
# CLINICAL MEDICINE 3

## FIFTH YEAR OF STUDY

Academic year 2025/2026

SURGERY

Subject:

# SURGERY

**The subject is worth ___ ECTS credits. There are 12 hours of active teaching per week (6 hours of lectures and 6 hours of small group work)**

# FACULTY AND ASSISTANTS

| РБ | Name and Surname | Email address | Title |
|---|---|---|---|
| 1. | Bojan Milošević | drbojanzm@gmail.com | Associate Professor |
| 2. | Dejan Vulović | dejanavu@eunet.rs | Full Professor |
| 3. | Aleksandar Matić | maticaleksandar@gmail.com | Associate Professor |
| 4. | Aleksandar Cvetković | alex777yu@yahoo.com | Associate Professor |
| 5. | Nenad Zornić | nenadzornic@gmail.com | Associate Professor |
| 6. | Marko Spasić | drmspasic@gmail.com | Associate Professor |
| 7. | Miloš Arsenijević | enraged6@yahoo.com | Associate Professor |
| 8. | Vojin Kovačević | vojinkg@gmail.com | Associate Professor |
| 9. | Željko Stepanović | stepakg@gmail.com | Assistant Professor |
| 10. | Ivan Radosavljević | ivanradoskapi@gmail.com | Associate Professor |
| 11. | Bojan Stojanović | bojan.stojanovic01@gmail.com | Associate Professor |
| 12. | Marko Petrović | markopetrovickg@yahoo.com | Assistant Professor |
| 13. | Nikola Prodanović | nikolaprodanovickg@gmail.com | Assistant Professor |
| 14. | Mladen Pavlović | drmpavlovic@gmx.com | Assistant Professor |
| 15. | Nenad Marković | dr.nenadmarkovic@yahoo.com | Assistant Professor |
| 16. | Danijela Jovanović | danijeladrjovanovic@gmail.com | Assistant Professor |
| 17. | Miloš Stanković | milos_st_kg@yahoo.com | Teaching Assistant |
| 18. | Damnjan Pantić | damnjanpantic@yahoo.com | Teaching Assistant |
| 19. | Ana Luković | analukovic91@gmail.com | Teaching Assistant |
| 20. | Stefan Jakovljević | stefan_jakov87@yahoo.com | Teaching Assistant |

# COURSE STRUCTURE:

| Module | Module Name | Weeks | Lectures per Week | Small Group Work per Week | Module Coordinator |
|---|---|---|---|---|---|
| 1 | General Surgery, Anesthesia, Abdominal Surgery, Cardiovascular Surgery, Neurosurgery and Thoracic Surgery | 15 | 6 | 6 | Associate Prof. Dr. Bojan Milošević |
| 2 | Plastic Surgery, Pediatric Surgery, Urology and Orthopedics | 15 | 6 | 6 | Associate Prof. Dr. Bojan Milošević |
| | | | | | 180+180=360 |

**GRADING:**

Students master the subject through modules. The grade is equivalent to the number of points earned (see tables). Points are obtained in two ways:

**1. PRE-EXAM ACTIVITIES:**

**a) IN-CLASS ACTIVITY:** In this way, students can earn up to 30 points by answering 2 exam questions during the last session of small group work each week, demonstrating their knowledge and earning a total of 0 - 1 points.

**b) FINAL MODULE TESTS:** Students can earn up to 30 points using this method, as outlined in the attached table.

2. **FINAL (ORAL) EXAMINATION:** Using this method, students can earn 40 points, 10 points for the final skills check and 30 points for the oral exam.

To pass the exam, students must earn more than 50% of the points in the final exam. The final skills check requires students to take a patient history, perform a physical examination, interpret findings, provide a diagnosis (differential), and suggest a treatment approach. Then, practically demonstrate a part of the examination (such as identifying direct/indirect hernia, digital rectal examination - rectal touch...) or one of the surgical skills (e.g., wound treatment). If a student doesn't earn more than 50% of the points in the final skills check, they can't proceed to the oral part of the exam. The oral part of the exam involves the student orally answering five posed questions (each question is worth 0-6 points). If a student doesn't earn more than 50% of the points in the oral exam, they haven't passed the exam."

| MODULE | | MAXIMUM POINTS | | | |
|---|---|---|---|---|---|
| | | Pre-exam activities | | Final (oral) exam | Σ |
| | | In-class activity | Module tests | | |
| 1 | General Surgery, Anesthesia, Abdominal Surgery, Cardiovascular Surgery, Neurosurgery and Thoracic Surgery | 15 | 15 | | 30 |
| 2 | Plastic Surgery, Pediatric Surgery, Urology and Orthopedics | 15 | 15 | | 30 |
| | | | | 40 | 40 |
| **Σ** | | **30** | **30** | **40** | **100** |

**CONSULTATIVE TEACHING:** Consultations can be scheduled with the Head of Surgery Course, Associate Prof. Dr. Bojan Milošević (drbojanzm@gmail.com).

**The final grade is determined as follows:**

In order for a student to pass the subject, they must earn a minimum of 51 points and pass all modules. To pass a module, a student must:

Earn more than 50% of the points for that module.
Earn more than 50% of the points allocated for in-class activities in each module.
Pass the module test, meaning they have more than 50% correct answers.
Earn more than 50% of the points in the final skills check."

| Number of Earned Points | Grade |
|---|---|
| 0 – 50 | **5** |
| 51 – 60 | **6** |
| 61 – 70 | **7** |
| 71 – 80 | **8** |
| 81 – 90 | **9** |
| 91 – 100 | **10** |

# MODULE TESTS

## MODULE 1.

**FINAL TEST**
**0 - 15 POINTS**

**ASSESSMENT OF THE FINAL TEST**
**The test consists of 60 questions.**
**Each question is worth 0.25 points**

## MODULE 2.

**FINAL TEST**
**0 - 15 POINTS**

**ASSESSMENT OF THE FINAL TEST**
**The test consists of 60 questions.**
**Each question is worth 0.25 points**

## Literature:

| Modul | Title of the textbook | Authors | Publisher |
|---|---|---|---|
| General Surgery, Anesthesia, Abdominal Surgery, Cardiovascular Surgery, Neurosurgery and Thoracic Surgery | **SCHWARTZ'S PRINCIPLES OF SURGERY, 11E** | F. Charles Brunicardi, Dana K. Andersen, Timothy R. Billiar, David L. Dunn, John G. Hunter, Raphael E. Pollock, Jeffrey B. Matthews | McGraw-Hill Education |
| Plastic Surgery, Pediatric Surgery, Urology and Orthopedics | **SCHWARTZ'S PRINCIPLES OF SURGERY, 11E** | F. Charles Brunicardi, Dana K. Andersen, Timothy R. Billiar, David L. Dunn, John G. Hunter, Raphael E. Pollock, Jeffrey B. Matthews | McGraw-Hill Education |

Additional literature: Osteopokilosis and Related Sclerotic Bone Disorder. Zeljko Stepanovic. Lambert Academic Publishing.

All lectures are available on the Faculty of Medical Sciences website: www.medf.kg.ac.rs

# PROGRAM:

## FIRST MODULE: General Surgery, Anesthesia, Abdominal Surgery, Cardiovascular Surgery, Neurosurgery and Thoracic Surgery

TEACHING UNIT 1 (FIRST WEEK)

### ASEPSIS AND ANTISEPSIS. INFECTIONS IN SURGERY. SURGICAL DIAGNOSIS. PREOPERATIVE PREPARATION AND POSTOPERATIVE COURSE

Lectures 6 hours

- Principles of Medical Practice and Medical Ethics
- Concept of Health and Disease
- Patient History - Methodology of Symptom Collection

**What the Student Should Know:**

- The student acquires knowledge about the modern classification of infections in surgery.
- Students become familiar with standard and new types of microorganisms as causative agents of surgical infections.
- Students gain insights into the prevention and treatment of surgical infections.
- Specifically, students become acquainted with anaerobic infection, gas gangrene, and phlegmon.
- Students acquire new knowledge about contemporary antibiotics and their use in both preventive and therapeutic contexts.
- Students become acquainted with the fundamental surgical principles of treating surgical infections.
- The student gains knowledge about preoperative patient assessment, preoperative patient preparation.
- Students become familiar with the basic methods of intraoperative treatment.
- Students acquire knowledge about the postoperative course, the most common postoperative complications, and their treatment."

Practice Sessions 6 hours

- Introducing students to patient history taking
- Familiarizing students with components of patient history
- Introducing students to the concepts of symptoms and signs of disease
- Patient history taking by students

**What the Student Should Know:**

- Students should be able to recognize and understand the symptomatology and local findings in various forms of surgical infections.
- Students should be able to identify types of surgical interventions for surgical infections.
- Recognize, understand, and explain the method of diagnosing the causative agent of infection, as well as the application of specific antibiotics (method of administration and dosage).
- Students should know the essential elements of preoperative patient preparation.
- Students should recognize the basic local and general symptoms of postoperative complications.
- Students should understand the fundamental principles of treating postoperative complications

TEACHING UNIT 2 (SECOND WEEK)

### INJURIES. WOUNDS. BLEEDING (TRANSFUSION AND HEMOSTASIS). SHOCK. FLUID AND ELECTROLYTE BALANCE. RESUSCITATION. ANESTHESIA AND ANALGESIA

Lectures 6 hours

**What the Student Should Know:**

- Acquires knowledge about the classification and categorization of injuries.
- Gains insights into the forms, evolution, and therapy of surgical wounds.
- Acquires knowledge about polytrauma, crush syndrome, and blast syndrome.

Practice Sessions 6 hours

**What the Student Should Know:**

- Student should be able to recognize, understand, and explain basic procedures related to surgical wounds.
- They should be able to recognize and understand polytrauma, along with the fundamental procedures carried out in cases of polytrauma.

- ❖ The student gains knowledge about the classification and clinical presentation of bleeding. Becomes acquainted with the fundamental pathophysiological disturbances associated with bleeding. Acquires knowledge about systemic causes of bleeding, diagnosis, and treatment.
- ❖ Becomes familiar with methods of temporary and permanent hemostasis, as well as provisional and standard methods of hemostasis.
- ❖ The student becomes acquainted with the basic concepts of water and electrolyte balance.
- ❖ Acquires knowledge about the division of body water in adult surgical patients and the equilibrium of water in the body.
- ❖ Becomes familiar with disorders of water and electrolyte exchange.
- ❖ Learns about the regulation of acid-base balance.
- ❖ The student becomes acquainted with the basic concepts and history of blood transfusion.
- ❖ Acquires knowledge about blood preparation for transfusion.
- ❖ Gains knowledge about transfusion complications.
- ❖ Concept and history of cardiopulmonary cerebral resuscitation (CPCR).
- ❖ Causes of cardiac arrest, premonitions and signs of cardiac arrest, indications for starting and not starting CPCR.
- ❖ Standards and levels of resuscitation.
- ❖ Principles of advanced resuscitation measures. Indications for discontinuing CPCR. Principles of prolonged resuscitation.
- ❖ Concept and history of shock.
- ❖ Etiology of shock.
- ❖ Concepts: hypovolemic, cardiogenic, and distributive shock.
- ❖ Pathophysiology of shock.

- ❖ Students should be able to identify surgical infection, recognize injuries and wounds.
- ❖ Student should recognize the clinical presentation of bleeding.
- ❖ Students should understand, recognize, and explain types of bleeding as well as the methods of temporary hemostasis.
- ❖ Students should understand methods of permanent hemostasis.
- ❖ The student should recognize the basic concepts of water and electrolyte balance.
- ❖ Students should master knowledge about the division of body water in adult surgical patients and the equilibrium of water in the body.
- ❖ Students should reproduce basic facts about water and electrolyte exchange disorders. The student should be able to interpret arterial blood gas analysis.
- ❖ Students should recognize acid-base balance disturbances.
- ❖ The student should recognize blood components.
- ❖ Students should reproduce facts about transfusion complications - early and delayed post-transfusion reactions. Recognize hemolytic and non-hemolytic reactions to blood transfusion.
- ❖ Demonstration of advanced resuscitation measures. Demonstration of cardiac muscle defibrillation apparatus. Demonstration of prolonged resuscitation principles - assessment of brain functions.
- ❖ Recognition of factors causing hypovolemia: blood loss, water and/or electrolyte loss.

