Adopted at a meeting of the Faculty Council of the Faculty of Medicine at the Medical University - Sofia on 27/09/2013.
Definitions:

**Educational goals:** they are set by the lecturers and comprise descriptive components of the curriculum.

**Educational outcomes:** they are set by the teaching staff, but refer to the overall curriculum and relate to the education outcomes at the end of education. They are specified in hierarchical levels and subdomains.

**Competences:** they are acquired by and belong to the students/graduates. Successful completion of the curriculum suggests competences should correspond to the learning outcomes set at the beginning of training.

### General and specific competences

1. **General goals**
   - Knowledge
   - Clinical skills
   - Professional conduct

2. **General learning outcomes / competences**

3. **Specific outcomes / competences, according to the year of training and to the individual disciplines, respectively.**
Overall objectives - Knowledge of:

- Main biochemical, genetic, molecular and cellular mechanisms of the normal development, structure and functions of the body as a whole and of its organs.
- Normal psychosocial development of the individual from birth to old age.
- The role of nutrition, lifestyle and preventive medicine.
- The epidemiology of the most common diseases.
- Etiology of diseases - biological and non-biological causes.
- Clinical, laboratory, imaging and pathoanatomical manifestations of disease.
- Pathophysiology of major diseases.
- Various types of pharmacological, surgical and psychological treatment of the main somatic and psychiatric disorders, including pain, adjuvant and alternative treatments, side effects.
- Palliative care for terminal patients.
- Variants of clinical course, treatment and prognosis in children and the elderly.
- Ethical principles of the doctor-patient relationship.
- Organization, financing and realization of public health.
General learning outcomes / competences

Graduates of MF will be able to:

1. Perform outpatient consultations
   1.1. Take an accurate and complete medical and psychosocial history of diseases.
   1.2. Perform organ-specific investigation of the somatic, neurological and mental status in all age groups.
   1.3. Pass clinical judgment and take appropriate decisions.
   1.4. Interpret and give recommendations.
   1.5. Create a sense of security and provide support.
   1.6. Assess the mental state of the patient.

2. Assess the clinical presentation, order tests, make differential diagnosis and discuss the treatment plan
   2.1. Identify patients with acute, life-threatening conditions, perform procedures to stabilize that condition, begin initial treatment and plan its next steps.
   2.2. Order adequate investigations of the patients with tentative diagnosis, interpret the results of the main screening tests, diagnostic procedures and laboratory data and correlate them to the specific clinical presentation.
   2.3. Formulate an appropriate diagnostic plan, reach a meaningful differential and working diagnosis and develop a treatment plan.
   2.4. Discuss an adequate treatment plan with patients and staff.
   2.5. Take care for a dying patient, respectively, their kin.
   2.6. Be able to treat chronic diseases.
3. Provide emergency aid, including first aid and resuscitation, in emergency situations

3.1. Recognize and assess emergency medical conditions.
3.2. Treat emergency conditions.
3.3. Provide basic first aid.
3.4. Maintain vital functions and perform cardiopulmonary resuscitation according to the requirements of good medical practice.
3.5. Carry out treatment of traumatic conditions as required.

4. Prescribe medicines

4.1. Clearly and accurately.
4.2. Select adequate medication or other treatment in accordance with the clinical course.
4.3. Analyze the adequacy of treatment and assess the potential benefits and risks.
4.4. Treat the pain and suffering of the patient.

5. Perform different manipulations

5.1. Measure blood pressure.
5.2. Venipuncture (phlebotomy).
5.3. Place an intravenous catheter.
5.4. Order intravenous therapy and work with infusion systems.
5.5. Subcutaneous and intramuscular injection.
5.6. Give oxygen.
5.7. Mobilization, immobilization and transportation of patients according to the disease.
5.8. Perform a suture on a wound.
5.9. Perform blood transfusion.
5.10. Catheterization of the bladder.
5.11. Urinalysis.

5.13. Main respiratory tests.

6. Communicate successfully in a medical context
6.1. Communicate with patients.
6.2. Communicate with colleagues.
6.3. Be able to deliver bad news.
6.4. Communicate with relatives of the patient.
6.5. Communicate with people with disabilities.
6.6. Communicate when getting informed consent from the patient or his relatives.
6.7. Communicate in writing (including medical records).
6.8. Communicate in conditions of aggression on the part of the patient and their relatives.
6.9. Communicate by telephone.
6.10. Communicate with patients who are in need of an interpreter.

