groups  
Dr. Tigyí Zoltán
- 5 Members of Enterobacteriaceae causing extraintestinal infections (E. coli, Proteus, Citrobacter, Klebsiella, Enterobacter, Serratia)  
Dr. Bártai Istvánné (Dr. Kerényi Mónika)
- 6 Salmonella spp, Shigella spp.  
Dr. Emődy Levente
- 7 Yersinia spp., Campylobacter spp., Helicobacter pylori  
Dr. Emődy Levente
- 8 Vibrio spp., Aeromonas spp., Pseudomonas spp,

- Dr. Bátai Istvánné (Dr. Kerényi Mónika)
- 9 Burkholderia spp., Acinetobacter spp.  
Dr. Bátai Istvánné (Dr. Kerényi Mónika)
- 10 Brucella spp. Francisella tularensis, Haemophilus spp.  
Dr. Mestyán Gyula
- 11 Bordetella sp, Legionella sp  
Dr. Mestyán Gyula
- 12 Corynebacterium spp., Listeria spp., Erysipelothrix rhusiopathiae  
Dr. Tigyi Zoltán
- 13 Bacillus spp., histolytic clostridia  
Dr. Kocsis Béla
- 14 Neurotoxic clostridia, Clostridium difficile  
Dr. Kocsis Béla
- 15 Anaerobic infection, Bacteroides spp., Fusobacterium spp., Porphyromonas spp., Prevotella spp  
Dr. Kocsis Béla
- 16 Veillonella sp., Peptococcus, Peptostreptococcus, Actinomyces spp  
Dr. Tigyi Zoltán
- 17 Treponema, Spirillum, Streptobacillus  
Dr. Kocsis Béla
- 18 Borrelia, Leptospira  
Dr. Kocsis Béla
- 19 Chlamydia, Mycoplasma, Ureaplasma  
Dr. Bátai Istvánné (Dr. Kerényi Mónika)
- 20 Rickettsiales, Coxiella burnetti, Bartonella spp., Ehrlichia spp.  
Dr. Bátai Istvánné (Dr. Kerényi Mónika)
- 21 Mycobacteria I  
Dr. Emódy Levente
- 22 Mycobacteria II  
Dr. Emódy Levente
- 23 General mycology. Dermatmycoses  
Dr. Mestyán Gyula
- 24 Systemic mycoses  
Dr. Mestyán Gyula
- 25 Opportunistic mycoses  
Dr. Mestyán Gyula
- 26 Protozoology: Intestinal and atrial protozoa  
Dr. Mestyán Gyula
- 27 Tissue and blood protozoa  
Dr. Kocsis Béla
- 28 Helminthology: Intestinal helminth  
Dr. Mestyán Gyula
- 29 Tissue dwelling helminths  
Dr. Kocsis Béla
- 30 Methods of the clinical and epidemiological microbiology  
Dr. Mestyán Gyula
- 31 Enteric infections, food poisoning  
Dr. Tigyi Zoltán
- 32 Microbiology of the urinary tract infections  
Dr. Emódy Levente
- 33 Microbiology of the respiratory infections  
Dr. Mestyán Gyula
- 34 Microbiology of the central nervous system infections  
Dr. Bátai Istvánné (Dr. Kerényi Mónika)
- 35 Eye, skin and deeper tissue infections  
Dr. Emódy Levente
- 36 Microbiology of the bone, prosthetic joint infections  
Dr. Emódy Levente
- 37 Microbiology of the sexually transmitted diseases

- Dr. Kocsis Béla
- 38 Nosocomial and iatrogenic infections  
Dr. Mestyán Gyula
- 39 Infections of the immunocompromised patient  
Dr. Kocsis Béla
- 40 Anaerobic infections  
Dr. Kocsis Béla
- 41 Bacteraemia, sepsis, blood culture, fever (pyrexia) of unknown origin (FUO or PUO)  
Dr. Emódy Levente
- 42 Emerging and re-emerging infections  
Dr. Tigyí Zoltán

#### Practices

- 1 Bacterial diagnosis of pyogenic infections; blood cultures
- 2 Bacterial diagnosis of pyogenic infections; blood cultures
- 3 Bacterial diagnosis of pyogenic infections; blood cultures
- 4 Bacterial diagnosis of pyogenic infections; blood cultures
- 5 Bacterial diagnosis of urinary tract infections
- 6 Bacterial diagnosis of urinary tract infections
- 7 Bacterial diagnosis of urinary tract infections
- 8 Bacterial diagnosis of urinary tract infections
- 9 Bacterial diagnosis of gastrointestinal infections
- 10 Bacterial diagnosis of gastrointestinal infections
- 11 Bacterial diagnosis of gastrointestinal infections
- 12 Bacterial diagnosis of gastrointestinal infections
- 13 Bacterial diagnosis of respiratory tract infections, bacterial diagnosis of meningitis
- 14 Bacterial diagnosis of respiratory tract infections, bacterial diagnosis of meningitis
- 15 Bacterial diagnosis of respiratory tract infections, bacterial diagnosis of meningitis
- 16 Bacterial diagnosis of respiratory tract infections, bacterial diagnosis of meningitis
- 17 Anaerobic infections
- 18 Anaerobic infections
- 19 Anaerobic infections
- 20 Anaerobic infections
- 21 Diagnostic mycology and parasitology
- 22 Diagnostic mycology and parasitology
- 23 Diagnostic mycology and parasitology
- 24 Diagnostic mycology and parasitology
- 25 Consultation
- 26 Consultation
- 27 Consultation, laboratory practice exam
- 28 Consultation, laboratory practice exam

#### Seminars

##### Exam topics/questions

THE WRITTEN EXAM CONSISTS OF MULTIPLE CHOICE QUESTIONS

(THE TOPICS OF THE FINAL EXAM ALSO INCLUDE THE TOPICS COVERED DURING THE FIRST SEMESTER)

Completed exam in lab practice is required for sitting for the written exam.

Information – The following skills of the Booklet for Clinical Skills shall be accomplished in the framework of the subject

##### Participants

Dr. Bártai Istvánné (Dr. Kerényi Mónika) (A6M8OA), Dr. Kocsis Béla (TDMDDX), Dr. Kovács Krisztina (NA69UD), Dr. Mestyán Gyula (DNCE8M), Dr. Polgár Beáta (T5D0ZX), Dr. Schneider György (Y295EC), Dr. Szereday László (QN9T0F), Dr. Tigyí Zoltán (IMRVFK)

## OAP-NOT-T PUBLIC HEALTH 4 (PREVENTIVE MEDICINE)

Course director:

DR. ISTVÁN ZOLTÁN KISS, professor  
Department of Public Health Medicine, istvan.kiss@aok.pte.hu

2 credit ▪ semester exam ▪ Pre-clinical subject for the module ▪ spring semester ▪ recommended semester: 6

Number of hours/semester: 20 lectures + 8 practices + 0 seminars = total of 28 hours

Course headcount limitations (min.-max.): 1 – 999 Prerequisites: see your [Recommended Curriculum](#)

**The subject can only be registered in case of a PASSED and valid health aptitude test!**

### Topic

The aim of the subject is to form a preventive attitude. The physicians have to know the different preventive strategies and they have to be able to use them in the practice.