TEACHING UNIT 3 (THIRD WEEK)

## DIAPHRAGM AND ESOPHAGEAL SURGERY

Lectures 6 hours

- ❖ Surgical anatomy of the esophagus and diaphragm. Incidence and epidemiological significance of esophageal diseases.
- ❖ Importance and frequency of esophageal function disorders, as well as reflux disease and its connection to esophageal epithelium cancerization.
- ❖ Precancerous conditions and injuries of the esophagus. Possibilities of modern diagnostic procedures.
- ❖ Clinical presentation of esophageal motility disorders, reflux disease, and esophageal malignancies.
- ❖ Pathogenesis of each disease entity. Definition of Barrett's epithelium and its association with the development of esophageal adenocarcinoma.
- ❖ Clinical anatomy of the esophagus and diaphragm, and types of hiatal hernias.

Practice Sessions 6 hours

- ❖ Clinical examination of at least two patients with a typical clinical presentation of dysphagia.
- ❖ Preoperative preparation.
- ❖ Demonstration of practical application of diagnostic tests and methods.

**What the student should know:**

- ❖ The student is enabled to recognize the clinical presentation (based on leading symptoms and individual clinical signs) that indicates esophageal diseases.

- ❖ Surgical treatment and complications.

**What the student should know:**

- ❖ The student becomes familiar with the epidemiology, clinical presentation, diagnostic standards, differential diagnosis, and treatment methods for the most common benign and malignant esophageal diseases: congenital malformations of the esophagus and diaphragm, primary motility disorders, diffuse esophageal spasm, achalasia, esophageal diverticula (pulsion - Zenker, epiphrenic, and traction - epibronchial), as well as gastroesophageal reflux disease (GERD).
- ❖ The student acquaints themselves with the concept of Barrett's esophagus (SIM, short and long segments), benign and malignant (squamous cell carcinomas and adenocarcinomas) esophageal tumors, enterogenous cysts. The student is capable of recognizing signs of esophageal injury and listing operative procedures on the esophagus (radical, palliative, esophageal reconstruction techniques).
- ❖ The student is informed about the significance of hiatal hernia (sliding, rolling, mixed) as well as diaphragmatic hernias (congenital and acquired).
- ❖ Students become familiar with therapeutic modalities for the treatment of benign diseases, as well as the principles and results of operative treatment for esophageal diseases. The student learns about diaphragmatic trauma in the context of thoracoabdominal trauma, as well as postoperative complications such as esophageal anastomotic dehiscence.
- ❖ Students should identify discrete signs of chronic esophageal disease, clear indirect signs of esophageal rupture, and understand the significance of hypersalivation, regurgitation, dysphagia, dysphonia, and odynophagia, interpreting them within the context of clinical presentations of motor disorders, reflux disease, damage, and esophageal tumors.
- ❖ The student should be acquainted with, understand, and explain the levels of conservative therapy and indications for surgical treatment, with a special focus on the potential applications in primary healthcare.

TEACHING UNIT 4 (FOURTH WEEK)

## SURGERY OF THE STOMACH AND DUODENUM BLEEDING FROM THE UPPER PARTS OF THE DIGESTIVE TRACT

Lectures 6 hours

- ❖ Surgical anatomy of the stomach and duodenum
- ❖ Etiology, pathogenesis, clinical presentation, and types of peptic ulcer diseases of the upper digestive tract
- ❖ Clinical anatomy of the stomach and duodenum
- ❖ Surgical treatment of stomach and duodenal injuries
- ❖ Pathology of mucosal barrier, secretions, and inhibition mechanisms. Significance of Hp status
- ❖ Therapeutic principles of non-surgical treatment. Importance of preventive measures, especially in primary healthcare
- ❖ Epidemiology and incidence of gastric malignancies. Clinical picture of carcinoma and visceral forms of non-Hodgkin's lymphoma of the stomach

Practice Sessions 6 hours

- ❖ Clinical presentation of a typical uncomplicated duodenal ulcer.
- ❖ Elective surgical treatment.
- ❖ Clinical management of at least two typical patients - clinical models with benign and malignant diseases of the stomach and duodenum.
- ❖ Demonstration of a resective or drainage operation with commentary (reconstruction: B-I, B-II, Vagotomy, GEA, Gastrostomy

**What the student should know:**

- Through clinical history-taking and examination, the student recognizes the clinical picture suggestive of gastro-duodenal disease.

- ❖ Diagnostic standards, disease staging, and modalities in surgical treatment
- ❖ Complications following surgical interventions

**What the student should know:**

- ❖ The student acquires knowledge about the etiology of gastric and duodenal diseases, pathogenesis, clinical presentation, diagnostic differentiation, and modalities of surgical treatment.
- ❖ Students become familiar with precancerous conditions and lesions of the stomach, acid-peptic diseases of the gastro-duodenum with a focus on the multifactorial etiology of these conditions (Helicobacter). The student learns the clinical picture of acid-peptic diseases of the gastro-duodenum, complications of the diseases and their diagnosis, types of gastro-duodenal ulcers, and methods of surgical treatment of complicated ulcers (urgent or elective surgery).
- ❖ The student becomes acquainted with types of malignant and benign tumors of the stomach, clinical presentation, diagnostics, and principles of oncological treatment (radical gastrectomy, palliative procedures). They gain knowledge about concepts like volvulus and acute gastric dilation, vascular occlusion, as well as Mallory-Weiss mucosal tear, hypertrophic gastritis (Menetrier's disease).
- ❖ Students become familiar with postoperative complications and their treatment (dehiscence of gastric anastomosis, development of gastric or duodenal fistula, postgastrectomy syndrome ("dumping syndrome"), afferent loop syndrome, alkaline reflux gastritis, post-vagotomy diarrhea).

- ❖ Recognizes, understands, and explains the implementation of conservative or surgical therapy

TEACHING UNIT 5 (FIFTH WEEK)

## SURGERY OF THE SMALL INTESTINE AND APPENDIX. ILEUS

Lectures 6 hours

- ❖ Surgical anatomy of the small intestine and appendix
- ❖ • Structural disorders of the small intestine (obstructions, strangulations, diverticula, vascular and congenital lesions)
- ❖ • Inflammatory bowel diseases – Crohn's disease
- ❖ • Appendicitis, Typhlitis. Intestinal injuries
- ❖ • Malignant and benign tumors of the small intestine - diagnosis and surgical treatment
- ❖ • Strictures and fistulas
- ❖ • Artificial ileostomy Nutritional jejunostomy

**What the student should know:**

Practice Sessions 6 hours

- ❖ Clinical tests for inducing pain in acute appendicitis and Meckel's diverticulitis - practical presentation
- ❖ • Clinical management of patients with complicated Crohn's disease

**What the student should know:**

- ❖ The student recognizes the clinical presentation suggestive of small intestine disorders in general, and specifically in acute conditions of the small intestine and acute appendicitis.

- ❖ The student acquires knowledge about diseases of the small intestine, including their etiology, pathogenesis, clinical presentation, diagnostic differentiation, definitive diagnosis, indications, and possibilities for surgical treatment.
- ❖ They become familiar with congenital anomalies of the intestine and appendix, primary structural disorders such as diverticula, particularly Meckel's diverticulum, vascular lesions, and peptic ulcers of the jejunum.
- ❖ The student gains information about short bowel syndrome and blind loop syndrome, indications for surgical treatment of Crohn's disease, and indications for treating strictures and fistulas.
- ❖ They learn about tumors of the small intestine, including polyposis syndromes like Peutz-Jeghers syndrome, lymphomas of the small intestine, and carcinoid tumors.
- ❖ The student acquires essential knowledge about acute appendicitis, its causes, clinical presentation, and complications like perforation, peri-appendicular infiltrate, and abscess, as well as indications for surgical treatment. They become familiar with tumors in the ileocecal region (carcinoid, adenocarcinoma, mucocele).
- ❖ They particularly acquaint themselves with surgical complications such as dehiscence of small bowel anastomoses, the development of enterocutaneous fistulas, paralytic ileus, and small bowel obstruction.
- ❖ The student is familiar with and rationally interprets the clinical manifestations of acute appendicitis, developing a rational approach in the diagnostic differentiation of acute intestinal conditions from symptoms of other organs. This includes making accurate diagnoses and deciding on appropriate therapeutic interventions.

TEACHING UNIT 6 (SIXTH WEEK)

## SURGERY OF THE LIVER AND BILIARY TRACT

Lectures 6 hours

- ❖ Surgical anatomy of the biliary system.
- ❖ Symptoms and signs of cholecystolithiasis and choledocholithiasis, clinical presentation, and diagnostic approaches.
- ❖ Complications of biliary diseases and possibilities for surgical treatment.
- ❖ Tumors of the gallbladder, bile ducts, and ampullary region. Clinical presentation, diagnosis, and surgical treatment.
- ❖ Surgical anatomy of the liver.
- ❖ Benign and malignant liver tumors.
- ❖ Principles of diagnosis and surgical treatment.
- ❖ Liver injuries and ruptures.

**What the student should know:**

Practice Sessions 6 hours

- ❖ Analysis of diagnostic methods in biliary surgery - practical application.
- ❖ Clinical management of patients with acute inflammation of the gallbladder and choledocholithiasis.
- ❖ Management of patients with esophageal varices.
- ❖ Practical application of balloon tamponade placement.
- ❖ Clinical management of patients with liver abscess or cyst (differential diagnostic approach for echinococcal and other cysts).
- ❖ Practice of liver palpation.

**What the student should know:**

- ❖ The student acquires fundamental knowledge about biliary calculi, inflammation of the gallbladder and biliary tract, as well as tumors of the gallbladder, biliary tract, and ampullary region.
- ❖ They become familiar with the etiopathogenesis of these diseases, methods of diagnosis, diagnostic differentiation, and surgical treatment options.
- ❖ The student learns about the evaluation methods for jaundiced patients, the pathogenesis of cholesterol and pigment gallstones, biliary colic, acute cholecystitis, and complications such as hydrops, empyema, perforation, biliary ileus, biliary pancreatitis, and choledocholithiasis.
- ❖ They gain knowledge about injuries to the biliary ducts, tumors of the gallbladder and biliary ducts, as well as the principles of biliary surgery (preoperative preparation, biliary decompression, open and laparoscopic cholecystectomy, biliary-enteric reconstruction).
- ❖ The student acquires knowledge about primary malignant liver tumors and intrahepatic biliary tree (primary liver carcinomas), metastatic liver tumors from distant organs, and benign liver changes (cysts, abscesses - pyogenic and amebic).
- ❖ They become familiar with the manifestation of diseases, diagnostic methods, and possibilities of surgical and non-surgical treatment.
- ❖ They also learn about the degree of destruction of normal liver anatomy in traumatized patients, the type and method of liver injury, diagnostic procedures for liver injuries, acute complications, and urgent surgical treatment modalities.
- ❖ The student is informed about the methods, types, and consequences of liver resection, as well as the clinical presentation, diagnosis, and treatment of portal hypertension.
- ❖ The student becomes familiar with the typical clinical presentation indicative of acute gallbladder and extrahepatic biliary tract diseases.
- ❖ They comprehend and accurately interpret clinical findings in the differential diagnosis of jaundice.

