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Members of the Field Board

Characteristic of the curriculum

The objective of the studies is preparation of the student for independent scientific and practical work in the field. The studies provide absolute knowledge of the theoretical fields, knowledge of cell biology, pharmacology, immunology, medical chemistry and biochemistry, physiology and pathology, basic laboratory technology as well as the latest laboratory techniques in the field, and above all, professional knowledge in the field of children's surgery, obstetrics and gynaecology, surgery, neurosurgery, ophthalmology, orthopaedics, otorhinolaryngology, plastic surgery, stomatology and urology. The student is eventually able to lay down the hypothesis of and scientific treatise, choose appropriate methods to verify the hypothesis, practically perform the given tasks, scientifically evaluate and subsequently publish the given results in scientific journals with impact factor, make presentations at erudite conferences, symposia and congresses. Having completed the studies, the student is prepared to take up any position in the field of surgery and take more academic and scientific degrees, taking part in the progress of the field.

Requirements to meet during the studies

The student's duty is to master methodology of scientific work so that after completing the studies he/she will be capable of autonomous scientific activity and publication of its results in internationally renowned journals. During the studies, the student is supposed to pass two obligatory courses: Experimental surgery I. (B90015) and II. (B90016) as well as the exam in English (D0400003). Taking and clerkship abroad is presumed. As directed by the Supervising Tutor, the student must actively participate in scientific conferences, congresses and assemblies of scientific societies, and regularly report on his/her results in seminars. It is recommended that these obligations, if possible, are incorporated in the student's curriculum. The Field Board can also prescribe some other assignments for the student.

Requirements concerning scholarships

It is recommended that the student takes at least one clerkship abroad, not shorter than 1 month, which can be compensated for by participation in and grant project with international participants or by other form of direct participation in international co-operation.

The courses offered

Experimental surgery I. and II.

Requirements for the State Doctoral Examination

AND proof of having passed two obligatory courses during the studies.

Passing the obligatory exam in English language.

Publications: It is necessary to prove at least two original publications with impact factor, both relevant to the topic of the dissertation thesis, the student being the first author of at least one of them. The total value of IF of all the student's publications pertaining to the dissertation thesis (irrespective of standing of the authors) must be higher than 1. One synoptic publication on the topic of the student's dissertation thesis published in and reviewed journal, where the student is the first author. This publication must be cited in the student's evaluation for the 3rd year of the studies at latest.

The student will choose two theoretical topic areas; the professional exam is given by the field the student is active in. The questions are drawn at random.

It is the Supervising Tutor that is responsible for observation of the set criteria, and any possible queries will be solved by the Field Board.

Examination topic areas

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Requirements to publishing activities

Before passing the State Doctor Examination, the student will be obliged to prove at least two original publications in journals with IF, pertaining to the topic of the dissertation thesis. At least in one of them, the student shall be the first author. The total IF value of all the student's publications pertaining to the dissertation thesis (irrespective of standing of the authors) must be higher than 1.

One synoptic publication on the topic of the student's dissertation thesis published in and reviewed journal, where the student is the first author. This publication must be cited in the student's evaluation for the 3rd year of the studies at latest.

Topic areas for the State Doctoral Examination

At the State Doctoral Examination, two questions from the general part will be asked as well as another from the given field (obstetrics and gynaecology, surgery, ophthalmology, orthopaedics, otorhinolaryngology, stomatology, urology, plastic surgery, paediatric surgery).

The minimum requirements for the State Doctoral Examination and defence of the dissertation thesis to obtain the Ph.D. degree (affixed after the name) in the field of experimental surgery of doctoral study programme in biomedicine. They have been valid since the academic year 2020-2021.

Approved by the Field Board of Experimental Surgery on 24th September 2020.