After Public Health 6 the students must take a public health final exam which includes the material of all the Public Health subjects (Public Health 1 - 6).

### Conditions for acceptance of the semester

Participation in practicals is obligatory which is registered.

Absences should not exceed 2x45 min. Otherwise signature of grade book is denied.

### Mid-term exams

### Making up for missed classes

Students may attend the practical of another group on the same week. Pre-consultation with practical leader is needed.

### Reading material

#### - *Obligatory literature*

Edit Paulik: Public Health and Preventive Medicine; Medicina Publishing House, Budapest 2013.

#### - *Literature developed by the Department*

Educational material uploaded on Neptun.

#### - *Notes*

#### - *Recommended literature*

### Lectures

- 1 The role of nutrition in non-communicable disease (especially cardiovascular disease) prevention.  
Dr. Kiss István Zoltán
- 2 Nutrition and cancer.  
Dr. Kiss István Zoltán
- 3 Diet and nutrition. Basics of healthy diet.  
Dr. Szabó István
- 4 Dietary recommendation. Dietary status in the world.  
Dr. Szabó István
- 5 Special dietary practice; risks and benefits  
Dr. Kiss István Zoltán
- 6 Genetically modified organisms.  
Dr. Gyöngyi Zoltán
- 7 Plant-derived bioactive components in diet. Chemoprevention. Food supplements and functional foods.  
Dr. Kiss István Zoltán
- 8 Food contaminants, food additives. Food safety.  
Dr. Kiss István Zoltán
- 9 Human genetics in public health  
Dr. Kiss István Zoltán
- 10 Interaction of environmental and genetical / genomical factors in disease development.  
Dr. Kiss István Zoltán
- 11 Genomics and epigenetics in public health. Nutrigenomics.  
Dr. Rákósy Zsuzsa
- 12 Molecular carcinogenesis, biomarkers, prevention.  
Dr. Rákósy Zsuzsa



- 13 The epidemic process. Routes of transmission. Progression of infectious diseases. Epidemiological status in the world.  
Dr. Németh Katalin
- 14 Airborne infections.  
Dr. Németh Katalin
- 15 Enteral infections I.  
Dr. Németh Katalin
- 16 Enteral infections II. Viral hepatitis.  
Dr. Németh Katalin
- 17 Epidemiology and prevention of haematogenic and lymphogenic infections  
Dr. Németh Katalin
- 18 Hospital hygiene. Nosocomial infections. Sterilization, disinfection.  
Dr. Gyöngyi Zoltán
- 19 Epidemiology and prevention of sexually transmitted diseases.  
Dr. Kiss István Zoltán
- 20 Epidemiology and prevention of prion diseases. New infectious diseases.  
Dr. Varga Csaba

#### Practices

- 1 Nutritional screening.
- 2 Maintaining and/or restoring energy balance: physical activity and nutrition. Epidemiology of obesity.
- 3 Food safety lab practicals I.
- 4 Food safety lab practicals II.
- 5 Epidemiology and prevention of infections transmitted through the skin
- 6 Epidemiology and prevention of zoonoses.
- 7 Possibilities for prevention of epidemics. Vaccination. I.
- 8 Possibilities for prevention of epidemics. Vaccination. II.

#### Seminars

##### Exam topics/questions

##### Public Health 4.

1. Role of nutrition in prevention of cardiovascular diseases
2. Role of nutrition in prevention of cancers
3. Principles of healthy diet
4. Epidemiology of malnutrition and nutritional deficiencies
5. Dietary guidelines
6. Special nutritional considerations: vegetarianism
7. Special nutritional considerations: Mediterranean diet, DASH- (Dietary Approaches to Stop Hypertension) diet
8. Special nutritional considerations: trendy diets
9. Assessment of nutritional status, nutritional screening
10. Epidemiology of obesity
11. Dietary supplements and functional foods
12. Food additives
13. Food safety, food safety testing
14. Chemoprevention
15. Genetically modified organisms
16. Interaction of environmental and genetical factors in disease development
17. Genomics and epigenetics in public health. Nutrigenomics
18. Molecular basics of carcinogenesis
19. Primary and secondary factors of epidemic process (virulence, source of infection, means of transmission, susceptible host)
20. Nosocomial infections. Sterilization, disinfection
21. Infectious diseases worldwide
22. Prevention of infectious diseases: vaccination, chemoprophylaxis
23. Epidemiology and prevention of vaccine-preventable diseases, mandatory immunisation for children
24. Epidemiology and prevention of airborne bacterial infections
25. Epidemiology and prevention of airborne viral infections
26. Characteristics, types, occurrence and prevention of enteric infections
27. Epidemiology and prevention of enteric bacterial infections

28. Epidemiology and prevention of enteric viral infections
29. Epidemiology and prevention of enteric helminth and protozoon infections
30. Epidemiology and prevention of viral hepatitis
31. Epidemiology and prevention of haematogenic and lymphogenic infections
32. Epidemiology and prevention of infections transmitted through the skin
33. Epidemiology and prevention of zoonotic helminth and bacterial infections
34. Epidemiology and prevention of zoonotic protozoon and viral infections
35. Epidemiology and prevention of sexually transmitted diseases (excluding AIDS)
36. Epidemiology and prevention of AIDS
37. Epidemiology and prevention of prion diseases
38. New infectious diseases. Bioterrorism

Information – The following skills of the Booklet for Clinical Skills shall be accomplished in the framework of the subject

#### Participants

Bérczi Bálint Dániel (J925B5), Dr. Horváth-Sarródi Andrea (IRK6XC), Dr. Németh Katalin (R7XSZN), Dr. Rákósy Zsuzsa (MC722M), Dr. Szendi Katalin (MRDJ71)

## OAP-PA2-T PATHOLOGY 2 - SYSTEMIC - ORGAN PATHOLOGY

Course director:

DR. BÉLA KAJTÁR, assistant professor  
Department of Pathology, belakajtar@yahoo.com

8 credit ▪ final exam ▪ Pre-clinical subject for the module ▪ spring semester ▪ recommended semester: 6

Number of hours/semester: 56 lectures + 28 practices + 28 seminars = total of 112 hours

Course headcount limitations (min.-max.): 5 – 999 Prerequisites: see your [Recommended Curriculum](#)

**The subject can only be registered in case of a PASSED and valid health aptitude test!**

### Topic

There is a special emphasis during the course on the clinicopathological view of the diseases, i.e., understanding the relationship of the clinical symptoms, macroscopical and microscopical changes of the diseased organs. By the end of the academic year, a basic clinicopathological affinity and competence in differential diagnosis is required of the students. Fundamentals and major examples of specific, organ pathology are discussed. The systemic pathology course involves the major fields of organ pathology not discussed in Pathology 1: dermatopathology, hematopathology, pathology of the gastrointestinal tract, liver, biliary tract, pancreas, kidney, male and female genital tract, skeletal system, endocrine system and soft tissues pathology. Cardiovascular pathology and pathology of the respiratory tract have been discussed during Pathology 1 course.