TEACHING UNIT 7 (SEVENTH WEEK)

## SURGERY OF THE PANCREAS AND SPLEEN

Lectures 6 hours

- ❖ Surgical anatomy of the pancreas
- ❖ Acute pancreatitis – polyetiology, pathogenesis, clinical types, clinical presentation, diagnosis
- ❖ Treatment approach for acute disease
- ❖ Local and systemic complications. Pathogenesis of chronic pancreatitis, clinical manifestations
- ❖ Complications of acute and chronic pancreatitis (cysts, abscesses)
- ❖ Pancreatic tumors. Clinical presentation and surgical treatment modalities

Practice Sessions 6 hours

- ❖ Clinical management of patients with complicated forms of pancreatitis
- ❖ Presentation of a patient with a solid pancreatic tumor and pancreatic pseudocyst
- ❖ Palpation of the spleen, size, consistency
- ❖ Interpretation of laboratory findings related to splenomegaly

**What the student should know:**

- ❖ Surgical anatomy of the spleen. Benign diseases of the spleen.
- ❖ Traumatic and spontaneous splenic rupture, diagnosis, and treatment.

**What the student should know:**

- ❖ The student acquires knowledge about pancreatic diseases, including their etiology, pathogenesis, clinical manifestations, diagnosis, differential diagnosis, complications, and surgical treatment.
- ❖ They gain information about congenital anomalies of the pancreas (cysts, pancreatic annular, ectopic pancreas), their etiology, pathogenesis, clinical presentation, diagnosis, prognosis, conservative, and surgical treatment of acute pancreatitis, as well as surgical procedures for chronic pancreatitis - drainage, resection.
- ❖ They learn about the clinical manifestations, complications, surgical treatment, and prognosis of pancreatic pseudocysts.
- ❖ They become familiar with pancreatic tumors (ductal adenocarcinomas and carcinomas of the Vater's papilla), their clinical presentation, diagnosis, and surgical treatment.
- ❖ The student acquires knowledge about the management of pancreatic injuries and surgical complications after pancreatic operations (pancreatic fistula).
- ❖ They learn about the degrees of splenic destruction in traumatized patients, the manner and type of injury, acute complications, and modalities of urgent surgical treatment, as well as therapeutic splenectomy in hematological disorders. They also learn to recognize post-splenectomy complications.
- ❖ They become acquainted with the terms "spontaneous" and "traumatic" rupture of the spleen.

- ❖ The student recognizes the clinical picture indicative of pancreatic diseases, particularly acute conditions. They understand the symptoms and signs of the diseases, methods of diagnosis, and therapeutic options.
- ❖ The student is capable of identifying traumatic rupture of the spleen, knows the indications for splenectomy in hematological patients, and can recognize complications (early and late) of surgical procedures related to pancreatic diseases and splenectomy.

TEACHING UNIT 8 (EIGHTH WEEK)

## SURGERY OF THE COLON. COLONIC OBSTRUCTION. RECTUM AND ANUS SURGERY

Lectures 6 hours

- ❖ Students acquire knowledge about tumor, inflammatory, and vascular lesions, as well as iatrogenic, spontaneous, and traumatic lesions of the colon, including etiology, pathogenesis, clinical manifestations, diagnostic methods, differential diagnosis, and treatment approaches.
- ❖ They become familiar with disorders of colonic physiology, colonic diverticulosis, volvulus, and acquired vascular anomalies.
- ❖ Particular emphasis is placed on inflammatory bowel disease of the colon and surgical treatment of ulcerative colitis and Crohn's colitis.

Practice Sessions 6 hours

- ❖ The student is familiar with the clinical presentation of tumors in specific segments of the colon, understands basic patient history data, identifies obvious clinical signs during clinical examination, and uses them for definitive diagnosis.
- ❖ They become acquainted with the clinical manifestations and significance of acute inflammatory lesions of the colon, as well as the clinical importance of precancerous conditions and colon lesions.
- ❖ Recognizes signs of colon injury.

- Students become familiar with methods of recognizing premalignant conditions of the colon, such as polyps (hamartomas and adenomas), as well as malignant tumors of the colon (carcinomas).
- Special attention is given to the incidence, epidemiological and demographic characteristics, symptoms and clinical signs, diagnosis, disease staging, prognosis, surgical and adjuvant therapy of colon carcinoma.
- Students learn about the symptoms, signs, diagnostic methods, and surgical treatment of colon injuries.
- Particular emphasis is placed on surgical complications, such as colorectal anastomotic dehiscence, development of colocutaneous fistulas, as well as the emergence of stoma-related complications (necrosis, retraction, strictures, stoma prolapse) and occurrences of parastomal hernia.

**What the student should know:**

- Surgical anatomy of the colon
- Epidemiology, incidence, and types of malignant tumors in the left and right colon
- Principles of colon surgery in urgent conditions
- Precancerous conditions and lesions
- Polyposis syndromes
- Acute inflammatory diseases of the large intestine (complications of diverticulitis, Crohn's disease, and ulcerative colitis) - similarities, differences, and treatment
- Principles of elective colon resections
- Surgical anatomy of the anorectum
- Surgery for acute inflammatory lesions of the anorectum (abscesses, fistulas) - diagnosis and treatment
- Hemorrhoidal disease and anal fissure - clinical manifestations, diagnosis, and surgical treatment
- Villous adenoma of the rectum (incidence, diagnostic methods, and treatment)
- Rectal carcinoma - epidemiology, possible etiology, diagnostic procedures, and principles of operative treatment

- The student becomes familiar with the etiology and manifestation of hemorrhoidal disease, fissures, fistulas, perianal abscesses, Crohn's disease, villous adenomas, and rectal carcinomas.
- They also gain proficiency in conducting basic rectal examinations (digital exploration) and examinations using an anoscope. Furthermore, they are trained to accurately interpret clinical signs and symptoms and practically consider them within the clinical context to establish a definitive diagnosis.

**What the student should know:**

- Mechanical preparation of the colon (enemas) for operative treatment in patients with altered bowel habits
- Presentation of basic diagnostic procedures
- Demonstration of the technique of pancolonscopy, identifying typical pathological changes and obtaining samples for biopsy
- Digital exploration of the rectum
- Examination of patients with hemorrhoidal disease, perianal fistulas, and anal fissures

TEACHING UNIT 9 (NINTH WEEK)

## SURGERY OF ENDOCRINE GLANDS
## BREAST SURGERY

Lectures 6 hours

- Surgical Anatomy of the Thyroid and Parathyroid Glands
- Congenital Malformations
- Disorders of Thyroid Gland Function: Thyroiditis
- Thyroid Gland Tumors. Thyroid Gland Surgeries

Practice Sessions 6 hours

- Algorithm for investigating functional and localization codes of hyperthyroidism, thyroiditis, hypothyroidism, goiter, nodules, benign tumors, differentiated carcinomas, medullary carcinoma, anaplastic and rare carcinomas
- Selection and application of surgical procedures, potential complications and their resolution, alternative treatment modalities

- Complications of Surgical Treatment
- Hypoparathyroidism as a Consequence of Thyroid Gland Surgeries
- Hyperparathyroidism: Primary, Secondary, and Tertiary
- Parathyroid Gland Surgeries
- Complications of Surgical Treatment
- Surgical Anatomy of the Adrenal Glands, Disorders of Adrenal Gland Function
- Secretory Active Tumors (Cushing's Syndrome, Conn's Syndrome, Hypersecretion of Androgens and Estrogens, Pheochromocytomas)
- Non-functioning Adrenal Tumors, Surgical Significance of Adrenal Hypofunction
- Adrenal Gland Surgeries, Complications of Surgical Treatment
- Hypersecretory Syndromes of the Endocrine Pancreas: Insulinoma, Zollinger- Ellison Syndrome
- Surgeries on the Endocrine Pancreas, Complications of Endocrine Pancreas Surgeries
- Multiple Endocrine Neoplasia (MEN) Syndromes: MEN I and MEN II, Surgical Treatment of MEN Syndromes
- Breast Cancer: Epidemiology, Etiopathogenesis, Clinical Presentation and Natural Course, Diagnosis, and Treatment

**What the student should know:**

- The student is familiar with potential disorders of the thyroid, parathyroid, and adrenal glands. They recognize symptoms of these glandular dysfunctions and are acquainted with complications resulting from untreated functional disorders. They are knowledgeable about corrective measures for these functional disorders.
- Specifically, the student is acquainted with symptoms and signs of compression caused by benign and malignant thyroid diseases. They are familiar with the diagnostic and therapeutic algorithm for these patients, as well as potential gaps in diagnosis and treatment. The student understands the clinical presentation, diagnosis, and treatment possibilities for differentiated and undifferentiated malignant thyroid tumors.
- The student is particularly familiar with symptoms and signs of complications arising from primary hyperparathyroidism in the urinary tract and bones, as well as complications of hypercalcemia. They are aware of the diagnostic and therapeutic algorithm for these patients and possible shortcomings in diagnosis and treatment. The student is aware of the clinical presentation of secondary and tertiary hyperparathyroidism.
- The student is aware of associated conditions of endocrine disorders, including hyperparathyroidism. They are familiar with symptoms and signs of adrenal gland hypofunction, the algorithm for their examination, and correction methods, including temporary and permanent substitution.

- Algorithm for investigating functional and localization codes of postoperative hypoparathyroidism, primary, secondary, and tertiary hyperparathyroidism
- Selection and application of surgical procedures, potential complications and their resolution, alternative treatment modalities
- Hyperparathyroidism within the framework of MEN syndromes
- Patient history and clinical examination of patients with adrenal gland disorders, endocrine pancreas disorders, and MEN syndromes
- Basics of clinical examination and specificities of patient history for breast cancer, and selection of diagnostic procedures (mammography, ultrasound, biopsy)
- Principles of TNM classification of disease stages
- Possibilities of surgery and other therapeutic modalities in breast cancer treatment
- Significance of primary prevention and breast cancer screening

**What the student should know:**

- The student should be able to recognize and comprehend the symptomatology and local findings associated with various forms of surgical infection.
- The student should be capable of conducting a clinical examination, understanding the specifics of obtaining an oncological history, identifying risk factors, selecting diagnostic procedures, and determining surgical treatment based on the disease stage. The student should be familiar with the role of surgery in the diagnosis and treatment of patients with breast cancer.

- ❖ Specifically, the student is acquainted with symptoms and signs of complications related to Cushing's syndrome, the causes, diagnostic and therapeutic algorithm for these patients, and potential gaps in diagnosis and treatment.
- ❖ The student is familiar with the clinical presentation, diagnosis, and treatment of Conn's syndrome and hyperaldosteronism. They are also aware of the clinical presentation of pheochromocytoma and the diagnostic-therapeutic algorithm for patients with pheochromocytoma, as well as possible gaps in diagnosis and treatment.
- ❖ The student is acquainted with the clinical presentation of inactive or weakly active adrenal tumors. They are familiar with the diagnostic-therapeutic algorithm for adrenal tumors and possible shortcomings in diagnosis and treatment.
- ❖ The student is aware of potential disorders of the endocrine pancreas. They recognize symptoms of endocrine pancreas dysfunctions, understand the complications resulting from untreated functional disorders, and are aware of methods for correcting these functional disorders.
- ❖ The student has a clear understanding of the prevalence of breast cancer and the importance of early diagnosis and treatment for long-term disease-free survival and quality of life preservation.

TEACHING UNIT 10 (TENTH WEEK)

## CARDIAC AND VASCULAR SURGERY. PERIPHERAL ARTERIAL DISEASES.

Lectures 6 hours

- ❖ Coronary artery disease, diagnosis, indications, preoperative assessment and preparation, complications of acute myocardial infarction. Surgical techniques for myocardial revascularization, graft selection. Immediate and long-term complications, outcomes. Indications for heart transplantation, preparation, surgical techniques, and results. Use of artificial heart and other assisted circulation techniques. Preoperative preparation, operative procedures, complications, and outcomes.
- ❖ Acquired heart valve disorders (stenosis, insufficiency) of cardiac valves. Necessary additional diagnostic procedures for adequate indication of surgical intervention. Choice of surgical technique and valve type. Advantages and differences between various types of mechanical and biological valves. Combined valve disorders.