7. Apply ethical and legal principles in medical practice
7.1. Maintain confidentiality.
7.2. Apply ethical principles and evaluation in clinical practice.
7.3. Verify the occurrence of death, complete a death certificate.
7.4. Appoint an autopsy.
7.5. Apply national and European law in clinical practice.

8. Assess the psychological and social aspects of illness.
8.1. Assess the psychological factors in the clinical course and their impact on disease.
8.2. Assess the social factors in the clinical course and their impact on disease.
8.3. Identify stress conditions due to the disease.
8.4. Establish abuse with alcohol and drugs, and dependence on them.
9. **Apply the principles and competences of evidence-based medicine.**

9.1. Apply evidence in clinical practice.

9.2. Define and carry out the necessary literature overview on a specific problem.

9.3. Critically evaluate the medical literature publications.

10. **Use information and information technology in a medical context.**

10.1. Keep accurate and complete medical records.

10.2. Use computers.

10.3 Use medical equipment.

10.4. Use software for administrative and medical needs.

10.5. Reach the necessary information sources.

10.6. Store and reproduce information.

11. **Apply scientific principles, methods and knowledge in medical practice and research.**

12. **Contribute to a better health of the nation and contribute to solution of issues in the public health system**

12.1. Provide health care to minimize risks of injury to the patient.

12.2. Implement measures to prevent the spread of infections.

12.3. Have a good understanding of their own health needs and make sure their health does not interfere with the performance of their professional medical duties.

12.4. Comply with professional standards and certifications for physician practices.
MEDICAL PROFESSIONALISM

Professional qualities

• Incorruptibility, integrity, ethics, altruism and responsibility, putting the patient's needs above their own.

• Stick to the standards of good medical practice and strive for quality.

• Exemplary performance of their duties and discipline in the workplace.

• Ability for criticism and self-criticism in the analysis of biomedical literature and clinical practice.

• Creativity.

• Initiative, will to succeed.

• Interpersonal skills.

Professional activity

• Capacity to assess the limits of their professional competence and desire to seek advice and help from the more experienced.

• Ability to deal with uncertainties and adapt to new situations.

• Ability to lead others.

• Ability to work independently when necessary.

• Ability to solve problems.

• Ability to make decisions.

• Ability to work in a multidisciplinary team.

• Ability to communicate with experts in other disciplines.

• Capacity for organizing and planning (including personal and professional time).
The physician as an expert

• Ability to perform analysis and synthesis.

• Ability to train (including to continue self-training) and to follow developments in their field, maintain and develop professional skills.

• Ability to implement innovations and knowledge in practice.

• Ability to train others - if the doctor has the duties of a teacher, he should develop the skills and abilities of a competent teacher.

• Ability to perform research.

The "Global" doctor

• Understanding and tolerance for human diversity, multiculturalism and religious affiliation.

• Ability to work in an international perspective.

• Knowledge of a second language / languages.

• General knowledge outside the field of medicine.
Content

Year 1
Year 2
Year 3
Year 4
Year 5
Year 6
FIRST YEAR

**Winter semester**
- Medical Ethics
- Cytology
- Biology
- Medical Physics
- Medical Chemistry
- Latin with medical terminology
- Bulgarian language
- Anatomy
- Sports

**Summer semester**
- Biology
- Medical Physics
- Medical Chemistry
- Latin with medical terminology
- Bulgarian language

Notes:
- Teaching Anatomy ends with the 4\textsuperscript{th} summer semester.
- Teaching Students Sports ends with the 3\textsuperscript{rd} winter semester.
EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN MEDICAL ETHICS

As a result of the training in Medical Ethics the students in medicine should acquire

- Knowledge about the nature of moral principles and categories and the qualities that the physicians should have.

- Knowledge of the specific characteristics of interpersonal relations and their application in medical practice.

- Knowledge of ethical issues arising in the development of medical science and practice and skills to solve them.

- To develop students' needs for ongoing self-development and self-improvement as individuals and professionals in order to become health educators to the public.