The main educational task of the subject:

The pathology course will form the basis for later clinical studies by teaching organ specific pathology knowledge, including the etiology and pathomechanism of diseases and the entire spectrum of pathological diagnostics from macroscopy and microscopy to special ancillary techniques (ultrastructural analysis, molecular pathology) with their clinical relevance.

### Conditions for acceptance of the semester

Absences exceeding 15% each of the histopathology and autopsy practical classes will result in denial of signing the gradebook. Maximum absence: two (2x45 min.) Histology and two (2x45 min.) Autopsy practises.

### Mid-term exams

The capability of recognising diseases on the basis of gross morphology, interpreting basic clinicopathology and giving differential diagnostics will be examined during the regular autopsy classes of the last (14th) weeks of the second semester. A student whose performance is not found at least satisfactory will get one additional macropreparation during the final exam.

One macropreparation and one histological preparation as well as two theoretical questions will be given to the students during the final examination at the end of the course. The theoretical questions include the entire organ pathology, cardiovascular pathology and pathology of the respiratory tract are included.

### Making up for missed classes

Making up for missed classes

Each missed seminar has to be made up for with another group in the same week.

### Reading material

- *Obligatory literature*

- *Literature developed by the Department*

Lecture handouts are available on the webpage of the department.

- *Notes*

- *Recommended literature*

S. L. Robins, V. Kumar: Basic Pathology, 9th edition, Saunders Company, 2012

### Lectures

- 1 Congenital malformations of face, inflammatory changes, tumor-like conditions and tumours of the oral cavity  
Dr. Bogner Barna István
- 2 Inflammatory diseases and tumours of the salivary glands  
Dr. Bogner Barna István
- 3 Congenital and acquired diseases as well as tumors of the oesophagus  
Dr. Bogner Barna István
- 4 Pathology of the stomach  
Dr. Bogner Barna István
- 5 Pathology of the small intestines  
Dr. Bogner Barna István
- 6 Pathology of the colon and rectum  
Dr. Bogner Barna István

- 7 Circulatory disorders of the liver. Non-viral inflammations in the liver. Drug hepatopathies  
Dr. Pajor László
- 8 Acute viral hepatitis  
Dr. Pajor László
- 9 Chronic viral hepatitis  
Dr. Pajor László
- 10 Cirrhosis and hepatic failure  
Dr. Pajor László
- 11 Tumor-like conditions and true neoplasia of the liver  
Dr. Pajor László
- 12 Pathology of the extrahepatic bile ducts and exocrine pancreas  
Dr. Pajor László
- 13 Renal failure  
Dr. Kereskai László
- 14 Cystic diseases of the kidney  
Dr. Kereskai László
- 15 Pathogenesis and classification of glomerulonephritides  
Dr. Kereskai László
- 16 Tubulointerstitial and vascular diseases  
Dr. Kereskai László
- 17 Renal neoplasms  
Dr. Kereskai László
- 18 Pathology of the bladder and ureter  
Dr. Kereskai László
- 19 Ontogenesis of the lymphoid cells, lymphoid cell populations  
Dr. Kajtár Béla
- 20 Reactive lymph node changes  
Dr. Kajtár Béla
- 21 B-cell lymphomas  
Dr. Kajtár Béla
- 22 T/NK cell lymphomas  
Dr. Kajtár Béla
- 23 Hodgkin lymphoma  
Dr. Kajtár Béla
- 24 Haemopoiesis. Myeloproliferative neoplasms  
Dr. Kajtár Béla
- 25 Acute myeloid leukaemias and myelodysplastic syndromes  
Dr. Kajtár Béla
- 26 Malformations of the brain, hydrocephalus, cerebral edema  
Dr. Kajtár Béla
- 27 Vascular disorders of the central nervous system  
Dr. Kajtár Béla
- 28 Dementias, neurodegenerative disorders.  
Dr. Kajtár Béla
- 29 Demyelination disorders, multiple sclerosis.  
Dr. Kajtár Béla
- 30 Inflammations of the central nervous system  
Dr. Kajtár Béla
- 31 Central nervous system tumors  
Dr. Kajtár Béla
- 32 Pathological conditions of the hypothalamo-hypophyseal system  
Dr. Tornóczki Tamás
- 33 Pathology of the thyroid gland (developmental abnormalities, hyperplasia, thyroiditis, tumours)  
Dr. Tornóczki Tamás
- 34 Pathology of the parathyroid glands  
Dr. Tornóczki Tamás
- 35 Pathology of the adrenal gland. MEN  
Dr. Tornóczki Tamás

- 36 Pathogenesis of the soft tissue tumors. Fibrous, fibrohistiocytic neoplasms of the soft tissues and tumors of the fat tissue  
Dr. Tornóczki Tamás
- 37 Tumors of the smooth- and striated muscle. Tumors of the peripheral nerves, PNET. Synovial sarcoma.  
Dr. Tornóczki Tamás
- 38 Pathology of the testis and its appendices  
Dr. Semjén Dávid
- 39 Pathology of the prostate  
Dr. Semjén Dávid
- 40 Pathology of the penis  
Dr. Semjén Dávid
- 41 Pathology of the vulva and the vagina  
Dr. Kálmán Endre
- 42 Inflammatory lesions of the female genital tract  
Dr. Kálmán Endre
- 43 Sexually transmitted diseases  
Dr. Kálmán Endre
- 44 Pathology of the cervix  
Dr. Kálmán Endre
- 45 Pathology of the uterine corpus  
Dr. Kálmán Endre
- 46 Pathology of the ovaries  
Dr. Kálmán Endre
- 47 Pathology of pregnancy I (abnormalities of implantation, gestosis, trophoblastic tumours)  
Dr. Kálmán Endre
- 48 Pathology of pregnancy II (transplacental infections, chromosomal aberrations)  
Dr. Kálmán Endre
- 49 Pathology of the breast  
Dr. Kálmán Endre
- 50 Dermathopathology I  
Dr. Gyömörei Csaba
- 51 Dermathopathology II  
Dr. Gyömörei Csaba
- 52 Dermathopathology III  
Dr. Gyömörei Csaba
- 53 Dermathopathology IV  
Dr. Gyömörei Csaba
- 54 Hereditary, inflammatory and metabolic bone diseases  
Dr. Kereskai László
- 55 Benign bone tumors  
Dr. Kereskai László
- 56 Malignant bone tumors  
Dr. Kereskai László

#### Practices

- 1-28 One autopsy case per week, with detailed clinicopathological discussion

#### Seminars

- 1 Week 1: Pathology of the gastrointestinal tract 1 -  
Preparations: Esophageal diverticulum, Esophageal carcinoma, Penetrating, chronic, ventricular ulcer (penetrating into pancreas), Exophytic carcinoma of the stomach, Pyloric carcinoma  
Slides: Pleiomorphic adenoma, Helicobacter pylori infection (Warthin-Starry), Coeliac disease - subtotal/total villus atrophy (Marsh 3c)
- 2 Week 1: Pathology of the gastrointestinal tract 1 -  
Preparations: Esophageal diverticulum, Esophageal carcinoma, Penetrating, chronic, ventricular ulcer (penetrating into pancreas), Exophytic carcinoma of the stomach, Pyloric carcinoma  
Slides: Pleiomorphic adenoma, Helicobacter pylori infection (Warthin-Starry), Coeliac disease - subtotal/total villus atrophy (Marsh 3c)