Questions for the State Doctoral Examination

General part:

➤ Anatomy

1. Topographic anatomy of the head
2. Topographic anatomy of the neck
3. Topographic anatomy of the back
4. Topographic anatomy of the upper extremity
5. Topographic anatomy of the lower extremity
6. Surface regions of the face
7. Submandibular triangle, carotid triangle
8. Anterior neck region
9. Thyroid gland and parathyroid glands – location related to other organs, blood supply
10. Lateral neck region, fissure of scalene muscles
11. Axillary fossa
12. Survey of the major vascular and nerve trunks of the upper extremity
13. Survey of the major vascular and nerve trunks of the lower extremity
14. Mediastinum – parts, location of organs
15. Topography of the thoracic wall, blood and nerve supply
16. Topography of the anterior abdominal wall, blood and nerve supply
17. Topography of organs of the peritoneal cavity – supramesocolic part
18. Location and space relations of the gallbladder and bile ducts
19. Topography of the duodenum and pancreas
20. Topography of organs of the peritoneal cavity – antromesocolic part
21. Retroperitoneum – topography of organs and major vessels
22. Topographic anatomy of the male pelvis
23. Topographic anatomy of the female pelvis
24. Pelvic floor, perineal region
25. Topography of the spinal canal, lumbar puncture

➤ Cell biology

1. Growth factors: review of major ones, and mechanisms of their action

2. Differentiation and its disorders; clonal composition of tissues
3. Stem cells, their biology and applications
4. Extracellular matrix – review of basic components and their functions
5. Fibroplastic processes – physiology and pathology
6. Calcifications – classification and mechanisms of occurrence
7. Necrosis versus apoptosis
8. Recent view of tumour transformation of the cell
9. Cell cycle
10. Pathology of oedemas – basic types and their pathophysiologic mechanisms
11. Ischaemia – pathophysiology of causes and consequences
12. Genetically conditioned thrombotic states
13. Genetically conditioned cardiomyopathies
14. Cell transplantations

➤ **Pharmacology**

1. Reasons for use of medications and types of pharmacotherapy
2. Names of drugs and medicinal preparations used in formularies
3. Fortune of substances in the organism; clinical pharmacokinetics
4. Pharmacodynamics
5. Receptor-effector systems and transmission of the signal
6. Unwanted side effects of medications; efficient pharmacotherapy
7. Substances influencing the vegetative nervous system
8. General anaesthetics, peripheral muscle relaxants and premedication
9. Local anaesthetics
10. Hypnotics and antiepileptic drugs
11. Analgesics
12. Psychopharmacological agents
13. Prokinetic and spasmolytic agents
14. Cardiac stimulants and antiarrhythmic agents
15. Antihypertensive and vasoactive substances
16. Anticoagulants
17. Anti-asthmatics and medications for the respiratory system
18. Anti-infection substances
19. Hormones
20. Cytostatics

➤ **Immunology**

1. Basic characteristics of innate immunity
2. Basic characteristic features of adaptive immunity
3. Antigen-presenting cells
4. Interactions between T and B lymphocytes
5. Co-operation of cells in immunity response
6. Adhesive molecules and their functions
7. Specific cytotoxic reactions
8. Complement system and its roles in inflammatory response
9. Cells taking part in hypersensitivity reactions
10. Phenomenon of MHC restriction
11. Basic characteristics of cytokines
12. Role of cytokines in adaptive immunity
13. Recognition structures of immunocompetent cells
14. Interferons and their function

15. Function of antibodies in the infectious environment process
16. Mechanism of cytokine action
17. Role of cell immunity in defence of the organism
18. Types of immunopathological reactions
19. Role of adhesive molecules in inflammation
20. Mechanisms of autoimmune damage to the tissue
21. Common mucosa immunity system
22. Regulatory function of T lymphocytes
23. Subpopulation of T lymphocytes
24. IgE-mediated immunopathological reaction
25. CD4+T lymphocytes and their function
26. Non-organ specific autoantibodies
27. Organ specific autoantibodies
28. Risks of occurrence of autoimmunity
29. Role of cytokines in innate immunity
30. Classification of cytokines according to function
31. Role of co-stimulatory molecules in activation of T lymphocytes