- To develop skills for autonomous and quick solution of specific ethical issues arising in medical practice.

- To know and work with key codes and legal documents relating to the rights of patients and doctors in Bulgarian and international medical practice.

EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN CYTOLOGY, GENERAL HISTOLOGY AND GENERAL EMBRYOLOGY

/ 45 hours lectures, 45 hours seminars – examination during the first year /

The ultimate goals of the course in Cytology, General Histology and General Embryology is to gain detailed knowledge of the normal structure of cells and tissues of the human body and their development as a mandatory prerequisite for the further study of pathological processes in various diseases that modern medicine studies at cellular and sub-cellular level.

Student motivation to learn the material in cytology, general histology and general embryology is the awareness that without the above knowledge it is not possible to understand both normal and pathological processes in the human body.

The necessary minimum of practical skills and theoretical knowledge
The knowledge medical students should acquire when studying that discipline starts at the molecular level and continues with the overall structure of the tissues that make up the human body. In practice the students should:

- learn how to work with a microscope by acquiring habits to preserve the microscope and slides from damage
- be able to recognize the different structures of the cell and tissue types and the constituent cells and matrix
- be able to recognize the early stages of prenatal development
- be able to identify the cell structures on electron microscope images
- acquire fundamental knowledge on the preparation of histological preparations
- learn to reproduce schematically the observed structures.

**EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN BIOLOGY**

**The ultimate goal:** Medical biology is a discipline that forms the biological views and thinking as well as the moral and ethical outlook of future doctors. The course in biology provides the necessary volume of theoretical knowledge and practical skills in organism, cellular and molecular biology, heredity and variability, reproduction, the organism as a single system, immunobiology and immunological homeostasis, biological evolution, anthropogenesis, ecology and biology of parasites of medical importance and the elements of comparative anatomy of vertebrates.

**The necessary minimum of theoretical knowledge in the field of**

- molecular and cell biology - the physical nature of life, molecular organization of living matter and cellular basis of living organisms
- fundamental heredity and variability - molecular basis of heredity, the organization of genetic material in the cell, karyotype, cytoplasmic heredity, heredity and environment, variability and causes of mutations.
- the organism as an integrated system - asexual and sexual reproduction, homeostasis, immune homeostasis - cellular and molecular basis of natural and
acquired immunity, developmental biology - personal development, regeneration, old age and death.

- biological evolution - biology and population genetics, molecular evolution
- anthropogenesis and races - racial signs, origin of the human races and racial diversification factors, biological and social nature of man.
- ecology and biology of parasites - the unity between organisms and the environment, parasitism as a biological phenomenon, morphology and biology of parasites of medical importance
- man and biosphere, evolution of behavior
- comparative anatomy of vertebrates - the evolution of some basic systems of vertebrates.

The necessary minimum of practical knowledge and skills to:

- Work with the light microscope and documenting monitored objects. Observation of permanent microscopic preparations and the development of native preparations
- Methods for etiologic diagnosis of parasitic diseases - observation of macroscopic and microscopic preparations of parasites (protozoa, helminths and representatives of the type of Arthropods)
- Observation and analysis of the stages of mitosis and meiosis
- In Vitro Fertilization – insemination of eggs and following the initial stages of fertilization
- Determination of human blood groups, using the ABO / H / system and Rhesus. Analysis of their inheritance. Identification and analysis of the secretory status.
- Immunological methods for demonstrating antibodies and antigens, based on precipitation, agglutination and other immunological reactions. Enzyme-linked immunosorbent assay (ELISA).
- Solving genetic problems, identifying morbid risk, analysis of penetrance and expressivity of different genes.
• Anthropometric and anthroposcopic analysis of quantitative characteristics of man - height, weight, index of brain skull, etc., receiving and analyzing dermatoglyphic fingerprints and palm-prints.

EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN MEDICAL PHYSICS

The ultimate goal of the course in Medical physics for students of medicine is to gain basic theoretical and practical knowledge and organizational skills in:

1. Physical diagnostics: ultrasound, X-ray, radionuclide, MRI diagnosis; spectrophotometry; CT; SPECT; PET; infrared thermography, endoscopy, Doppler sonography.