- 3 Week 2: Pathology of the gastrointestinal tract 2 -  
Preparations: Crohn's disease, Colonic diverticulosis, Ulcerative colitis, Rectal polyp (repetition), Rectal adenocarcinoma (repetition), Linitis plastica and Krukenberg tumor  
Slides: Crohn's disease, Carcinoid of the appendix, Rectal adenocarcinoma
- 4 Week 2: Pathology of the gastrointestinal tract 2 -  
Preparations: Crohn's disease, Colonic diverticulosis, Ulcerative colitis, Rectal polyp (repetition), Rectal adenocarcinoma (repetition), Linitis plastica and Krukenberg tumor  
Slides: Crohn's disease, Carcinoid of the appendix, Rectal adenocarcinoma
- 5 Week 3: Pathology of liver, bile ducts, pancreas -  
Preparations: Echinococcus cysts in the liver, Macronodular (postnecrotic) cirrhosis, Focal nodular hyperplasia, Hepatocellular carcinoma, Cholelithiasis, chronic cholecystitis and empyema, Adenocarcinoma of the gall bladder with multiple liver metastases, Pancreatic carcinoma  
Slides: HBs-antigen positivism (Shikata-orcein), Alcoholic hepatitis, Hepatocellular carcinoma in cirrhosis
- 6 Week 3: Pathology of liver, bile ducts, pancreas -  
Preparations: Echinococcus cysts in the liver, Macronodular (postnecrotic) cirrhosis, Focal nodular hyperplasia, Hepatocellular carcinoma, Cholelithiasis, chronic cholecystitis and empyema, Adenocarcinoma of the gall bladder with multiple liver metastases, Pancreatic carcinoma  
Slides: HBs-antigen positivism (Shikata-orcein), Alcoholic hepatitis, Hepatocellular carcinoma in cirrhosis
- 7 Week 4: Nephro- and uropathology -  
Preparations: Polycystic kidney (infantile sponge kidney), Polycystic kidney (adult type), Pyelonephritis abscedens. Necrosis of papilla, Nephrosclerosis, Congenital hydronephrosis, Clear cell carcinoma of kidney, Wilms' tumor, Urothelial carcinoma of the bladder  
Slides: Rapidly progressive GN with crescents, Hyalinised glomeruli, Kimmelstiel Wilson syndrome, Clear cell carcinoma of the kidney, Urothelial carcinoma of the renal pelvis
- 8 Week 4: Nephro- and uropathology -  
Preparations: Polycystic kidney (infantile sponge kidney), Polycystic kidney (adult type), Pyelonephritis abscedens. Necrosis of papilla, Nephrosclerosis, Congenital hydronephrosis, Clear cell carcinoma of kidney, Wilms' tumor, Urothelial carcinoma of the bladder  
Slides: Rapidly progressive GN with crescents, Hyalinised glomeruli, Kimmelstiel Wilson syndrome, Clear cell carcinoma of the kidney, Urothelial carcinoma of the renal pelvis
- 9 Week 5: Hematopathology -  
Preparations: Burkitt's lymphoma, Multiple myeloma, CML - extreme splenomegaly, Lymphomatous polyposis of small and large intestine  
Slides: Toxoplasma lymphadenitis, Follicular lymphoma, CLL/SLL infiltration in lymph node, Diffuse large B-cell lymphoma, Hodgkin lymphoma, CML, CP smear
- 10 Week 5: Hematopathology -  
Preparations: Burkitt's lymphoma, Multiple myeloma, CML - extreme splenomegaly, Lymphomatous polyposis of small and large intestine  
Slides: Toxoplasma lymphadenitis, Follicular lymphoma, CLL/SLL infiltration in lymph node, Diffuse large B-cell lymphoma, Hodgkin lymphoma, CML, CP smear
- 11 Week 6: Neuropathology 1 -  
Preparations: Epidural haemorrhage, Subdural haemorrhage, Subarachnoidal haemorrhage, Secondary hemorrhage of the pons, hemocephalus  
Slides: Prion disease, spongioform encephalopathy
- 12 Week 6: Neuropathology 1 -  
Preparations: Epidural haemorrhage, Subdural haemorrhage, Subarachnoidal haemorrhage, Secondary hemorrhage of the pons, hemocephalus  
Slides: Prion disease, spongioform encephalopathy
- 13 Week 7: Neuropathology 2 -  
Preparations: Meningioma, Glioblastoma, Medulloblastoma, Multiple brain metastases, Cerebral atrophy (repetition), Multiple sclerosis  
Slides: Oligodendroglioma, Glioblastoma, Senile plaques and neurofibrillar degeneration

- 14 Week 7: Neuropathology 2 -  
Preparations: Meningioma, Glioblastoma, Medulloblastoma, Multiple brain metastases, Cerebral atrophy (repetition), Multiple sclerosis  
Slides: Oligodendroglioma, Glioblastoma, Senile plaques and neurofibrillar degeneration
- 15 Week 8: Endocrinopathology and pathology of soft tissues 1 -  
Preparations: Craniopharyngeoma, Suprarenal cortical adenoma, Papillary carcinoma of the thyroid gland  
Slides: Subacute granulomatous thyroiditis (De Quervain), Papillary carcinoma of the thyroid, Graves disease, Hashimoto thyroiditis
- 16 Week 8: Endocrinopathology and pathology of soft tissues 1 -  
Preparations: Craniopharyngeoma, Suprarenal cortical adenoma, Papillary carcinoma of the thyroid gland  
Slides: Subacute granulomatous thyroiditis (De Quervain), Papillary carcinoma of the thyroid, Graves disease, Hashimoto thyroiditis
- 17 Week 9: Endocrinopathology and pathology of soft tissues 1 -  
Slides: Parathyroid adenoma, Pheochromocytoma, Leiomyosarcoma, Myxoid liposarcoma
- 18 Week 9: Endocrinopathology and pathology of soft tissues 1 -  
Slides: Parathyroid adenoma, Pheochromocytoma, Leiomyosarcoma, Myxoid liposarcoma
- 19 Week 10: Pathology of male genital tract -  
Preparations: Prostate adenocarcinoma, Chronic epididymitis. Hydrocele. Atrophy of the testes, Mixed germ-cell tumor; seminoma and teratoma, Penile carcinoma  
Slides: Prostatic adenocarcinoma, Seminoma, Mixed germ cell tumor: teratoma and embryonal carcinoma
- 20 Week 10: Pathology of male genital tract -  
Preparations: Prostate adenocarcinoma, Chronic epididymitis. Hydrocele. Atrophy of the testes, Mixed germ-cell tumor; seminoma and teratoma, Penile carcinoma  
Slides: Prostatic adenocarcinoma, Seminoma, Mixed germ cell tumor: teratoma and embryonal carcinoma
- 21 Week 11 Pathology of female genital tract 1 -  
Preparations: Carcinoma of the cervix, Endometrial polyp, Carcinoma of the uterine corpus, Mucinous, multilocular cystadenoma of the ovary, Thecafibroma of the ovary, Dermoid cyst (repetition), Dysgerminoma  
Slides: Endometrial adenocarcinoma (curettage), Serous papillary cystadenocarcinoma of the ovary
- 22 Week 11 Pathology of female genital tract 1 -  
Preparations: Carcinoma of the cervix, Endometrial polyp, Carcinoma of the uterine corpus, Mucinous, multilocular cystadenoma of the ovary, Thecafibroma of the ovary, Dermoid cyst (repetition), Dysgerminoma  
Slides: Endometrial adenocarcinoma (curettage), Serous papillary cystadenocarcinoma of the ovary
- 23 Week 12: Pathology of female genital tract 2 -  
Preparations: Hydatidiform mole, Fibroadenoma of the breast (repetition), Carcinoma of the breast (repetition), Mastitis carcinomatosa, Paget's disease, Serous papillary adenocarcinoma of fallopian tube, Teratoma of the ovary (embryonal)  
Slides: Hydatidiform mole, Intraductal papilloma, Paget-disease, Invasive ductal carcinoma, Mucinous carcinoma
- 24 Week 12: Pathology of female genital tract 2 -  
Preparations: Hydatidiform mole, Fibroadenoma of the breast (repetition), Carcinoma of the breast (repetition), Mastitis carcinomatosa, Paget's disease, Serous papillary adenocarcinoma of fallopian tube, Teratoma of the ovary (embryonal)  
Slides: Hydatidiform mole, Intraductal papilloma, Paget-disease, Invasive ductal carcinoma, Mucinous carcinoma
- 25 Week 13: Dermatopathology -  
Preparations: Melanoma of the eye, Metastasizing melanoma, Cylindromatosis (turban tumour)  
Slides: Seborrheic keratosis, Basal cell carcinoma, Nodular melanoma, Melanocytic nevus and superficially spreading melanoma, Bullous pemphigoid, Psoriasis