➤ **Medical chemistry and biochemistry**

1. Basic principles and mechanisms of signal transduction
2. Kinds of signals as “materialized information”
3. Specificity and “promiscuity” of “signal pathways”: one ligand different functions versus different ligands similar function
4. Endocrine, paracrine and autocrine signals: Different functional, pathogenic, diagnostic and therapeutic consequences
5. Membrane receptors: Structure, function, mechanisms
6. Intracellular receptors: Structure, function, mechanisms
7. “Non-standard” receptors: Protease-activated receptors, adhesion molecules
8. Post-receptor part of signal transduction. G proteins, non-receptor enzyme activities, receptor substrates involved in the signalling cascade
9. Projection of the signalling cascade to the nuclear level
10. Connection of signalling transduction molecules and oncogenes/anti-oncogenes
11. Sharing and crossing of signalling transduction pathways. Principles and examples of information context
12. Signalization regulating cell proliferation and differentiation
13. Regulation of growth in oncology: transformation, invasion, metastasizing, angiogenesis
14. Examples of regulation of metabolic processes
15. Molecular nature of inflammatory reaction
16. Molecular nature of carcinogenesis
17. Function and importance of oncogenes and tumour suppressor genes
18. Regulation of gene expression
19. Basic methods of molecular biology, appropriateness of use of particular methods in applied research and diagnostics

➤ **Pathological physiology (1)**

1. Acute coronary syndrome (classification, ECG changes)
2. Acute kidney injury (Etiology: 1. prerenal 2. intrarenal/intrinsic 3. postrenal and subtypes, Uremia)
3. Anemia (classification of anemia by morphology, severity, time course, inheritance, etiology, and RBC proliferation)

4. Cardiac Arrhythmia (classification of arrhythmias: bradyarrhythmias – including arterial origin and AV node blocks, tachyarrhythmias and Ventricular arrhythmias)
5. Stroke (classification of strokes, TIA vs syncope,)
6. Chronic kidney disease -CKD (diagnostic criteria: 1. CKD 2.CKD progression 3. ESRD, Nephritic vs nephrotic causes)
7. Shock (types of shock, stages of hypovolemic shock)
8. Epilepsy (etiology, classification of seizures according to ILAE 2017 classification)
9. Hypoxia (types, cyanosis)
10. Liver failure (acute vs chronic, hepatic encephalopathy)
11. Calcium metabolism (regulation - hormone response, hypercalcemia, and hypocalcaemia)
12. Water metabolism (regulation - hormone response, dysregulation, hyponatremia)
13. Acid- base disorders (types, etiology)
14. Primary hemostatic disorders (classification, types)
15. Secondary hemostatic disorders (classification, types)
16. Disorders of consciousness (classification, examples)
17. Respiratory failure (classification, etiology, ARDS, RDS, obstructive vs restrictive lung disease)
18. Sepsis (definition: according to the third international consensus definitions for sepsis and septic shock), SIRS, SOFA score, MODS – multiple organ dysfunction syndrome)
19. Traumatic brain injuries (focal primary brain injuries: epidural, subdural, subarachnoid, and intracerebral hemorrhage, mild traumatic brain injury mTBI (concussion), contusion)
20. Hypercoagulability (classification, Deep vein thrombosis (DVT), pulmonary embolism (PE))

➤ **Pathological physiology (2)**

1. Definition of pain, definition of acute and chronic pain
2. Types of pain (nociceptive, neuropathic) and differences between them
3. Pain receptors, pain-inducing factors
4. Pain perception at spinal level, Rexed spinal lamina, pain mediators at the spinal level
5. Pain pathways: spinothalamic, spinoreticulotalamic and other pathways that influence pain
6. Pain perception at the thalamic level
7. Pain perception at the cortical and cerebral level
8. Descendent pain systems
9. Sex differences in perception of pain
10. Pain and stress
11. Phantom pain
12. Visceral pain
13. Pharmacological management of pain
14. Neurosurgical interventions against manifestations of pain
15. Rehabilitation methods, psychotherapy, anaesthetic intervention in management of pain
16. Palliative medicine and pain
17. Algorithm of management of acute and chronic pain
18. Most common painful syndromes and their managements
19. Psychogenic pain and its mechanisms
20. Endorphins, enkephalins and endomorphins and their role in perception of pain