Practice Sessions 6 hours

- ❖ Patient History, Physical Examination, Review of Medical Documentation, Importance and Types of Supplementary Diagnostic Procedures, Laboratory Analyses, Echocardiography (ECHO), Coronary Angiography, Perfusion Tests, Stress Tests. Interpretation of Coronary Angiographic Findings. Examination of Venous System for Graft Harvesting. Allen's Test. Observation of Surgical Interventions, Assisting.
- ❖ Patient History and Clinical Examination. Auscultation of Artificial Valve. Observing and Interpreting Tele-radiography to Identify Artificial Valve Position. Observing Intraoperative Transesophageal Echocardiography. Observing Implantation of Artificial Valve or Reconstruction and Repair of Cardiac Valves. Assisting in Surgical Interventions.

- Valvular disorders with coronary disease. Intraoperative and postoperative complications. Postoperative monitoring and long-term outcomes. Endocarditis and prosthetic endocarditis. Adult congenital heart defects, specifics, classification, clinical presentation, diagnostic procedures, hemodynamic assessment, oximetry. Indications for surgery and surgical procedures. Role and significance of invasive cardiology in resolving specific congenital heart defects. Complications and long-term results.
- Etiology, clinical presentation, diagnosis, classification, indications for surgical intervention in heart and major vascular diseases. Preoperative evaluation. Surgical techniques and contemporary approaches. Immediate postoperative complications and long-term outcomes.
- Bradyarrhythmia, classification, indications for pacemaker implantation. Tachyarrhythmias, classification, diagnosis, and therapy (electrical and radiofrequency). Cardioversion and implantation of intracardial defibrillator. Heart tumors, clinical presentation, diagnostic possibilities, and long-term treatment results. Pericarditis, etiology, clinical presentation. Therapy for exudative and constrictive pericarditis, indications for surgical treatment.
- Acute ischemia. Etiopathogenesis. Clinical presentation. Therapeutic options.
- Chronic ischemia. Etiopathogenesis. Clinical presentation. Therapeutic options.
- Aneurysmal disease. Anatomical distribution, frequency. Pathoanatomical substrate. Clinical presentation. Diagnosis. Fundamentals of surgical treatment.

**What the student should know:**

- Cardiac Contusion
- Cardiac Tamponade
- Cardiac Defects
- Pulmonary Artery Embolism
- Thoracic Aortic Aneurysm
- Aortic Dissection
- Acute Pericarditis
- Arterial Diseases
- Vascular Injuries
- Aneurysms, AV Fistulas
- Abdominal Aortic Aneurysms
- Peripheral Arterial Aneurysms
- Acute Arterial Occlusions
- Chronic Occlusions (Stenosis) of Aortoiliac Arteries
- Chronic Occlusions (Stenosis) of Femoropopliteal Arteries
- Chronic Occlusions (Stenosis) of Distal Arteries of the Lower Extremities
- Surgical Conditions of Carotid and Vertebral Arteries
- Raynaud's Phenomenon
- Diabetic Foot

- Patient History, Clinical Examination, and Diagnostic Algorithm for the Diagnosis of Adult Congenital Heart Defects, Hemodynamic Assessment, Auscultation of Congenital Heart Defects. Observation of Surgical Interventions.
- Invasive Monitoring. Measurement and Interpretation of Central Venous Pressure Values. Intravenous Therapy. External Defibrillator. Temporary Pacemaker Insertion.
- • Observing Pacemaker Implantation and Cardioversion. Monitoring Patients with Implanted Pacemakers. Pericardial Puncture. Chest Tube Drainage. Hemithorax Puncture.
- Patient History and Clinical Examination of Patients with Acute Ischemia.
- Patient History and Clinical Examination of Patients with Chronic Ischemia. Doppler Sonographic Diagnosis. Angiography.
- Patient History and Clinical Examination of Patients with Aortic and/or Peripheral Artery Aneurysms.

**What the student should know:**

- Patient History, Physical Examination
- Neck Inspection – Swollen Veins, Carotid Artery Pulse
- Palpation, Percussion, and Auscultation of Lungs and Heart
- Recording and Interpretation of ECG
- Monitoring Vital Functions in Intensive Care
- Auscultation of Mechanical and Natural Valves
- Dressing and Suture Removal
- Inspection, Palpation of Extremities
- Assessment of Extremity Ischemia Degree
- Palpation of Peripheral Pulses
- Recognizing Critical Extremity Ischemia
- Palpation of Aorta
- Detection of Murmurs
- Examination of Extremity Motor Function
- Examination of Extremity Sensibility

## DISORDERS OF VEINS AND LYMPHATIC SYSTEM

Lectures 6 hours

- Introduction to vascular surgery. Classification of vascular diseases. Basic pathoanatomical substrates. Bleeding and hemostasis. Vascular injuries. Etiopathogenesis. Pathomorphological substrate. Clinical presentation. Therapeutic options.
- Diagnostic procedures and techniques in vascular surgery and angiology. Diagnostic-therapeutic algorithm for patients with vascular injuries.
- Acute venous disorders. Thrombophlebitis. Phlebothrombosis. Chronic venous disorders. Treatment of varicose veins. Lymphedema.
- Other conditions in vascular surgery. Visceral ischemia. Renovascular hypertension. Thoracic outlet syndrome. Subclavian steal syndrome. AV fistulas. Diagnostic-therapeutic algorithm for patients with these conditions. Common errors and omissions in diagnosis. Common clinical presentations. Conditions that mimic these disorders.

**What the student should know:**

- Varicose veins
- Superficial thrombophlebitis
- Deep vein thrombosis
- Venous ulcer (Ulcus venosum)
- Lymphedema, primary and secondary
- Acute and chronic lymphadenitis
- Lymphangitis

Practice Sessions 6 hours

- Basics of clinical examination in vascular patients. Specifics of history-taking and physical examination. History-taking and clinical examination of patients with vascular injuries. Temporary hemostasis methods. Digital compression, compressive bandaging, wound packing, Esmarch's tourniquet. Essential tools for wound care and hemostasis.
- History-taking and clinical examination of patients with thrombophlebitis and phlebothrombosis.
- History-taking and clinical examination of patients with primary varicose veins. Basics of venous ulcer treatment. Application of elastic bandages.

**What the student should know:**

- Hemostasis with digital compression
- Hemostasis with compressive bandaging
- Application of elastic bandage
- Application of elastic stocking
- Performing Homans' test
- Performing Burger's test
- Venipuncture

TEACHING UNIT 11 (TWELFTH WEEK)

## CONGENITAL MALFORMATIONS AND INVASIVE/NON-INVASIVE DIAGNOSTIC METHODS IN NEUROSURGERY. HEAD AND BRAIN INJURIES (TRAUMATIC COMA). EARLY AND LATE COMPLICATIONS OF CRANIOCEREBRAL INJURIES. INTRACRANIAL HYPERTENSION AND EXPANSIVE INTRACRANIAL PROCESSES

Lectures 6 hours

Practice Sessions 6 hours

- ❖ Intracranial Hypertension (physiology and pathophysiology of the craniospinal space, Monro-Kellie doctrine, cerebral blood flow, systemic factors influencing intracranial equilibrium, shifts in brain masses and herniation; etiology, clinical presentation, diagnosis, treatment of intracranial hypertension)
- ❖ Craniocephalic Injuries (classification, etiology, clinical presentation, diagnosis, treatment, indications for surgery, prognosis factors, consequences)
- ❖ Intracranial Tumors (supra and infratentorial intracerebral and extracerebral tumors, clinical manifestations, diagnostics, indications for surgery, other treatment modalities). Pituitary Tumors, clinical presentation, diagnosis, treatment
- ❖ Classification, diagnosis, and therapeutic measures of congenital intracranial, craniofacial, craniospinal, and spinal malformations. Hydrocephalus in children and adults

**What the student should know:**

- ❖ Acute Headaches - Differential Diagnosis
- ❖ Symptoms and Signs of Intracranial Hypertension
- ❖ Acute Spontaneous Alteration of Consciousness
- ❖ Acute Visual Disturbance
- ❖ Head Injuries in Adults
- ❖ Head Injuries in Children
- ❖ Skull Fractures in Adults
- ❖ Skull Fractures in Children
- ❖ Injuries to Intracranial Structures
- ❖ Post-Traumatic Syndrome and Its Treatment
- ❖ Head Injuries from Firearms
- ❖ Chronic Subdural Hematoma
- ❖ Supratentorial Brain Tumors
- ❖ Infratentorial Brain Tumors
- ❖ Pituitary Tumors
- ❖ Craniosynostoses
- ❖ Congenital Hydrocephalus

- ❖ Examination of Patients with Altered Level of Consciousness, Glasgow Coma Scale Assessment, Neurological Examination of Unconscious Patients, Examination of Polytraumatized Patients, Interpretation of Diagnostic Methods, Determination of Conservative Therapy, Familiarity with Surgical Principles. Maintaining Detailed Documentation and Recording of all Injuries.
- ❖ Examination of Patients with Brain Tumors, Interpretation of Diagnostic Methods (Planned and Performed), Suggestion of Treatment Approaches, Prognosis. Postoperative Management.
- ❖ Examination of Patients with Pituitary Tumors, Interpretation of Diagnostic Methods, Review of Endocrine Analyses, Proposal of Treatment Approaches, Prognosis. Postoperative Patient Management.
- ❖ Taking History and Detailed Neurological Examination of Children with Congenital Anomalies of the Nervous System. Diagnostic Methods in Pediatric and Adult Age.

**What the student should know:**

- ❖ Neurological Examination of Cranial Nerves
- ❖ Speech Assessment
- ❖ Memory Assessment
- ❖ Examination of Gnostic Functions
- ❖ Determination of Level of Consciousness Impairment using the Glasgow Coma Scale
- ❖ Examination of Polytraumatized Patients with Altered Level of Consciousness
- ❖ Preparation of Polytraumatized Patients with Altered Level of Consciousness for Transport
- ❖ Wound Management and Peri-wound Area in the Hairy Part of the Head
- ❖ Inspection of the Base of Head Wound
- ❖ Suturing Head Wounds up to 5 cm in Length
- ❖ Digital Compression and Compressive Dressing in Injuries of the Occipital Artery and Superficial Temporal Artery
- ❖ Removal of Sutures after Healing of Head Wounds
- ❖ Examination of Patients with Acute Headache and Altered Level of Consciousness
- ❖ Assessment of Impaired Level of Consciousness According to the Glasgow Coma Scale for Children

TEACHING UNIT 13 (THIRTEENTH WEEK)

# NEUROSURGICAL INFECTIONS. CEREBROVASCULARDISORDERS. SPINAL CORD INJURIES AND DISORDERS. RADICULAR COMPRESSION SYNDROME. PERIPHERAL NERVE INJURIES AND DISORDERS.

## Lectures 6 hours

- Focal Infections of the Intracranial and Spinal Canal, Etiology, Modes of Spread, Clinical Presentation, Diagnosis, Treatment.
- Cerebrovascular Diseases (Spontaneous Intracranial Hemorrhages: Intracerebral Hematoma, Intraventricular Hemorrhage, Subarachnoid Hemorrhage, Subdural Hematoma). Intracranial Aneurysms, Ruptured and Incidentally Discovered, Natural Course, Diagnosis, Treatment Indications and Methods, Rupture Complications, Consequences, Treatment Outcome. Vascular Malformations (Arteriovenous, Cavernous Hemangiomas, Venous Angiomas, Telangiectasias, Mixed), Clinical Presentation, Diagnosis, Treatment Methods, and Indications. Transient Ischemic Attack, Extra-Intracranial Bypass.
- Surgical Anatomy of the Intervertebral Disc, Pathological Anatomy of Intervertebral Disc Prolapse, Symptoms of Intervertebral Disc Prolapse at Different Levels of the Spine, Diagnosis, Treatment, Prognosis.
- • Spinal Canal Stenosis as a Consequence of Spondylosis, Mechanisms of Occurrence, Clinical Presentation, Neurological Findings, Myelopathy, Diagnosis, Treatment, Prognosis.
- Spinal Cord Tumors (Extramedullary and Intramedullary), Clinical Presentation, Diagnosis, Treatment, Consequences, Prognosis Factors.
- Injuries and Disorders of Peripheral Nerves, Classification, Indications for Surgical Treatment, Timing of Surgical Intervention in Peripheral Nerve Injuries. Compressive Neuropathies. Peripheral Nerve Tumors.
- Movement Disorders, Epilepsy, and Painful Conditions - Indications for Surgical Treatment.