- 26 Week 13: Dermatopathology -  
Preparations: Melanoma of the eye, Metastasizing melanoma, Cyndromatosis (turban tumour)  
Slides: Seborrhoeic keratosis, Basal cell carcinoma, Nodular melanoma, Melanocytic nevus and superficially spreading melanoma, Bullous pemphigoid, Psoriasis
- 27 Week 14: Pathology of the bone -  
Preparations: Osteogenic sarcoma, Chondrosarcoma  
Slides: Giant cell tumor of bone (osteoclastoma)
- 28 Week 14: Pathology of the bone -  
Preparations: Osteogenic sarcoma, Chondrosarcoma  
Slides: Giant cell tumor of bone (osteoclastoma)

#### Exam topics/questions

#### PREPARATIONS

#### I. PATHOLOGY OF THE GASTROINTESTINAL TRACT

1. Esophageal diverticulum
2. Esophageal carcinoma
3. Penetrating, chronic, ventricular ulcer (penetrating into pancreas)
4. Exophytic carcinoma of the stomach
5. Pyloric carcinoma
6. Crohn's disease
7. Colonic diverticulosis
8. Ulcerative colitis
9. Rectal polyp (repetition)
10. Rectal adenocarcinoma (repetition)
11. Linitis plastica and Krukenberg tumor

#### II. PATHOLOGY OF LIVER, BILIARY TRACT, PANCREAS

12. Echinococcus cysts in the liver
13. Macronodular (postnecrotic) cirrhosis
14. Focal nodular hyperplasia
15. Hepatocellular carcinoma
16. Cholelithiasis, chronic cholecystitis and empyema

#### III. NEPHRO AND UROPATHOLOGY

17. Polycystic kidney (infantile sponge kidney)
18. Polycystic kidney (adult type)
19. Nephrosclerosis
20. Congenital hydronephrosis
21. Clear cell carcinoma of kidney
22. Wilms' tumor
23. Urothelial carcinoma of the bladder

#### IV. HEMATOPATHOLOGY

24. Burkitt's lymphoma
25. Multiple myeloma
26. CML extreme splenomegaly
27. Lymphomatous polyposis of small and large intestine

#### V. NEUROPATHOLOGY

28. Epidural haemorrhage
29. Subdural haemorrhage
30. Subarachnoidal haemorrhage
31. Secondary hemorrhage of the pons, hematocephalus
32. Meningioma
33. Glioblastoma
34. Medulloblastoma



35. Multiple brain metastases
36. Cerebral atrophy (repetition)
37. Multiple sclerosis

#### VI. ENDOCRINOPATHOLOGY AND PATHOLOGY OF SOFT TISSUES

39. Craniopharyngeoma
40. Suprarenal cortical adenoma
41. Papillary carcinoma of the thyroid gland

#### VII. PATHOLOGY OF MALE GENITAL TRACT

42. Prostate adenocarcinoma
43. Mixed germ cell tumor; seminoma and teratoma
44. Penal carcinoma

#### VIII. PATHOLOGY OF FEMALE GENITAL TRACT

45. Carcinoma of the cervix
46. Endometrial polyp
47. Carcinoma of the uterine corpus
48. Serous papillary adenocarcinoma of fallopian tube
49. Mucinous, multilocular cystadenoma of the ovary
50. Teratoma of the ovary (embryonal)
51. Dermoid cyst (repetition)
52. Thecofibroma
53. Hydatidiform mole
54. Fibroadenoma of the breast (repetition)
55. Carcinoma of the breast (repetition)
56. Paget's disease

#### IX. DERMATOPATHOLOGY

57. Melanoma of the eye
58. Metastasizing melanoma
59. Cyndromatosis (turban tumour)

#### X. PATHOLOGY OF BONES

59. Osteogenic sarcoma
60. Chondrosarcoma

#### SLIDES

##### I. PATHOLOGY OF THE GASTROINTESTINAL TRACT

1. Pleiomorphic adenoma
2. Helicobacter pylori infection (Warthin-Starry)
3. Celiac disease - subtotal/total villus atrophy (Marsh 3c)
4. Crohn's disease
5. Neuroendocrine tumor (carcinoid) of the appendix
6. Rectal adenocarcinoma

##### II. PATHOLOGY OF LIVER, BILE TRACT, PANCREAS

7. Congenital hepatic fibrosis
8. HBs antigen positivity (Shikata orcein)
9. Chronic hepatitis
10. Hepatocellular carcinoma in cirrhosis

##### III. NEPHRO AND UROPATHOLOGY

11. Rapidly progressive GN with crescents
12. Hyalinised glomeruli
13. Kimmelstiel Wilson syndrome
14. Clear cell carcinoma of the kidney

15. Urothelial carcinoma of the renal pelvis

#### IV. HAEMATOPATHOLOGY

- 16. Toxoplasma lymphadenitis
- 17. Follicular lymphoma
- 18. CLL/SLL infiltration in lymph node
- 19. Diffuse large B cell lymphoma
- 20. Hodgkin lymphoma
- 21. CML, CP smear