➤ **Histology and embryology**

1. Histology of the digestive tract
2. Histology of glands of the digestive system
3. Histology of the circulatory system

4. Histology of the lymphatic system
5. Histology of the male reproductive system
6. Histology of the female reproductive system
7. Histology of the excretory system
8. Histology of the nerve tissue and nervous system
9. Histology of the sensory system
10. Histology of the integumentary system
11. Histology of the endocrine system
12. Histology of the respiratory system
13. Gametogenesis and fertilization (clinically – chromosomal aberrations, molas)
14. First three weeks of development of the embryo and related developmental defects
15. Development of the digestive system and related developmental defects
16. Development of the locomotor system and related developmental defects
17. Development of the nervous system and related developmental defects
18. Development of the respiratory system and related developmental defects
19. Development of the circulatory system and related developmental defects
20. Development of the excretory system and related developmental defects
21. Development of the reproductive system and related developmental defects
22. Development of the head and neck (pharyngeal arches and face) and related developmental defects
23. Development of sensory systems
24. Development the endocrine system and skin

Professional part:

➤ **Paediatric surgery:**

1. Injuries to the chest and lungs
2. Injuries to the oesophagus, diaphragm, heart and vessels
3. Injuries to the liver, bile ducts and spleen
4. Injuries to the duodenum and pancreas
5. Injuries to the urinary organs
6. Deformities of the thoracic wall
7. Bronchopulmonary malformations
8. Acquired pulmonary and pleural conditions
9. Diaphragmatic hernias
10. Oesophageal conditions
11. Gastro-oesophageal reflux
12. Tumours of the lungs and thoracic wall
13. Mediastinal conditions
14. Tumours of the oesophagus, stomach, small and large intestine
15. Teratomas
16. Tumours of the liver and pancreas
17. Tumours of the kidney and adrenal gland
18. Neuroblastoma
19. Phimosis, paraphimosis, balanitis, tumours of the testis
20. Acute scrotal syndrome
21. Conditions of the stomach and duodenum
22. Atresias and stenoses of the small and large intestine
23. Malrotations
24. Meconium ileus and meconium blockage syndrome
25. Necrotizing enterocolitis
26. Hirschsprung's disease

27. Anorectal atresia and cloacal malformations
28. Invaginations
29. Duplicatures in the gastrointestinal tract
30. Meckel's diverticulum
31. Appendicitis
32. Conditions of bile ducts
33. Portal hypertension
34. Conditions of the pancreas
35. Conditions of the spleen
36. Gastroschisis and omphalocele
37. Umbilical hernia, inguinal hernia, hydrocele
38. Retention of the testis

➤ **Obstetrics and gynaecology:**

1. Menstrual cycle – endocrinology, disturbances of the cycle, diagnosis, treatment
2. Conception, development and nutrition, foetus, ovum and its defects
3. Functional changes of organs in pregnancy
4. Endocrine changes in pregnancy
5. Pathophysiology, diagnosis and treatment of breast conditions
6. Cervical tumours
7. Tumours
8. Ovarian tumours
9. Female infertility
10. Endometriosis
11. Sexual disturbances
12. Trophoblastic disease
13. Early and late gestoses
14. Hypoxia of the foetus in pregnancy and during the labour
15. Pre-cancers of the reproductive system
16. Disorders of glucose metabolism in pregnancy
17. DIC in obstetrics
18. Ultrasonography in obstetrics
19. Irregular development of the foetus and growth retardation
20. Menopause
21. Genetics in obstetrics
22. Family planning – contraception
23. Vulvovaginal inflammations
24. Acute abdomen in gynaecology
25. Acute abdomen in obstetrics
26. Pathophysiology, diagnosis and treatment of faecal incontinence

➤ **Surgery:**

1. Wounds
 - classification
 - management in first aid
 - surgical treatment
2. Wound infections
 - tetanus
 - gas gangrene
 - rabies
3. Burns