**What the student should know:**

- Injuries of the Cervical Spinal Cord Segment, Primary Medical Treatment
- Injuries of the Thoracic Spinal Cord Segment, Primary Medical Treatment
- Cauda Equina Injuries
- Spinal Cord Injuries by Firearms
- Spontaneous Subarachnoid Hemorrhage
- Intracranial Arterial Aneurysms
- Hypertensive Intracranial Hemorrhages
- Intracranial Hemorrhages caused by Arteriovenous Malformations

## Practice Sessions 6 hours

- Examination of a Patient with Spontaneous Subarachnoid Hemorrhage, Determination of Clinical Grade, Taking Auto and Heteroanamnesis, Documentation, Recognition of Appropriate Diagnostic Methods, Determination of Patient Management Depending on Clinical Condition. Observation of Angiography, Potential Embolization, and Surgery.
- Examination and Differential Diagnosis of Intracranial Vascular Anomalies, Insight into Diagnostic Methods and Principles of Determining Therapeutic Modalities.
- Examination of a Patient with a Spinal Cord Tumor, Interpretation of Findings and Diagnostic Methods, Proposal of Treatment Approach, Postoperative Course.
- Anamnesis and Detailed Neurological Examination of a Patient with Degenerative Disorders of the Lumbar, Cervical, and Thoracic Spine, Interpretation of Diagnostic Methods and Findings, Proposal of Therapeutic Measures Based on Findings and Patient's Condition. Resolving Differential Diagnostic Issues in Degenerative Spinal Diseases.
- Neurological and Local Examination of a Patient with Total and Partial Brachial Plexus and Peripheral Nerve Injury, as well as Compressive Neuropathy.
- Examination of a Patient with Painful Syndrome, Discussion Regarding Treatment Approach (Medical, Pump Implantation, Surgical).

**What the student should know:**

- Neurological Examination of the Upper Extremities
- Neurological Examination of the Trunk and Spine
- Neurological Examination of the Lower Extremities
- Testing Function of the Brachial Plexus
- Testing Function of the Axillary Nerve
- Testing Function of the Musculocutaneous Nerve
- Testing Function of the Radial Nerve
- Testing Function of the Median Nerve
- Testing Function of the Ulnar Nerve
- Testing Function of the Sciatic Nerve

- • Brain Arteriovenous Malformations
- Cerebral Cavernomas
- Tumors of the Spinal Canal and Spinal Cord
- Intracranial Empyemas and Abscesses
- Spinal Abscesses of the Spinal Canal
- Cervical Radiculopathy
- Cervical Myelopathy
- Lumbar Radiculopathy
- Cauda Equina Syndrome
- Cervical Disc Herniation
- Thoracic Disc Herniation
- Lumbar Disc Herniation
- Urinary Retention
- Urinary Incontinence
- Fecal Retention
- Fecal Incontinence
- Injuries and Disorders of the Brachial Plexus
- Injuries and Disorders of the Sciatic Nerve

- Testing Function of the Peroneal Nerve
- Testing Function of the Tibialis Nerve

TEACHING UNIT 14 (FOURTEENTH WEEK):

## THORACIC WALL SURGERY. THORACIC TRAUMA. PLEURAL MEMBRANE SURGERY

Lectures 6 hours

- Spontaneous pneumothorax
- Pleural mesothelioma
- Pleural empyema
- Blunt and penetrating chest trauma, injuries to the major airways, diaphragmatic injuries, post-traumatic pseudoaneurysm of the aorta, post-traumatic tracheal stenosis

**What the student should know:**

- Pectus excavatum and other deformities of the chest wall
- Traumatic pneumothorax
- Uncomplicated rib fractures
- Rib fractures with chest organ injury
- Sternum fracture
- Thoracic flail chest
- Traumatic hemothorax
- Spontaneous pneumothorax
- Pulmonary contusion
- Intrapleural complications - exudate, empyema

Practice Sessions 6 hours

- Clinical assessment of patients with chest trauma
- Determining the presence of fluid collection in the pleural space by percussion
- Determining the presence of fluid collection in the pleural space by auscultation
- Determining the presence of air collection in the pleural space by percussion
- Determining the presence of air collection in the pleural space by auscultation
- Radiographic finding of fluid collection in the pleural space without air presence
- Radiographic finding of hydro-pneumothorax
- Radiographic aspect of diaphragmatic rupture
- Needle aspiration and drainage in pneumothorax cases
- Management of an immobile injured patient
- Standard diagnostic procedures in a mobile patient with isolated chest injury
- Standard diagnostic procedures in an immobile patient with isolated chest injury
- Procedure for an injured patient with rib fracture

TEACHING UNIT 15 (FIFTEENTH WEEK)

### MEDIASTINAL SURGERY. LUNG SURGERY

Lectures 6 hours

- ❖ Lung Tumors - Surgical Treatment
- ❖ Mediastinal Tumors and Cysts - Surgical Treatment
- ❖ Role and Significance of Bronchoscopy
- ❖ Pulmonary Hydatid Cyst
- ❖ Lung Abscess, Bronchiectasis, Pulmonary Tuberculosis, Mediastinitis - Surgical Treatment

**What the student should know:**

- ❖ Foreign Body in the Bronchus
- ❖ Bronchial Rupture
- ❖ Lung Abscess and Bronchiectasis
- ❖ Pulmonary Tuberculosis (TB)
- ❖ Pulmonary Hydatid Cyst
- ❖ Lung Cancer, Histopathological Types, Diagnosis, and Multidisciplinary Treatment
- ❖ Mediastinitis
- ❖ Mediastinal Tumors
- ❖ Thymus Disorders
- ❖ Aspiration Pneumonia
- ❖ Respiratory Distress Syndrome
- ❖ Acute Respiratory Disorders

Practice Sessions 6 hours

- ❖ Evaluation of Patients with Lung Tumors, History Taking, Clinical Examination, Interpretation of Radiographic Findings, Treatment Planning.
- ❖ Management of Patients with Cystic Lesions in the Mediastinum.
- ❖ Clinical Assessment of Patients with Bronchiectasis.

**What the student should know:**

- ❖ Palpation of Enlarged Supraclavicular and Axillary Lymph Nodes
- ❖ Physical Examination Findings in Patients with Tracheal Stenosis
- ❖ Radiographic Findings of Lung Tumors
- ❖ Radiographic Findings of Atelectasis as a Manifestation of Lung Tumors
- ❖ Radiographic Appearance of Mediastinal Tumors

## MODULE 2: PLASTIC SURGERY, PEDIATRIC SURGERY, UROLOGY AND ORTHOPEDICS

TEACHING UNIT 16 (SIXTEENTH WEEK):

### CHRONIC, NEUROPATHIC, AND CANCER PAIN

Lectures 6 hours

- ➢ The student acquires necessary knowledge about the causes of chronic pain and the importance of treatment.
- ➢ The student gains knowledge to differentiate between acute and chronic pain and to provide first aid for chronic pain.
- ➢ Negative physiological effects of untreated acute pain.
- ➢ Risk factors for the development of chronic post-operative and post-traumatic pain.
- ➢ Pharmacotherapy and nerve blocks suitable for treating pain after various surgical interventions or injuries.
- ➢ Non-pharmacological methods for treating acute pain.
- ➢ The significance of preventive analgesia during the perioperative period.
- ➢ Principles of multimodal therapy for acute and chronic pain

Practice Sessions 6 hours

- ➢ Determining the therapy and therapeutic approach for acute and chronic pain.
- ➢ Principles of multimodal therapy for acute and chronic pain.
- ➢ Pharmacotherapy and nerve blocks.
- ➢ Treatment of chronic post-operative and post-traumatic pain

TEACHING UNIT 17 (SEVENTEENTH WEEK):

**BASIC PRINCIPLES OF PLASTIC SURGERY**
**THERMAL INJURIES (BURNS AND FROSTBITE)**
**SKIN AND SOFT TISSUE TUMORS**

Lectures 6 hours

- The student acquires necessary knowledge about the causes of burns and tissue changes relevant for treatment. The student learns to assess the surface and depth of burns, provide initial and general medical assistance to the injured. The student gains knowledge about necessary measures in case of transportation, potential early complications, and prognosis. They learn how to determine the required fluid replacement, the method of administration, and distribution.
- They also acquire knowledge about the significance of infection in burns and preventive measures. They understand the possibilities of local treatment of burn surfaces and initial treatment of burn diseases. The student gains basic knowledge about the treatment and significance of burns in specific regions and respiratory burns, as well as injuries caused by electrical current, lightning, caustic substances, radiation, and especially injuries caused by extremely low temperatures (frostbite)

Practice Sessions 6 hours

- Determination of burn depth (degree).
- Calculation of burn surface area (Rule of nines and Rule of palms). Preparation for transportation.
- Calculation of required fluid for resuscitation and distribution. Local treatment using the closed method for IIa and IIb burns. Observation of emergency surgical procedures - longitudinal incisions. Primary burn care. Frostbite treatment.

TEACHING UNIT 18 (EIGHTEENTH WEEK):

**HAND SURGERY**
**FACIAL AND NECK SURGERY**
**PLASTIC SURGERY OF THE TRUNK AND EXTREMITIES AND AESTHETIC SURGERY**

Lectures 6 hours

- The student acquires necessary knowledge about injuries and degenerative diseases of the hand.
- They learn about essential measures in case of transportation, possible early complications, and prognosis. Familiarization with basic concepts, classifications, diagnostic methods, physical examination of hand injuries, radiological, and other diagnostic approaches, as well as fundamental general principles of musculoskeletal injuries treatment.
- The student becomes familiar with soft tissue and bone injuries of the hand, learning basic concepts of traumatic amputation and replantation.
- They gain knowledge about the significance of prompt and adequate closure of skin defects, resulting from injuries, trophic disorders, congenital anomalies, infection, or surgical procedures. In this context, students learn reasons for skin transplantation, donor sites, types of grafts, graft placement techniques, and conditions for acceptance, as well as the reasons for graft failure, advantages, and disadvantages of

Practice Sessions 6 hours

- Working with patients, identifying signs of fractures, joint range of motion, the presence of swelling, effusion, deformities, skin assessment, integument examination, and neurovascular examination. Examination of patients with hand injuries, primary care, wound management, hand immobilization, static immobilization, dynamic immobilization.
- Familiarization with skin transplantation methods. Understanding the differences between grafts, their advantages, and disadvantages. Grafts, variations in graft content and distance from the defect. Graft care. Graft control.
- Decubitus ulcers – recognition, clean and dirty ulcers. Preparation for surgery. Prevention. Most common

specific grafts, and care procedures for transplanted skin.

- They become acquainted with reasons for the use of flaps, types of flaps, and care for donor sites. Regarding decubitus ulcers, students learn about the reasons for their development, most frequent localization, preparatory measures for surgery, and methods of prevention and treatment.
- About skin tumors, students discover the importance of surgical therapy, diagnosis, differential diagnosis, prognosis, and the significance of pH findings in prognosis and treatment.
- Regarding ingrown nails as a common pathological finding, students find out about the reasons for their occurrence, reasons for recurrence, as well as therapy and necessary precautionary measures for interventions.
- They learn about the causes of lymphedema, types, and basic surgical treatment methods.

procedures and postoperative treatment. Ingrown nails – appearance, preparation for surgery. Reasons for recurrence. Precautionary measures for diabetic and trophic disorders. Lymphedema – types and differential diagnosis.