#### V. NEUROPATHOLOGY

- 22. Oligodendroglioma
- 23. Glioblastoma
- 24. Senile plaques and neurofibrillar degeneration
- 25. Prion disease, spongiform encephalopathy

#### VI. ENDOCRINOPATHOLOGY AND PATHOLOGY OF SOFT TISSUES

- 26. Subacute granulomatous thyroiditis (De Quervain)
- 27. Papillary carcinoma of the thyroid
- 28. Graves disease
- 29. Hashimoto thyroiditis
- 30. Parathyroid adenoma
- 31. Pheochromocytoma
- 32. Leiomyosarcoma
- 33. Myxoid liposarcoma

#### VII. PATHOLOGY OF MALE GENITAL TRACT

- 34. Prostatic adenocarcinoma
- 35. Seminoma
- 36. Mixed germ cell tumor

#### VIII. PATHOLOGY OF FEMALE GENITAL TRACT

- 37. Endometrial adenocarcinoma (curettage)
- 38. Serous papillary cystadenocarcinoma of the ovary
- 39. Hydatidiform mole
- 40. Complex sclerosing lesion
- 41. Paget disease
- 42. Invasive ductal carcinoma

#### IX. DERMATOPATHOLOGY

- 43. Seborrhoeic keratosis
- 44. Basal cell carcinoma
- 45. Nodular melanoma
- 46. Melanocytic nevus and superficially spreading melanoma
- 47. Bullous pemphigoid
- 48. Psoriasis

#### X. PATHOLOGY OF BONES

- 49. Giant cell tumor of bone (osteoclastoma)

## THEORETICAL QUESTIONS

### I. PATHOLOGY OF THE GASTROINTESTINAL TRACT

1. Developmental malformations of the face. Inflammatory and tumorous diseases of the oral cavity
2. Pathology of the salivary glands
3. Diseases of the oesophagus
4. Inflammatory and ulcerative disorders of the stomach
5. The benign and malignant tumours of the stomach
6. Malformations of the small intestine. Malabsorption. Tumors of the small intestine
7. Diverticulosis of the colon. Pathology of colonic polyps
8. Crohn's disease and ulcerative colitis
9. Colorectal malignancies and their relationship to polypous lesions
10. Diseases of the appendix and the peritoneum (appendicitis, mucocele, peritonitis, retroperitoneal sclerosis, pseudomyxoma of the peritoneum).

### II. PATHOLOGY OF LIVER, BILE DUCTS, PANCREAS

11. Hepatic lesions caused by circulatory disorders. Nonviral inflammatory diseases of the liver. Drug hepatopathies.
12. Acute viral hepatitis (aetiology, pathomorphology, complicated forms)
13. Chronic viral hepatitis (aetiology, types; pathomorphology and differential diagnostics, detection of virus associated antigens and their significance)
14. Cirrhosis and hepatic failure
15. Tumours and tumorlike conditions of the liver
16. Cholelithiasis (aetiology and complications) and pathology of the extrahepatic biliary tract
17. Acute and chronic pancreatitis. Tumours of the pancreas

### III. NEPHRO AND UROPATHOLOGY

18. Renal failure, uraemia. Congenital malformations and cystic diseases of the kidney.
19. Glomerulonephritis: classification according to clinical symptoms. Histologic alterations in glomerulonephritides
20. Nephrosis syndrome: minimal change, membranous glomerulonephritis, focal segmental glomerulosclerosis, membranoproliferative glomerulonephritis.
21. IgA nephropathy, chronic glomerulonephritis. Glomerular lesions associated with systemic disorders (SLE, Henoch-Schönlein purpura, Wegener's granulomatosis, amyloidosis)
22. Nephritic syndrome (acute poststreptococcal glomerulonephritis). Rapidly progressive glomerulonephritis.
23. Acute tubular necrosis (ischaemic and toxic). Druginduced (hypersensitive) interstitial nephritis, analgetic nephropathy, urate nephropathy. Acute and chronic pyelonephritis
24. Benign and malignant nephrosclerosis and diffuse cortical necrosis. Diabetic nephropathy.
25. Renal tumours (oncocytoma, renocellular cancer, Wilms tumor, urothelial carcinoma of the renal pelvis)
26. Cystitides, tumours of the bladder and ureter

### IV. HAEMATOPATHOLOGY

27. Reactive lymph node changes
28. Indolent B cell lymphomas (FL, CLL, MCL, MZL)
29. High grade B cell lymphomas (BL, DLBCL). Plasma cell neoplasms
30. Hodgkin lymphoma
31. T/NK cell lymphomas.
32. Nonneoplastic bone marrow disorders (anaemia, leukocytosis and leukopenia, thrombocytopenia)
33. AML and MDS
34. Myeloproliferative neoplasms

### V. NEUROPATHOLOGY

35. Cerebral edema, hydrocephalus, malformations of the brain
36. Dementias and neurodegenerative disorders
37. Demyelination disorders
38. Infectious diseases of the CNS
39. Cerebrovascular diseases, intracranial haemorrhages
40. Glial central nervous system tumors
41. Nonglial central nervous system tumors

#### VI. ENDOCRINOPATHOLOGY AND PATHOLOGY OF SOFT TISSUES

42. Anterior lobe pituitary tumours and their consequences. Posterior lobe syndromes. Disorders associated with hypopituitarism (Sheehan's syndrome, chromophobic adenoma, empty sella syndrome, suprasellar tumours)
43. Inflammatory, tumorous diseases as well as disorders associated with hyperplasia of the thyroid gland.
44. Pathology of the parathyroid glands (hyperplasia, adenoma, causes of hypoparathyroidism). Multiple endocrine neoplasms.
45. Causes and clinical consequences of hyperplasia and atrophy of the suprarenal gland. Cortical tumours of the suprarenal gland (morphology, clinical syndromes) Cortical insufficiency of the suprarenal gland. Tumors of the adrenal medulla.
46. Pathogenesis and frequency of soft tissue tumours. Fibrous tumours and tumourlike lesions. Fibrosarcoma. Fibromatoses. So-called fibrohistiocytic tumors.
47. Tumours of adipose tissue and peripheral nerves, synovial sarcoma.
48. Tumours of smooth and striated muscle (leiomyoma, leiomyosarcoma, rhabdomyoma and rhabdomyosarcoma, types)

#### VII. PATHOLOGY MALE GENITAL TRACT

49. Congenital malformations, inflammations and tumors of the penis
50. Prostatitides. Hyperplasia of the prostate, complications
51. Tumours of the prostate (pathogenesis, morphology, screening, diagnosis)
52. Cryptorchism, inflammations of the testis, pathology of the testicular capsule and the epididymis
53. Testicular tumours, classification, tumour markers

#### VIII. PATHOLOGY OF FEMALE GENITAL TRACT

54. Pathology of vulva and vagina. Venereal infections.
55. Inflammations, tumourlike lesions and tumours of the cervix. Carcinoma of the cervix (pathogenesis, pathomorphology, screening).
56. Adenomyosis and endometriosis. Dysfunctional bleedings. Endometrial hyperplasia. Endometritises.
57. Pathology of the uterine corpus and the fallopian tube
58. Cysts and tumours of the ovaries (surface epithelial, germ cell, sex cordstromal tumours, tumours, metastases)
59. Pathology of pregnancy I (implantation disorders, gestosis, trophoblastic tumours)
60. Pathology of pregnancy II (transplacental infections, chromosomal aberrations)
61. Mastitides (lactational, ductus ectasia, fat necrosis, galactocele). Mastopathies (fibrocystic change). Fibroepithelial tumours.
62. Breast carcinoma. Pathogenesis, types, prognosis.