- classification
- treatment
- post-burn condition
- 4. Fractures
 - classification
 - first aid and treatment
 - surgical treatment
- 5. Ways of surgical treatment of fractures
 - conservative
 - osteosyntheses
 - extensions
 - outer fixation
- 6. Multiple trauma
 - definition
 - procedure of treatment
 - complications
- 7. Chest injuries
 - pneumo- and haemothorax
 - rib fractures
 - ways of chest drainages
- 8. Craniocerebral injuries
 - classification of disturbances of consciousness
 - skull fractures
 - intracranial bleeding
- 9. Abdominal trauma
 - penetrating
 - blunt
 - haemoperitoneum
- 10. Transplantation of organs
 - organization
 - legal aspects
 - success rate
- 11. Kidney transplantation
- 12. Heart transplantation
- 13. Combined heart-lung transplantation
- 14. Lung transplantation
- 15. Liver transplantation
- 16. Pancreas transplantation
- 17. Mini-invasive surgery
 - indications
 - advantages
 - pitfalls
- 18. TNM classification of tumours
 - definition
 - use
 - strategy of treatment
- 19. Bronchogenic carcinoma
 - oetiology
 - diagnosis
 - ways of treatment
- 20. Colorectal carcinoma
 - oetiology

- diagnosis
- ways of treatment
- 21. Gastric carcinoma
 - symptomatology
 - diagnosis
 - ways of treatment
- 22. Gastroduodenal ulceration
 - bleeding
 - perforation
 - stenoses
- 23. Complications of cholelithiasis
 - obstructive
 - inflammatory
 - surgical interventions
- 24. Pancreatitis
 - acute
 - chronic
 - indications for surgical treatment
- 25. Acute peritonitis
 - causes
 - symptomatology
 - treatment
- 26. Ileus
 - causes
 - signs and symptoms
 - treatment
- 27. Acute appendicitis
 - symptomatology
 - complications
 - treatment
- 28. Bleeding in GIT
 - hematemesis
 - melena
 - enterorrhagia
- 29. Bowel inflammations
 - Crohn's disease
 - ulcerative colitis
 - diverticulitis
- 30. Arterial disorders
 - injury
 - acute occlusion
 - embolism
- 31. Thromboembolic disease
 - thrombosis
 - embolism
 - prevention
 - treatment
- 32. Inflammations, infections and antibiotics
 - specific types of surgical infections and antimicrobial therapy
- 33. Fluid and electrolyte balance
 - volume disorders
 - special electrolyte disorders

- acid–base balance
- principles of hydrotherapy and electrolyte therapy
- 34. Rational nutrition in a patient before and after a surgery on bowels, pancreas, liver etc. and for tumour disease
- 35. Treatment of patients with an injury
- 36. Surgery for portal hypertension
- 37. Hernias of the abdominal wall
- 38. Conditions of adrenal glands and indications for surgical treatment
- 39. Surgery for the thyroid and pituitary glands
- 40. Surgery for malign condition of the breast
- 41. Myocardial ischaemia and its surgical management
- 42. Surgical management of arteries and veins of the lower extremity
- 43. Diagnosis and surgical procedures in disturbances of consciousness
- 44. Brain and medulla lesions, brain death
- 45. Tumour conditions of the lungs and mediastinum, and their surgical treatment

➤ **Neurosurgery:**

I.

- I/1 History of neurosurgery
- I/2 Emergencies in neurosurgery
- I/3 Basic electrophysiology (EMG, EEG, EP)
- I/4 Imaging techniques (CT scan, MRI, sonography, AG, PMG) – nature of the investigation, sensitivity, specificity, algorithm of use
- I/5 Intracranial hypertension (mechanisms of development, diagnosis, treatment)
- I/6 Monitoring of the level of consciousness
- I/7 Disturbances of CSF dynamics (hydrocephalus, diagnosis, therapy)
- I/8 Monitoring of vital functions and laboratory values at the surgical ICU
- I/9 Pain – symptom of disease
- I/10 Epileptic seizure – manifestation of disease of CNS
- I/11 Neuromodulation (principles, application, indications)
- I/12 Functional neurosurgery (principles, application, indications)
- I/13 Radiosurgery (principles, application, indications)
- I/14 Stereotaxis (principles, application, indications)
- I/15 Perioperative EF methods
- I/16 Interventional radiology
- I/17 Brain death and transplantation programme

II.