- Familiarization with skin transplantation methods. Understanding the differences between grafts, their advantages, and disadvantages. Grafts, variations in graft content and distance from the defect. Graft care. Graft control. Decubitus ulcers – recognition, clean and dirty ulcers. Preparation for surgery. Prevention. Most common procedures and postoperative treatment. Ingrown nails – appearance, preparation for surgery. Reasons for recurrence. Precautionary measures for diabetic and trophic disorders. Lymphedema – types and differential diagnosis. Observing interventions in the field of aesthetic surgery.

TEACHING UNIT 19 (NINETEENTH WEEK)::

**INTRODUCTION TO PEDIATRIC SURGERY**
**CONGENITAL AND DEVELOPMENTAL SKELETAL ANOMALIES AND CONDITIONS**
**TUMORS IN CHILDREN**

Lectures 6 hours

- Introduction to the embryological basis of the origin and development of anomalies, as well as the possibilities of prenatal diagnosis.
- All topics include the urgency level, methods, and optimal timing of treatment, as well as the specificities of the trauma system it deals with, and the tumors mentioned in the field.
- The student becomes familiar with endoscopic diagnostic and treatment options within the mentioned field.

Practice Sessions 6 hours

- Clinical diagnosis of developmental hip disorder (DDH). Ultrasound and radiographic examination in the diagnosis of DDH.
- Conservative treatment of DDH.
- Diagnosis of congenital foot malformations. Conservative treatment of foot deformities.
- Osteomyelitis. Joint punctures.

TEACHING UNIT 20 (TWENTIETH WEEK):

## CONGENITAL ANOMALIES OF THE HEAD AND NECK
## CONGENITAL ANOMALIES OF THE THORACIC CAVITY AND LUNGS

Lectures 6 hours

- The student familiarizes themselves with the basic embryonic aspects of the development and possibilities of prenatal diagnosis of head and neck anomalies. This includes cleft lip and palate, abnormalities of the ear, oral cavity, tongue, and nose. They become acquainted with the most common anomalies of the neck, such as lateral and medial cysts, fistulas, sinuses, dermoid cysts, lymphangiomas, and hemangiomas. The student learns to recognize the clinical presentation, make a diagnosis, and understand diagnostic and therapeutic procedures, outcomes, and possible complications of head anomalies, specifically cleft lip and palate, oral cavity abnormalities, tongue anomalies, and nose anomalies.
- The student learns the theoretical foundations of the diagnosis and treatment of ear shell anomalies.
- The student thoroughly understands the clinical presentation, makes a precise diagnosis, becomes familiar with further diagnostic and therapeutic procedures, outcomes, and possible complications of neck anomalies, including medial and lateral cysts, fistulas, sinuses, dermoid cysts, lymphangiomas, and hemangiomas, as well as all pigmentary skin changes in children.
- The student becomes acquainted with the basic embryonic aspects of chest wall and its contents anomalies.
- The student becomes thoroughly familiar with the most common congenital anomalies of the chest wall, lungs, and cardiovascular anomalies in childhood.
- Detailed knowledge about lung and mediastinal tumors characteristic of childhood.
- The student becomes thoroughly familiar with pneumothorax in childhood, as well as empyema of the pleura.

Practice Sessions 6 hours

- Examination of a child with cleft lip and palate. Care and nutrition of a child with cleft lip and palate - nasogastric tube for feeding.
- Clinical examination of neck anomalies.
- Examination and management of a child with congenital chest and lung anomalies.

TEACHING UNIT 21 (TWENTY-FIRST WEEK):

## CONGENITAL ANOMALIES OF THE UPPER DIGESTIVE TRACT CONGENITAL MEGACOLON. ANORECTAL MALFORMATIONS

### Lectures 6 hours

- The student becomes acquainted with the basic embryonal aspects of the origin and possibilities of prenatal diagnosis of anomalies related to the umbilicus, malrotations, gastrointestinal tract anomalies, biliary atresia, and meconium ileus. They familiarize themselves with both classic and endoscopic diagnostic and treatment methods within this area.
- The student learns the fundamental principles of care, urgency, and transport methods for non-neonatal patients based on the specificity of the anomaly.
- The student becomes acquainted with the clinical presentation, diagnosis, further diagnostic and therapeutic procedures, outcomes, and potential complications of atresia of the esophagus and tracheo-bronchial fistulas, stomach anomalies, obstructions, and bowel atresias during the non-neonatal period. They also become familiar with the clinical presentation, diagnosis, further diagnostic and therapeutic procedures, outcomes, and potential complications of stomach anomalies, obstructions, and bowel atresias during the non-neonatal period.
- The student can definitively and accurately diagnose not only based on history and clinical presentation but also by applying additional diagnostic methods (e.g., ultrasound findings) for hypertrophic pylorus.
- The student becomes acquainted with the clinical presentation, further diagnostic and therapeutic procedures, outcomes, and complications of congenital megacolon. The student learns the urgency levels and transportation conditions for these anomalies.
- The student is introduced to the clinical and pathological aspects of necrotizing enterocolitis, as well as the issues related to differential diagnosis.
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### Practice Sessions 6 hours

- Placement of a nasogastric tube
- First aid for gastroschisis and omphalocele
- Interpretation of ultrasound (EHO) findings for the mentioned anomalies
- Interpretation of X-rays, native images of digestive tract atresias
- Contrast examinations of the digestive tract in congenital anomalies
- Abdominal palpation in pediatric patients
- Rectal enema in pediatric patients
- Placement of a nasogastric tube in a child
- Enema. Anus dilation using Hegar dilators
- First aid for gastroschisis and omphalocele
- Interpretation of ultrasound (EHO) findings for the mentioned anomalies. Interpretation of X-rays, native images of digestive tract atresias. Contrast examinations of the digestive tract in congenital anomalies.

TEACHING UNIT 22 (TWENTY-SECOND WEEK):

# PATHOLOGY OF THE UMBILICAL AND INGUINAL REGIONS. SPECIFICS OF APPENDICITIS IN CHILDREN. ACUTE ABDOMEN IN CHILDREN. PEDIATRIC UROLOGY.

## Lectures 6 hours

- The student becomes familiar with anomalies such as gastroschisis and omphalocele, as well as initial treatment.
- The student learns about embryonal aspects of the development and diagnosis of pathology of the inguinal canal, inguinal hernias, and undescended testicles. They become familiar with the clinical presentation, diagnostic and therapeutic procedures, outcomes, and complications of inguinal canal pathology and undescended testicles.
- The student becomes acquainted with the basic classification of emergency conditions in pediatric surgery. They learn about the organization of emergency care. They gain an understanding of the concept of acute abdomen in pediatric surgery. Diagnostic procedures in cases of acute abdomen, symptoms, and signs of high and low bowel obstructions are discussed. They become familiar with the causes of gastrointestinal bleeding in children and pediatric injuries.
- The student acquaints themselves with the clinical presentation, all diagnostic and therapeutic procedures, outcomes, and complications in the field of emergency conditions in pediatric surgery.
- The student becomes familiar with the basic embryonal aspects of urotract anomalies. They learn about the pathology and pathophysiology of diseases and trauma of the pediatric urotract, as well as the specifics of diagnostic procedures. They become familiar with the classification of anomalies and diseases and all clinical varieties, diagnostics, and treatment methods. Tumors of the pediatric urotract and specifics of endoscopic procedures are discussed.
- The student acquaints themselves with the clinical presentation, all diagnostic and therapeutic procedures, outcomes, and complications of anomalies, diseases, and trauma of the pediatric urotract. They gain detailed knowledge of the concept of acute scrotum. They become familiar with the classification of male and female genitalia anomalies and clinical varieties. They learn about the clinical presentation, diagnostic and therapeutic procedures, outcomes, and complications of varicocele

## Practice Sessions 6 hours

- Palpation of the abdomen in children. Rectal douches in childhood. Placing a nasogastric tube in a child. Enema. Dilatations of the anus with hegar. Dressing of gastroschisis and omphalocele. Interpretation of ECHO findings of the mentioned anomalies. Interpretation of radiography, native image of digestive tract atresia. Contrast examination of the digestive tract in congenital anomalies. Overview of the inguinum and varieties of inguinal hernia, as well as entrapment, taxis. Examination of the inguinum and scrotum in undescended testicles, classification and differential diagnosis. Enemas in neonatal surgery. practical performance of passage and irrigation
- Rectal catheter. Interpretation of EHO and X-ray images of the abdomen. Palpation in acute abdomen. Abdominal palpation in pyloric hypertrophy. Rectal douches
- Leaving the abdominal drain. Abdominal puncture. Hydrostatic disinvagination
- Interpretation of EHO findings, MCUG and IVP in pediatric urology
- Interpretation of basic laboratory analyzes for UI in pediatric urology. Ways of taking urine for analysis in pediatric urology. Implementation and supervision of UI prophylaxis. Placement and removal of catheters and suprapubic drainage in pediatric urology. Examination of the acute scrotum, examination of the scrotum in varicocele. General overview of male and female genitalia in children. Removal of adhesions of the foreskin or labia minora under local anesthesia. Placement and removal of suprapubic drainage, placement of transureteral catheters
- Interpretation of urethrogram and genitogram

TEACHING UNIT 23 (TWENTY-THIRD WEEK):

**SEMIOLOGY OF UROGENITAL DISORDERS. CLINICAL EXAMINATION. DIAGNOSTIC PROCEDURES IN UROLOGY. UROGENITAL INJURIES. ACUTE SCROTUM. OBSTRUCTIVE UROPATHIES. BENIGN PROSTATIC HYPERPLASIA.**

| Lectures 6 hours | Practice Sessions 6 hours |
|---|---|
| ➢ The student acquires knowledge about the most significant signs and symptoms of urological disorders, as well as the diagnostic procedures, their execution, and their significance.<br>➢ The student gains knowledge about the most common congenital malformations of the urogenital tract, which are significant in the pathology of adults.<br>➢ The student learns to recognize symptoms and observe signs during the physical examination that indicate urinary tract diseases in both women and men.<br>➢ The student acquires knowledge about basic biochemical blood and urine tests that need to be performed on patients and learns to interpret them when dealing with urinary tract diseases in both men and women.<br>➢ The student learns about the mechanism of injury, classification, diagnosis, and treatment of urogenital system injuries.<br>➢ The student is capable of identifying urogenital system injuries, providing first aid, and adequately treating the injured individual. | ➢ Specifics of medical history taking in urological patients. Physical examination of urological patients. Diagnostic procedures - performing and/or interpreting the results of individual procedures. Tests for evaluating neurogenic dysfunction of the urinary bladder.<br>➢ Urological procedures in cases of spinal cord injury.<br>➢ Management of patients with urogenital tract injuries.<br>➢ Interpretation of spermograms, tests for erectile function, acute scrotum syndrome.<br>➢ Medical history, diagnostic procedures in patients with benign prostatic hyperplasia (BHP).<br>➢ Medical history, diagnostic procedures in patients with prostate cancer.<br>➢ Treatment modalities for BHP and prostate cancer. |

TEACHING UNIT 24 (TWENTY-FOURTH WEEK):

**UROLITHIASIS. RENAL COLIC. URINARY TRACT INFECTIONS. PYOGENIC RENAL INFECTIONS. INFECTIONS OF THE MALE GENITAL ORGANS. GENITOURINARY SYSTEM TUBERCULOSIS.**

| Lectures 6 hours | Practice Sessions 6 hours |
|---|---|
| ➢ The student gains knowledge about the etiology, diagnosis, and treatment of urinary tract infections in general, as well as specific forms of inflammatory processes in the urotract.<br>➢ The student learns to recognize the symptoms and signs of urinary infections, can interpret laboratory and bacteriological findings in urine, and determine appropriate therapy, as well as refer the patient for additional examinations when necessary.<br>➢ The student can recognize symptoms and, through physical examination, suspect the presence of acute and chronic diseases of male genital organs, such as acute epididymitis, testicular torsion, balanoposthitis, priapism, hydrocele, varicocele.<br>➢ The student can interpret laboratory, ultrasonography, and radiographic findings that may indicate the presence of renal tuberculosis, learns about complications, and basic principles of therapy. | ➢ Management of patients with urinary tract infections. Procedures for establishing and maintaining drainage systems in patients with complicated urinary tract infections.<br>➢ Treatment of patients with genital organ diseases. |