#### IX. DERMATOPATHOLOGY

63. Melanocytic lesions
64. Epithelial tumours of the skin
65. Inflammatory skin diseases

#### X. PATHOLOGY OF BONES

66. Hereditary, inflammatory and metabolic bone diseases
67. Benign and malignant bone tumours

#### XI. CARDIOVASCULAR PATHOLOGY

68. Angina pectoris, chronic ischemic heart disease, sudden cardiac death.
69. Clinicopathology of acute myocardial infarction.
70. Pathology of the valvular disorders (inflammatory and degenerative ones).
71. Cardiomyopathies. Tumors and tumor-like conditions of the heart.
72. Myocarditis. Pathology of the pericardium.
73. Congenital heart diseases.
74. Types and clinicopathology of the aneurysms.
75. Pathogenesis, classification and clinicopathology of vasculitides. Vascular tumours.

#### XII. PATHOLOGY OF RESPIRATORY TRACT

76. Diseases of the upper airways (inflammations, benign and malignant tumors of the sinonasal tract, inflammations and malignant tumors of the larynx)
77. Congenital anomalies of the lungs, atelectasis, acute lung injury
78. Infectious disorders of the lower airways (examples of nosocomial and community acquired pneumonia, atypical pneumonia, immunosuppression related infections)
79. General characteristics and types of chronic obstructive lung diseases
80. Chronic restrictive lung diseases I: IPF/UIP, NSIP, OP, hypersensitive pneumonitis
81. Chronic restrictive lung diseases II: pneumoconioses
82. Vascular diseases of the lung (types of pulmonary hypertension, Wegener granulomatosis, Goodpasture syndrome)

83. Malignant lung tumors

84. Pleural and mediastinal disorders

Comment: The Department of Pathology reserves the right of minor modifications in the curriculum

Information – The following skills of the Booklet for Clinical Skills shall be accomplished in the framework of the subject

#### Participants

Dr. Kajtár Béla (SOUO7C), Dr. Kálmán Endre (H4MBX2), Dr. Kaszás Bálint (C6EZUZ), Dr. Kereskai László (C0HFTF), Dr. Pap Anita (DO1ZZP), Dr. Semjén Dávid (D3T05F), Dr. Vida Livia (XJJ5MJ)

## OAP-SPR-T SURGICAL PROPEDEUTICS

Course director:

DR. ANDRÁS GÁBOR VERECZKEI, professor  
Surgery Clinic, vereczkei.andras@pte.hu

2 credit ▪ semester exam ▪ Pre-clinical subject for the module ▪ spring semester ▪ recommended semester: 6

Number of hours/semester: 14 lectures + 14 practices + 0 seminars = total of 28 hours

Course headcount limitations (min.-max.): 1 – 200 Prerequisites: see your [Recommended Curriculum](#)

**The subject can only be registered in case of a PASSED and valid health aptitude test!**

### Topic

The subject deals with the principles of surgery, basic oncologic surgery, baselines of transplantation, parenteral nutrition, transplantation surgery, minimally invasive surgery, endocrine surgery, and selected special chapters of the previous topics.

### Conditions for acceptance of the semester

Maximum of 15 % absence allowed

### Mid-term exams

The first exam is accomplished in a written form, following corrective exams are oral.

### Making up for missed classes

According to appointments with the group leader.

### Reading material

- *Obligatory literature*  
S. Schwartz et al.: Principles of Surgery, McGraw Hill Company, NY,
- *Literature developed by the Department*
- *Notes*
- *Recommended literature*

### Lectures

- 1 General surgical oncology  
Dr. Horváth Örs Péter
- 2 Nutritional therapy  
Dr. Vereczkei András Gábor
- 3 One day surgery  
Dr. Ember Ágoston
- 4 Laparoscopic surgery  
Dr. Vereczkei András Gábor
- 5 Thermic injuries  
Dr. Zapf István Tamás
- 6 Principles of plastic surgery  
Dr. Kovács Gyula
- 7 Breast surgery  
Dr. Pavlovics Gábor
- 8 Hernia repair surgery  
Dr. Baracs József
- 9 Appendicitis, ileus, peptic ulcer  
Dr. Papp András
- 10 Principles of organ and tissue transplantation  
Dr. Kalmár Nagy Károly
- 11 Organ transplantation (kidney, pancreas)  
Dr. Szakály Péter
- 12 Surgery of the thyroids  
Dr. Vereczkei András Gábor
- 13 Surgery of the adrenals  
Dr. Vereczkei András Gábor
- 14 Parathyroid and spleen surgery  
Dr. Vereczkei András Gábor

## Practices

- 1 Demonstration of routine interventions during surgical treatment (iv and ia line, nasogastric tube, urinary catheter, replacement of fluid and electrolytes).
- 2 Demonstration of routine interventions during surgical treatment (iv and ia line, nasogastric tube, urinary catheter, replacement of fluid and electrolytes).
- 3 Surgical approaches and their demonstration.
- 4 Surgical approaches and their demonstration.
- 5 Postoperative woundcare. Thermic injury
- 6 Postoperative woundcare.
- 7 Physical examination of the surgical patient. Discussion of diagnostic procedures and findings.
- 8 Hernia surgery
- 9 The pain as leading complaint, its forms and significance. Local anaesthesia. Nausea and vomitus, their casual significance
- 10 The pain as leading complaint, its forms and significance. Local anaesthesia. Nausea and vomitus, their casual significance
- 11 Primary, secondary and delayed woundcare
- 12 Investigation of organtransplant patients
- 13 Endocrine surgery. Clinical aspects
- 14 One day surgery

## Seminars

### Exam topics/questions

- 1 Palliative interventions. Irresectability and inoperability
2. Treatment options of tumor patients, quality of resection (R0, R1, R2)
3. Types of precancerosis. Spreading of tumors, tumor symptoms
4. Classification of tumors. Surgery of metastatic lesions
5. Types and indication of nutrition (parenteral, enteral)
6. Hyperparathyroidism
7. Thyroid tumors, symptoms, treatment options
8. Surgical treatment of hyperthyreosis
9. Nodular diseases of the thyroid gland
10. Postoperative complications after thyroid surgery
11. Tumors of the suprarenal gland. Surgical treatment
12. Gastroduodenal ulcers and their surgical treatment
13. Inguinal hernia
14. Abdominal hernia. Surgical treatment
15. Appendicitis
16. Symptoms and diagnosis of ileus.
17. Acute gastrointestinal bleedings
18. Diagnosis of breast cancer
19. Operable breast tumors (surgical and adjuvant treatment)
20. Benign breast tumors, inflammations of the breast
21. Acute abdomen
22. Indications and contraindications of laparoscopic surgery
23. Requirements of one day surgery
24. Criteria of brain death. Medical and legal aspects
25. Types of organ donation
26. Immunosuppressive therapy after organtransplantation
27. Donor management. Preparation of cadaver kidneys
28. Kidney transplantation. Early and late complications
29. Indications of liver and pancreas transplantation
30. Thermic injury Diagnosis, Symptoms, and Treatment