- II/1 Classification, clinical aspects and algorithm of the diagnostic and therapeutic procedure and intracranial tumours
- II/2 Gliomas
- II/3 Meningiomas
- II/4 Metastases
- II/5 Sella turcica tumours
- II/6 Tumours in the pinna region
- II/7 Tumours of the cerebellopontine angle
- II/8 Tumours cerebellar hemispheres
- II/9 Tumours of the brain stem
- II/10 Tumours of the ventricular system
- II/11 Post-operative actinotherapy and chemotherapy
- II/12 Spinal tumours
- II/13 Subarachnoid bleeding + brain aneurysms
- II/14 Cerebral arteriovenous malformations & cavernomas

II/15 Cerebral ischaemia, carotid endarterectomy, extra-intracranial anastomosis

II/16 Intracerebral bleeding in hypertonic patients

II/17 Carotid-cavernous fistula

III.

III/1 Craniocerebral traumas – classification, algorithm of diagnostic and therapeutic procedure

III/2 Frontobasal trauma, fractures of the skull

III/3 Gunshot injuries to the brain

III/4 Post-traumatic intracranial haematomas

III/5 Diffuse axonal trauma

III/6 Injuries to the brain vessels and cranial nerves

III/7 Surgical accesses into the intracranial space and cranioplasty

III/8 Injuries to the spinal cord

III/9 Injuries to peripheral nerves

III/10 Entrapment syndromes and tumours of peripheral nerves

III/11 Infectious diseases of the brain and spinal cord

III/12 Paediatric neurosurgery

III/13 Oetio-pathogenesis of the cervico-brachial syndrome; surgical treatment of prolapsed cervical intervertebral discs; surgical treatment of lumbar stenosis

III/14 Oetio-pathogenesis of the cervico-brachial syndrome; surgical treatment of prolapsed cervical intervertebral discs; surgical treatment of osteophytes of cervical spine

III/15 Spondylolisthesis (algorithm of the diagnostic and therapeutic procedure); failed back surgery syndrome

III/16 Surgical treatment of pain

III/17 Epilepsy surgery

➤ **Ophthalmology**

1. Accommodation, presbyopia and its correction

2. Refraction of the eye, ways of correction, surgical and non-surgical

3. Laser and non-laser refraction interventions and their complications

4. Dystrophy and degeneration of the cornea – clinical aspects, treatment

5. Transplantation of the cornea

6. Injuries to the eye – first aid

7. Glaucoma – diagnosis, types of glaucoma

8. Glaucoma – non-surgical and surgical treatment

9. Eye manifestations in DM

10. Treatment of diabetic retinopathy

11. Differential diagnosis of haemophthalmus

12. Age-related macular degeneration – clinical aspects, treatment

13. Retinal detachment – clinical aspects, treatment

14. Other conditions of the retina

15. Cataract – treatment, complications

16. Intraocular tumours in adults

17. Genetically correlated eye conditions

18. Systemic diseases and the eye

19. Red eye – differential diagnosis

20. Sore eye – differential diagnosis

21. Impairment and loss of vision – differential diagnosis

22. Inborn anomalies of the eye

23. Amblyopia

24. Eye tumours in children

25. Leukocoria – differential diagnosis

26. Palsies of oculomotor nerves – clinical aspects, diagnosis, treatment

27. Pathologies of the pupil
28. Neuritis of the visual nerve – clinical aspects, diagnosis, differential diagnosis
29. Tumours and surgery of the orbit
30. Examination of the visual field, pathologic findings – differential diagnosis