TEACHING UNIT 25 (TWENTY-FIFTH WEEK):

**KIDNEY TUMORS. UPPER UROTHELIAL TUMORS. BLADDER TUMORS. PROSTATE CANCER. TESTICULAR TUMORS. PENILE TUMORS. NEUROGENIC BLADDER DYSFUNCTION AND URINARY INCONTINENCE. BASIC MALE INFERTILITY. ERECTILE DYSFUNCTION. KIDNEY TRANSPLANTATION.**

Lectures 6 hours

- The student learns about the basic therapeutic principles and indications for their implementation in kidney tumors, upper urothelial tumors, and bladder tumors.
- The student becomes familiar with congenital anomalies of the kidneys, ureters, and urethra that can manifest in adults and their significance in the development of chronic urological diseases in adults.
- The student acquires knowledge about the etiology, diagnosis, and treatment of benign prostatic hyperplasia (BHP) and prostate cancer.
- The student is capable of identifying irregularities in the structure and size of the prostate through physical examination, learns the necessary diagnostic methods to confirm the presence of benign or malignant enlargement, and understands therapeutic principles.
- The student learns about diagnostic and therapeutic procedures in testicular tumors and penile cancer.
- The student becomes acquainted with urological aspects of neurogenic disorders affecting bladder function and methods for diagnosing and treating these disorders in acute and chronic phases.
- The student learns to recognize acute and chronic neurogenic disorders of bladder function.
- The student learns to identify primary symptoms that may indicate the presence of kidney tumors, urothelial tumors, and bladder tumors, and becomes familiar with the diagnostic methods necessary for differential diagnosis of these tumors.
- The student gains knowledge about indications for kidney transplantation, the procedure for performing transplantation, necessary laboratory analyses, and postoperative monitoring of patients with a transplanted kidney.
- The student becomes familiar with indications for kidney transplantation, preoperative patient preparation, and postoperative follow-up.

Practice Sessions 6 hours

- Medical history, physical examination, and diagnostic procedures in patients with renal parenchymal and upper urothelial tumors.
- Medical history, physical examination of patients with bladder tumors, interpretation of test results (laboratory analyses and X-ray findings). Participation in diagnostic procedures (cystoscopy, ultrasound, bimanual palpation of the bladder).

TEACHING UNIT 26 (TWENTY-SIXTH WEEK):

**INTRODUCTION TO ORTHOPEDIC SURGERY AND TRAUMATOLOGY. INFLAMMATORY PROCESSES**

Lectures 6 hours

Practice Sessions 6 hours

- The student acquires knowledge about the structure of bone, cartilaginous, and connective tissue and the development of the musculoskeletal system.
- The student gains an understanding of the significance of orthopedic surgery and traumatology in modern medicine.
- The student learns about the pathophysiological mechanisms of bone and joint infection and its general and local symptoms. They learn diagnostic procedures for confirming or refuting bone and joint infections, with a particular focus on understanding the algorithms applied, ranging from standard to complex and specific ones.
- The student acquires knowledge of the principles of treating bone and joint infections. They are capable of diagnosing and initiating treatment and assessing the need for hospitalization and surgical intervention.
- The student learns about the diagnosis and treatment of bone and joint tuberculosis.
- They are informed about the types of surgical procedures used in the treatment of bone and joint infections.

- Features of medical history taking in orthopedic patients.
- Students are shown and then perform on their own: inspection and palpation of extremities, measurement of the range of motion of major joints, measurement of the length and circumference of extremities.
- Students are shown and then perform on their own: applying immobilization to the upper and lower extremities.
- Students are shown and then perform on their own: dressing of a postoperative wound.
- Students are shown and then perform on their own: dressing of an infected wound and obtaining material for microbiological analysis.

TEACHING UNIT 27 (TWENTY-SEVENTH WEEK):

**TUMORS OF THE MUSCULOSKELETAL SYSTEM.**
**TUMOR-LIKE LESIONS.**
**DEGENERATIVE DISEASES OF THE MUSCULOSKELETAL SYSTEM.**

Lectures 6 hours

- The student becomes familiar with the characteristics of the most significant types of primary and secondary tumors of the musculoskeletal system.
- The student learns characteristic medical history data, clinical and radiographic signs used to establish a diagnosis and differential diagnosis in relation to tumor-like lesions. Understands the significance of the biological aggressiveness of the tumor, the degree of process dissemination, and the patient's overall condition when choosing the type of surgical treatment.
- Acquires the principles of diagnostic procedures necessary to make a correct diagnosis and the basic principles of treating pathological fractures.
- The student becomes familiar with characteristic medical history data, clinical, and radiographic signs used to establish a diagnosis and a differential diagnosis of osteoarthritis.
- The student gains knowledge of the principles of treating osteoarthritis. Surgical treatment of coxarthrosis and gonarthrosis.

Practice Sessions 6 hours

- Conversations with patients who have tumors of the musculoskeletal system, obtaining medical history, clinical and neurological examination of the patient, interpreting diagnostic procedures, creating possible treatment strategies, familiarization with non-operative and operative treatment procedures, and maintaining medical documentation.
- Presentation of a patient with coxarthrosis. Obtaining medical history, clinical examination, and interpretation of preoperative radiography. Examination of the patient and interpretation of hip radiography after endoprosthesis implantation.
- Presentation of a patient with gonarthrosis. Obtaining medical history, clinical examination, and interpretation of preoperative radiography. Examination of the patient and interpretation of knee radiography after endoprosthesis implantation.

TEACHING UNIT 28 (TWENTY-EIGHTH WEEK):

**DISEASES AND DEFORMITIES OF THE SPINE.**
**INTRODUCTION TO TRAUMATOLOGY OF THE MUSCULOSKELETAL SYSTEM.**

Lectures 6 hours

- The student becomes familiar with characteristic medical history data, clinical, and radiographic signs, which are used to establish the diagnosis of scoliosis and kyphosis.
- The student acquires knowledge about the principles of treating spondyloarthrosis.
- The student learns to recognize clinical signs of fractures, distinguishing between soft tissue injuries and injuries to the musculoskeletal system. They learn to interpret radiographs, identify the types of injuries, and understand the basic methods of their diagnosis and treatment.
- The student learns to identify fracture complications and the presence of potential nerve and vascular lesions.

Practice Sessions 6 hours

- Examination of a patient with a spinal deformity. Familiarization with non-operative treatment types. Types and techniques of orthosis and cast application.
- Familiarization with basic exercises for spinal deformities. Analysis of X-rays, measurement methods, and types of surgical treatments.
- Presentation of a patient with spondyloarthrosis. Gathering medical history, clinical examination, and interpretation of standard radiography. Interpretation of findings from other diagnostic procedures.
- Working with patients, assessing skeletal integrity, signs of fractures, joint range of motion, the presence of swelling, effusion, deformity, skin evaluation, integrity of tendons, and neurovascular assessment.

TEACHING UNIT 29 (TWENTY-NINTH WEEK):

## UPPER EXTREMITY INJURIES. SPINAL CORD AND PELVIS INJURIES.

### Lectures 6 hours

- The student learns to clinically diagnose clavicle fractures and fractures of the upper arm and to properly transport the patient to the definitive care location.
- The student learns to recognize injuries to the shoulder girdle and dislocation of the shoulder joint and provides temporary care for them.
- The student learns methods and principles of treating upper extremity injuries, from the shoulder to the wrist, and learns indications for surgical treatment.
- They learn to recognize the most common complications following forearm fractures and Folkman's ischemic contracture.
- Based on the clinical picture and neurological findings, the student learns to diagnose injuries to the cervical, thoracic, and lumbar spine, with or without signs of nerve structure injury.
- The student learns to apply temporary immobilization correctly and to transport the patient to the definitive care location. They learn the basic ways to prevent additional neurological deficits in patients who do not have immediate neurological deficits following the injury.
- The student learns which diagnostic methods can be applied today in diagnosing spine, spinal canal, and nerve structure injuries.
- The student learns to recognize the basic clinical symptoms and signs of pelvic bone fractures, learns which diagnostic procedures need to be performed, and how to properly treat and transport a patient with a pelvic fracture.

### Practice Sessions 6 hours

- Performing tests and assessing the range of motion of the shoulder, elbow, and wrist. Evaluating the neurovascular status of the upper extremity. Assessing muscle strength, muscle trophism, and skin condition of the extremity. Measuring the length and circumference of individual segments of the upper extremity.
- Interpreting radiographs in cases of upper extremity injuries.
- Immobilization of parts of the upper extremity.
- Gathering trauma history, examining patients with spinal injuries, evaluating range of motion in the cervical and thoracolumbar regions. Assessing nerve root irritation. Assessing deficits in gross motor strength and sensitivity, both superficial and deep, in the context of spinal cord injuries.

TEACHING UNIT 30 (THIRTIETH WEEK):

## LOWER EXTREMITY INJURIES

| Lectures 6 hours | Practice Sessions 6 hours |
| --- | --- |
| ➢ The student learns the significance and frequency of proximal femur fractures, methods of care, indications for surgical treatment, and the type of surgical treatment for hip fractures in elderly individuals.<br>➢ The student learns to establish a working diagnosis of tibia and fibula fractures and the orthopedic and surgical treatment methods based on the clinical presentation.<br>➢ The student learns to recognize knee injuries and the principles of their treatment.<br>➢ They learn the clinical presentation and necessary diagnostic methods for ankle and foot injuries, as well as possible complications and their prevention. | ➢ Performing tests and assessing the range of motion of the hip, knee, and ankle joints.<br>➢ Evaluating the neurovascular status of the lower extremity.<br>➢ Assessing muscle strength, muscle trophism, and the condition of the skin of the lower extremity.<br>➢ Measuring the length of the lower extremity, the range of motion in the hip, knee, and ankle, and evaluating the range of motion in individual segments of the lower extremity.<br>➢ Interpreting radiographs for lower extremity injuries.<br>➢ Immobilizing parts of the lower extremity.<br>➢ Presenting a patient with a hip injury and interpreting diagnostic and treatment methods under the guidance of an instructor.<br>➢ Conducting tests to assess ligament injuries in the knee, meniscus injuries, and the Ballottement test for the patella. |

## LECTURE SCHEDULE

**WEDNESDAY**

**14:35-19:05**

**(Hall on the 8th floor of UCCK)**

## PRACTICE SCHEDULE

| CLINIC FOR SURGERY<br>UCC KRAGUJEVAC | |
|---|---|
| **THURSDAY** | **FRIDAY** |
| **13:00 - 15:15** | **13:00 - 15:15** |

Schedule of lectures, practical classes and tests – academic calendar

**COURSE SCHEDULE FOR SUBJECT SURGERY**

| Module | Week | Type | Method Unit Title | Instructor |
|---|---|---|---|---|
| 1 | 1 | **Lectures (L)** | Asepsis and Antisepsis. Infections in Surgery. Preoperative Preparation and Postoperative Course. | Assistant Professor Dr. Nenad Marković |
| 1 | 1 | **Practical Exercises (PE)** | According to the schedule of the Department | |
| 1 | 2 | **L** | Injuries. Wounds.<br>Bleeding (Transfusion and Hemostasis).<br>Shock. Fluid and Electrolyte Balance. Resuscitation. Anesthesia and Analgesia. | Associate Professor Dr. Bojan Milošević,<br><br>Associate Professor Dr. Nenad Zornic |

**COURSE SCHEDULE FOR SUBJECT SURGERY**

| Module | Week | Type | Method Unit Title | Instructor |
|---|---|---|---|---|
| 1 | 2 | **PE** | According to the schedule of the Department | |
| 1 | 3 | **L** | Diaphragm and Esophagus Surgery | Assistant Professor Dr. Mladen Pavlović |