Information – The following skills of the Booklet for Clinical Skills shall be accomplished in the framework of the subject

### Participants

Dr. Baracs József (ITMT7Q), Dr. Ember Ágoston (WM3H3F), Dr. Ferencz Sándor (BTRS8O), Dr. Horváth Örs Péter (D8LFMA), Dr. Jakab Ferenc (G0AKWC), Dr. Kalmár Nagy Károly (AOZ34R), Dr. Kelemen Dezső Tamás (XZG1E9), Dr. Kondor Ariella (H2RQ2S), Dr. Kovács Gyula (AFCRHH), Dr. Lukács László (OSSPZ5), Dr. Papp András (GXCABS), Dr. Papp Róbert (HCU5UF), Dr. Pavlovics Gábor (DW0P7B), Dr. Szakály Péter (OXSUAB), Dr. Szántó Zalán János (HEAFHI), Dr. Vereczkei András Gábor (FU43H1), Dr. Zapf István Tamás (DK4LIE)

## OAR-BEL-T SUMMER PRACTICE IN INTERNAL MEDICINE

Course director:

DR. KÁLMÁN TÓTH, professor  
1st Department of Internal Medicine, toth.kalman@pte.hu

0 credit • signature • Criterion requirement • spring semester • recommended semester: 6

Number of hours/semester: 0 lectures + 140 practices + 0 seminars = total of 140 hours

Course headcount limitations (min.-max.): 1 – 999 Prerequisites: see your [Recommended Curriculum](#)

**The subject can only be registered in case of a PASSED and valid health aptitude test!**

### Topic

The students should gain mastery of the most significant components of diagnostics in internal medicine, they should acquire routine in dealing with patients, they get used to admit new patients, to plan the most important diagnostic tests, and to summarise the patients' complaints and examination results in a synopsis (epicrisis).

Independent practical work in the fields listed below: 1. Admission of patients, daily follow-up, 2. Drawing of blood, giving injections and infusions, 3. ECG taking and evaluation, 4. Rectal digital examination, 5. Taking part in gastroscopy and colonoscopy, 6. Taking part at non-invasive cardiological tests and at ultrasound examinations, 7. Taking part at ward rounds and staff meetings.

### Conditions for acceptance of the semester

All absences must be verified. 15% or more excused absences are not tolerated during the practice.

Internal medicine practice can be spent in a foreign country (after approval of the course leader) at an Internal Medicine Ward in a University Hospital, in a Teaching Hospital or County Hospital with 24 hours admissions. The student is required to speak the language of the host country. The head of the ward should certify the fulfilment of the practice according to the criteria of the University of Pécs (this should include signature, readable name of head and stamp of the dept.)

### Mid-term exams

#### Making up for missed classes

It is not possible to make up absences.

### Reading material

- *Obligatory literature*
- *Literature developed by the Department*
- *Notes*
- *Recommended literature*

Bates, B.: A Guide to Physical Examination and History Taking, 11th edition, J. B. Lippincott Company.

Greenberg, Hinthorn: History Taking and Physical Examination, Mosby-Year Book Inc.

Textbook of Physical Diagnosis: History and Examination With STUDENT CONSULT Online Access, 7e (Textbook of Physical Diagnosis (Swartz)) 7th Edition.

Macleod's Clinical Examination - 13th Edition Elsevier.

### Lectures

### Practices

1-140 Practice in the topics declared in `Short introduction` section (syllabus)

### Seminars

#### Exam topics/questions

Information – The following skills of the Booklet for Clinical Skills shall be accomplished in the framework of the subject

Assembling infusion, use of infusion therapy

Blood glucose determination

Blood sampling from the finger pad

Catheterization of the female urethra and removal of the catheter

Catheterization of the male urethra and removal of the catheter

Closed circuit venous blood sampling

Communication during patient care (verbal, mother tongue, foreign language, interpreter, telephone, non-verbal, written) (doctor-patient, doctor-patient's relative, doctor-doctor, doctor-medical personnel), communication with a dying patient and with the family members, patient management, patient care, counselling, communication with a disabled person, giving information, acquiring and documenting informed patient consent, psychologic support of the patient



Documentation on patient care (diagnostic and therapeutic plan, patient file, referral, evaluation of test results, complete medical documentation, final report)

Injection (subcutaneous, intramuscular and intravenous)

Internal Medicine history taking and physical examination, case history (inspection of the patient, examination of the nose, pharynx and the oral cavity, inspection of the mucous membranes, palpation of the salivary glands, palpation of the lymph nodes, inspection and palpation of the skin, examination of turgor and edema, examination of the thorax, examination of apical beat, percussion of cardiac boundaries, auscultation of the heart sounds, murmurs, palpation, percussion, auscultation of the abdomen, palpation of the liver and the spleen, rectal digital examination, palpation of thyroid gland, pectoral fremitus, examination of the pulse, lung boundaries, excursion of the diaphragm, auscultation, percussion of the lungs, measurement of blood pressure, palpation of the kidneys, measurement of somatometric data, assessment of genital developmental condition, assessment of psychological and social health condition)

Puncture and cannulation of peripheral vein in adults

Recording and evaluating an ECG

Sampling of blood for arterial blood gas analysis

#### Participants

Dr. Alizadeh Hussain (I108IM), Dr. Bajnok László Zoltán (ZW70YF), Dr. Bekő Viktória (Y79LQ1), Dr. Bódis Beáta (X3ML31), Dr. Csalódi Renáta (EYKI11), Dr. Czimmer József (H96C48), Dr. Czopf László József (BAVD1M), Dr. Édel Zsófia (CQHFF0), Dr. Fábíán György (ECAC24), Dr. Habon Tamás (GG1E2P), Dr. Halmosi Róbert (I7GKGG), Dr. Kosztolányi Szabolcs (RKD5KR), Dr. Kovács Tibor József (CMIKNF), Dr. Márkné Dr. Sárosi Veronika (G6UWAT), Dr. Márton Zsolt I (CRH2BI), Dr. Mezősi Emese (EV4D75), Dr. Molnár Gergő Attila (GH1COA), Dr. Nemes Orsolya (JFSRWC), Dr. Pár Gabriella (IQHZQO), Dr. Péterfi Zoltán (KUQFYW), Dr. Ruzsics István (U3J5GT), Dr. Sebők Judit (GLM10L), Dr. Szabó Imre (VBRF9D), Dr. Szigeti Nóra (D6GZXG), Dr. Szomor Árpád (FVVVTA), Dr. Tóth Kálmán (MEK9DI), Dr. Vas Tibor (MWC504), Dr. Wittmann István (QX2T3A)