➤ **Orthopaedics:**

1. Coxa arthrosis
2. Manifestations of inflammatory rheumatic conditions on the locomotor system and their surgical treatment
3. Defective posture and scoliosis
4. Benign tumours of the locomotor system
5. Malign tumours of the locomotor system
6. Endoprosthetics in general, kinds of joint replacements
7. Artificial replacements of the knee joint
8. Artificial replacements of the hip joint
9. Pre-arthrosis states, secondary arthrosis
10. Osteoarthrosis of the knee joint and its management
11. Isthmic syndromes of the upper extremity
12. Conditions of muscles, tendons and aponeuroses
13. Aseptic bone necrosis
14. Specific inflammations of the locomotor system
15. Metastatic affliction of the skeleton
16. Non-specific inflammations of bones and joints
17. Vertebrogenic algic syndrome
18. Inborn dysplasia of the hip joint
19. Enthesopathy and tendovaginitis
20. Differential diagnosis of sore shoulder

➤ **Otorhinolaryngology:**

1. Tumours of salivary glands
2. Tumours of the nasal cavity and paranasal sinuses
3. Carcinoma of the nasopharynx
4. Carcinoma of the oropharynx
5. Carcinoma of the oral cavity
6. Carcinoma of the larynx
7. Carcinoma of the hypopharynx
8. Malign tumours of the thyroid gland
9. Node metastases of pavement cell carcinomas of the head and neck
10. Tumours of the cerebellopontine angle and the pyramid
11. Differential diagnosis of rigid masses on the neck
12. Disturbances of balance – diagnostic procedure
13. Differential diagnosis of disturbances of balance
14. Peripheral vestibular syndrome
15. Acute otitis media
16. Chronic otitis media
17. Complications of otitis media
18. Otosclerosis
19. Tympanoplasties
20. Surgical repair of the ear
21. Examination of hearing
22. Differential diagnosis of hypacusis

23. Scope of rehabilitation for hypacusis and deafness – conservative and surgical
24. ENT aspects of facial nerve palsy
25. Acute tonsillitis and its complications
26. Chronic tonsillitis and vegetations adenoideae
27. Acute inflammations of the larynx
28. Chronic inflammations and pre-cancers of the larynx
29. Differential diagnosis of limited nasal patency
30. Acute rhinosinusitis and its complications
31. Chronic rhinosinusitis
32. FESS – concept, indications, complications
33. Epistaxis
34. Injuries to the facial skeleton
35. Tumours of parathyroid glands
36. Swallowing disturbances – diagnosis and treatment
37. Obstructive syndrome of sleep apnoea

➤ **Plastic surgery:**

1. Skin – properties, grafts, lobes
2. Muscular and musculocutaneous lobes
3. Basic microsurgery
4. Basic transplantation technique – skin, fat, fasciae, tendons, muscles, cartilage, bone, peripheral nerves
5. Keloid and hypertrophic scars
6. Principles of treatment for injuries (be heat, electricity, radiation)
7. Facial injuries
8. Rhinoplasty
9. Paresis of the facial nerve
10. Blepharoplasty, facelift
11. Clefts, craniofacial syndromes
12. Skin tumours – benign, malign
13. Lobes in the area of the face
14. Bedsores
15. Aesthetic surgery of breasts, breast reconstitution
16. Abdominoplasty
17. Genitals – inborn & acquired defects, reconstitution
18. Replantation and revascularization of the upper extremity
19. Basics of treatment for hand injuries
20. Injuries to the flexor and extensor apparatus of the hand, Dupuytren's contracture
21. Inborn and acquired defects in the area of the hand
22. Infections in the area of the hand

➤ **Stomatology:**

1. Particular stages of development of deciduous and permanent teeth, and their importance in children's dental practice
2. Materials and procedures used in conservative dental care in children
3. Preparation of the child for dental treatment (psychological, premedication, sedation with Midazolam) and indications for treatment in general anaesthesia
4. Filling materials in restorative dentistry – description, indications (amalgam, composite resin, glass polyalkenoate)
5. Tooth decay, causes, theories of origin, classification, examination and therapy
6. Anatomy and physiology of the tooth. Hard dental tissues, pulp