**COURSE SCHEDULE FOR SUBJECT SURGERY**

| Module | Week | Type | Method Unit Title | Instructor |
|---|---|---|---|---|
| 1 | 3 | **PE** | According to the schedule of the Department | |
| 1 | 4 | **L** | Surgery of the Stomach and Duodenum<br>Bleeding from the Upper Digestive Tract | Associate Professor Dr. Bojan Milošević |

**COURSE SCHEDULE FOR SUBJECT SURGERY**

| Module | Week | Type | Method Unit Title | Instructor |
|---|---|---|---|---|
| 1 | 4 | **PE** | According to the schedule of the Department | |
| 1 | 5 | **L** | Surgery of the Small Intestine and Appendix. Ileus | Associate Professor Dr. Bojan Stojanović |

**COURSE SCHEDULE FOR SUBJECT SURGERY**

| Module | Week | Type | Method Unit Title | Instructor |
|---|---|---|---|---|
| 1 | 5 | **PE** | According to the schedule of the Department | |
| 2 | 6 | **L** | Hepatobiliary Surgery | Associate Professor Dr. Ivan Radosavljević |

**COURSE SCHEDULE FOR SUBJECT SURGERY**

| Module | Week | Type | Method Unit Title | Instructor |
|---|---|---|---|---|
| 2 | 6 | **PE** | According to the schedule of the Department | |
| 2 | 7 | **L** | Pancreatic and Splenic Surgery | Associate Professor Dr. Aleksandar Cvetković |

**COURSE SCHEDULE FOR SUBJECT SURGERY**

| Module | Week | Type | Method Unit Title | Instructor |
|---|---|---|---|---|
| 2 | 7 | **PE** | According to the schedule of the Department | |
| 2 | 8 | **L** | Colorectal Surgery. Colonic Obstruction. Rectal and Anal Surgery. | Associate Professor Dr. Bojan Milošević |

**COURSE SCHEDULE FOR SUBJECT SURGERY**

| Module | Week | Type | Method Unit Title | Instructor |
|---|---|---|---|---|
| 2 | 8 | **PE** | According to the schedule of the Department | |
| 2 | 9 | **L** | Surgery of Endocrine Glands. Breast Surgery. | Associate Professor Dr. Marko Spasić |

**COURSE SCHEDULE FOR SUBJECT SURGERY**

| Module | Week | Type | Method Unit Title | Instructor |
|---|---|---|---|---|
| 2 | 9 | **PE** | According to the schedule of the Department | |
| 2 | 10 | **L** | Cardiac and Great Vessel Surgery.<br>Peripheral Arterial Diseases. | AssociateProfessor Dr. Bojan Stojanović |

**COURSE SCHEDULE FOR SUBJECT SURGERY**

| Module | Week | Type | Method Unit Title | Instructor |
|---|---|---|---|---|
| 2 | 10 | **PE** | According to the schedule of the Department | |
| 2 | 11 | **L** | Diseases of Veins and Lymphatic System. | Associate Professor Dr. Marko Spasić |

**COURSE SCHEDULE FOR SUBJECT SURGERY**

| Module | Week | Type | Method Unit Title | Instructor |
|---|---|---|---|---|
| 2 | 11 | **PE** | According to the schedule of the Department | |
| 3 | 12 | **L** | Congenital Malformations and Invasive/Non-Invasive Diagnostic Methods in Neurosurgery. Head and Brain Injuries (Traumatic Coma). Early and Late Complications of Cranio-Cerebral Injuries. Intracranial Hypertension and Expansive Intracranial Processes. | Associate Professor Dr. Vojin Kovačević |

**COURSE SCHEDULE FOR SUBJECT SURGERY**

| Module | Week | Type | Method Unit Title | Instructor |
|---|---|---|---|---|
| 3 | 12 | **PE** | According to the schedule of the Department | |
| 3 | 13 | **L** | Surgical Infections of the Central Nervous System (CNS). Cerebrovascular Diseases (Hemorrhages, Aneurysms, etc.).<br><br>Injuries and Diseases of the Spinal Cord. Radicular Compression Syndrome. Injuries and Diseases of Peripheral Nerves. | Assistant Professor Dr. Marko Petrović |

**COURSE SCHEDULE FOR SUBJECT SURGERY**

| Module | Week | Type | Method Unit Title | Instructor |
|---|---|---|---|---|
| 3 | 13 | **PE** | According to the schedule of the Department | |
| 3 | 14 | **L** | Surgery of the Chest Wall. Thoracic Trauma. Surgery of the Pulmonary Parenchyma. | Associate Professor Dr. Miloš Arsenijević |

**COURSE SCHEDULE FOR SUBJECT SURGERY**

| Module | Week | Type | Method Unit Title | Instructor |
|---|---|---|---|---|
| 3 | 14 | **PE** | According to the schedule of the Department | |
| 3 | 15 | **L** | Surgery of the Mediastinum. Surgery of the Lungs. | Associate Professor Dr. Miloš Arsenijević |
| 3 | 15 | **PE** | According to the schedule of the Department | |
| | | **FTM** | **FINAL TEST OF MODULE 1** | |
| **4** | **16** | **L** | Chronic, neuropathic, and cancer pain | Associate Professor Dr. Nenad Zornic |

**COURSE SCHEDULE FOR SUBJECT SURGERY**

| Module | Week | Type | Method Unit Title | Instructor |
|---|---|---|---|---|
| 4 | 16 | **PE** | According to the schedule of the Department | |
| 4 | 17 | **L** | Basic Principles of Plastic Surgery, Thermal Injuries (Burns and Frostbite), Skin and Soft Tissue Tumors | Full Professor Dr. Dejan Vulović |
| 4 | 17 | **PE** | According to the schedule of the Department | |
| 4 | 18 | **L** | Cosmetic Surgery. Facial and Neck Surgery.<br>Plastic Surgery of the Trunk and Extremities.<br>Hand Surgery. | Full Professor Dr. Dejan Vulović |

**COURSE SCHEDULE FOR SUBJECT SURGERY**

| Module | Week | Type | Method Unit Title | Instructor |
|---|---|---|---|---|
| **4** | **18** | **PE** | According to the schedule of the Department | |
| **4** | **19** | **L** | Introduction to Pediatric Surgery. Congenital and Developmental Skeletal Anomalies and Disorders. Tumors in Children. | Assistant Professor Željko Stepanović. |
| **4** | **19** | **PE** | According to the schedule of the Department | |

**COURSE SCHEDULE FOR SUBJECT SURGERY**

| Module | Week | Type | Method Unit Title | Instructor |
|---|---|---|---|---|
| 4 | 20 | L | Congenital anomalies of the head and neck.<br>Congenital anomalies of the chest and lungs. | Associate Professor Dr. Vojin Kovačević<br>Associate Professor Dr. Milose Arsenijevic |
| **4** | **20** | **PE** | According to the schedule of the Department | |
| 4 | 21 | L | Congenital Anomalies of the Upper Digestive Tract. Congenital Megacolon. Anorectal Malformations. | Associate Professor Dr. Ivan Radosavljević |

**COURSE SCHEDULE FOR SUBJECT SURGERY**

| Module | Week | Type | Method Unit Title | Instructor |
|---|---|---|---|---|
| **4** | **21** | **PE** | According to the schedule of the Department | |
| 4 | 22 | L | Pathology of the umbilical and inguinal regions<br>Specificities of appendicitis in children<br>Acute abdomen in children<br>Pediatric urology | Associate Professor Dr. Aleksandar Cvetkovic |
| **4** | **22** | **PE** | According to the schedule of the Department | |
| **5** | **23** | **L** | Semiology of urogenital diseases. Clinical examination. Diagnostic procedures in urology. Urogenital injuries. Acute scrotum. Obstructive uropathies. Benign prostatic hyperplasia. | Assistant Professor Dr. Mladen Pavlović |

## COURSE SCHEDULE FOR SUBJECT SURGERY

| Module | Week | Type | Method Unit Title | Instructor |
|---|---|---|---|---|
| **5** | **23** | **PE** | According to the schedule of the Department | |
| **5** | **24** | **L** | Urolithiasis. Renal colic. Urinary tract infections. Pyelonephritis. Infections of male genital organs. Genitourinary tuberculosis. | Assistant Professor Dr. Nenad Marković |
| **5** | **24** | **PE** | According to the schedule of the Department | |
| **5** | **25** | **L** | Kidney tumors. Upper urinary tract tumors. Bladder tumors. Prostate cancer. Testicular tumors. Penile tumors. Neurogenic bladder dysfunction and urinary incontinence. Basics of male infertility. Erectile dysfunction. Kidney transplantation. | Associate Professor Dr. Bojan Stojanović |

**COURSE SCHEDULE FOR SUBJECT SURGERY**

| Module | Week | Type | Method Unit Title | Instructor |
|---|---|---|---|---|
| **5** | **25** | **PE** | According to the schedule of the Department | |
| **5** | **26** | **L** | Introduction to orthopedic surgery and traumatology. Inflammatory processes. | Associate Professor Dr. Aleksandar Matic |
| **5** | **26** | **PE** | According to the schedule of the Department | |
| **5** | **27** | **L** | Tumors of the musculoskeletal system. Lesions resembling tumors. Degenerative diseases of the musculoskeletal system. | Assistant Professor Dr Nikola Prodanović |

**COURSE SCHEDULE FOR SUBJECT SURGERY**

| Module | Week | Type | Method Unit Title | Instructor |
|---|---|---|---|---|
| **5** | **27** | **PE** | According to the schedule of the Department | |
| **5** | **28** | **L** | Diseases and deformities of the spinal column. Introduction to musculoskeletal trauma. | Assistant Professor Željko Stepanović |
| **5** | **28** | **PE** | According to the schedule of the Department | |
| **5** | **29** | **L** | Injuries of the upper extremities. Injuries of the spinal column and pelvis. | Associate Professor Dr. Aleksandar Matic |

**COURSE SCHEDULE FOR SUBJECT SURGERY**

| Module | Week | Type | Method Unit Title | Instructor |
|---|---|---|---|---|
| **5** | **29** | **PE** | According to the schedule of the Department | |
| **5** | **30** | **L** | Injuries of the lower extremities. | Assistant Professor Dr. Nikola Prodanović |
| **5** | **30** | **PE** | According to the schedule of the Department | |
| | | **FTM** | **FINAL TEST OF MODULE 2** | |

## Commissions for Final Skills Assessment and Oral Examination

I Examination Commission for the Final Skills and Oral Exam

1. Assoc. Prof. Dr. Ivan Radosavljević, President
2. Assoc. Prof. Dr. Vojin Kovačević, Member
3. Asst. Prof. Dr. Mladen Pavlović, Member
4. Asst. Prof. Dr. Željko Stepanović, Member

II Examination Commission for the Final Skills and Oral Exam

1. Assoc. Prof. Dr. Aleksandar Cvetković, President
2. Prof. Dr. Dejan Vulović, Member
3. Assoc. Prof. Dr. Miloš Arsenijević, Member
4. Asst. Prof. Dr. Marko Petrović, Member
5. Asst. Prof. Dr Danijela Jovanović. Member

III Examination Commission for the Final Skills and Oral Exam

1. Assoc. Prof. Dr. Marko Spasić, President
2. Assoc. Prof. Dr. Aleksandar Matić, Member
3. Assoc. Prof. Dr. Nenad Zornić, Member
4. Asst. Prof. Dr. Nenad Marković, Member

IV Examination Commission for the Final Skills and Oral Exam

1. Assoc. Prof. Dr. Bojan Milošević, President
2. Assoc. Prof. Dr. Bojan Stojanović, Member
3. Asst. Prof. Dr. Nenad Marković, Member
4. Asst. Prof. Dr. Nikola Prodanović, Member
5. Asst. Prof. Dr Danijela Jovanović. Member