7. Endodontic treatment of the tooth – indications, contraindications, procedure of preparation
8. Conditions of the dental pulp and periapical region – classification, differential diagnosis, signs & symptoms, therapy
9. Primary, secondary and tertiary prophylaxis in restorative dentistry
10. Examination and diagnosis in periodontology
11. Treatment plan for conditions of the periodontium – initial phase
12. Principles of surgical and prosthetic treatment in periodontology
13. Examination of oral mucosa
14. Most common conditions of oral mucosa
15. Classification of defect of the dentition in the prosthetic aspect
16. Importance of prosthetic treatment (rehabilitation, correction, splinting)
17. Classification of permanently fixed replacements
18. Classification of removable replacements
19. Major and auxiliary materials in prosthetic dentistry
20. Oetiology and prevention of orthodontic anomalies
21. Craniofacial development and growth
22. Orthodontic diagnostics
23. Types of orthodontic treatment
24. Orthodontic surgical treatment in jaw anomalies
25. Inflammatory conditions around the jaw spaces: Causes, clinical picture, principles of treatment
26. Injuries to the face: Causes, clinical picture, principles of treatment
27. Major kinds of jaw and face anomalies. Brief survey of possible causes, diagnosis, principles of treatment
28. Tumours of the mouth and face. Brief classification, diagnosis, principles of treatment.
Oncologic prevention
29. Biomaterials and guided tissue regeneration
30. Pains and aches of the face

➤ **Urology:**

1. Clinical anatomy and development of the urinary system and male reproductive system
2. Inborn developmental defects of the kidneys, renal pelvis and ureters. Diagnosis and treatment
3. Inborn developmental defects of the urinary bladder and urethra. Diagnosis and treatment
4. Vesicoureteral reflux
5. Infections of urinary pathways
6. Urinary sepsis and septic shock
7. Urogenital tuberculosis
8. Retroperitoneal conditions
9. Tumour conditions of adrenal glands
10. Tumours of the kidney parenchyma
11. Tumours of the renal pelvis and ureters
12. Tumours of the urinary bladder
13. Tumours of the prostate
14. Tumours of the testes and penis
15. Obstructive uropathy
16. Benign hyperplasia of the prostate
17. Strictures of the urethra
18. Oetiopathogenesis of urolithiasis, diagnosis, metaphylaxis
19. Treatment of urolithiasis
20. Urinary incontinence
21. Dysfunction of lower urinary pathways
22. Traumas to the urogenital system
23. Acute scrotum

24. Male infertility
25. Erectile dysfunction
26. Urinary diversion
27. Laparoscopy in urology
- Anaesthesiology:
 1. Pre-anaesthetic examination, preoperative preparation, premedication
 2. Prophylaxis of thromboembolic disease
 3. Choice of the type of anaesthesia – general and/or regional/local
 4. Recent concept of general anaesthesia – supplementing and combined anaesthesia
 5. Recent concept and techniques of regional anaesthesia
 6. Neuro-axial anaesthesia
 7. Intravenous anaesthesia
 8. Inhaled anaesthetics
 9. Local anaesthetics
 10. Muscle relaxants, neuromuscular transmission and its monitoring
 11. Pharmacokinetics in anaesthesiology
 12. Observation and monitoring of patient under anaesthesia
 13. Care of patients after anaesthesia
 14. Treatment of acute postoperative pain
 15. Securing the patency of the airway
 16. Perioperative infusion treatment
 17. Perioperative transfusion treatment, management of haemorrhagic conditions and life-threatening bleeding
 18. Perioperative management in patients with COPD
 19. Perioperative management in patients with ischaemic heart disease
 20. Perioperative management in patients with DM
 21. Perioperative management in patients with kidney and liver disease
 22. Anaesthesia in abdominal surgery
 23. Anaesthesia in thoracic interventions
 24. Anaesthesia in obstetrics
 25. Neuro-anaesthesia
 26. Cardio-anaesthesia
 27. Anaesthesia in traumas
 28. Out-patient anaesthesia
 29. Children's anaesthesia
 30. Anaesthesia in the elderly and children

Requirements for defence of the thesis

- ☒ State Doctoral Examination
- ☒ Two publications *in extenso* with the total impact factor of at least 1. In one of them the student must be stated as the first author.
- ☒ The Dissertation Thesis must be compiled in compliance with the guidelines displayed at the Faculty's web pages.
- ☒ The Field Board requires a separate Author's Summary.