2. Physical methods of treatments: ultrasound, ionizing radiation; lithotripsy; LASIK; treatment with electromagnetic fields.

The necessary minimum of theoretical knowledge in the field of

• Movement of an ideal fluid, law of continuity of streams, Bernoulli’s law;

• Movement of real fluids, capillarity, gas and fat embolism;

• Phase separation in liquid heterogeneous systems; centrifugation, principles;

• Sound, physical and psycho-physical characteristics, auscultation, percussion, Doppler effect;

• Ultrasound, properties, applications in medicine;

• Temperature and heat, temperature scales, heat transfer by conduction, convection, radiation and absorption;

• Zero, first, second and third laws of thermodynamics, entropy;

• Electric field, magnetic field, magnetic properties of substances;

• Electromagnetic field, properties, application in medicine;

• Conductors, semiconductors, insulators, applications;

• Electrodiagnostics, electrotherapy;
• Alternating electric current, electrical safety rules;
• Reflection and refraction of light, total internal reflection, refractometers, polarization, polarimetry, medical applications;
• Dispersion of light scattering, absorption, applications in medicine;
• Ultraviolet and infrared rays, applications in medicine;
• Luminescence, spectral analysis;
• Lenses; dioptrometer; optical microscope;
• The eye as an optical system;
• Electron microscopy;
• Lasers, principle of action, properties of laser light, applications in medicine;
• X-rays, properties, mode of operation, applications in medicine;
• Radionuclide transformations, properties of corpuscular and photon radiation;
• Effect of ionizing radiation on the human body and protection.

The necessary minimum of practical knowledge and organizational skills on:
• knowledge of safety rules when working with electrical appliances;
• knowledge of safety rules when working with sources of laser radiation;
• knowledge of safety rules when working with sources of ionizing radiation;
• working with Oswald-Pinkevich viscosimeter;
• working with the audiometer;
• determining the velocity of blood flow with a device, using the Doppler effect;
• working with electrical measuring instruments;
• working with a refractometer;
• working with dioptrometer;
• working with He-Ne laser;
• working with Laurant’s Half Shade polarimeter;
• working with digital oscilloscope;
• working with Wheatstone bridge;
• graduation of semiconductor thermometer.

EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN MEDICAL CHEMISTRY

The ultimate goal is for students in human and dental medicine to acquire thorough theoretical knowledge in the subject and to acquire the basic practical skills. To achieve the objective, lectures and seminars focus on:

1. Regularities, underlying chemistry as part of the natural sciences.


3. Using important terms in this discipline such as mole, equivalent, stoichiometry of the processes and others.

4. Finding a link between the molecular structure and biological activity of a number of medically important compounds.

5. Learning to analyze objects of medical importance.

6. Use of literature and Internet sources.

7. Basic principles for the presentation of scientific knowledge in a presentation.

The necessary minimum of theoretical knowledge on:

• Structure of the atom.

• Types of chemical bonding.

• The rate of chemical processes and chemical equilibrium.

• The properties of true and colloidal solutions.

• Types of chemical processes and basic governing thermodynamic relationships.

• Sorption processes and their application.
• The main classes of organic compounds and a number of biologically active representatives of medical importance.

• Biological activity in the phenomenon of isomerism.

The necessary minimum of practical knowledge and skills on:

• Rules for safe operations in a chemical laboratory.

• Conducting qualitative and quantitative analysis of inorganic and organic objects.

• Using a variety of ways to express the concentration of solutions and preparation of working solutions.

• Measuring the pH with paper indicators and the pH-meter.

• Preparation of buffer solutions with predefined properties.

• Working with the spectrophotometer.

• Conducting chromatographic analysis.

• Using reference tables.

EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN LATIN WITH MEDICAL TERMINOLOGY

The discipline "Latin with medical terminology" is included in the curriculum of first-year students in medicine, as required by the unified state requirements for obtaining a degree in medicine.

The study of medical terminology in Latin is a means of mastering the professional language of medical science. That provides for future results and aims at the formation of professionals competent in terminology. Lexical, grammatical and semantic knowledge is the core of linguistic competence, while the ability to use the knowledge acquired during the training and professional development is the core of pragmatic competence.
Course content

The study of Latin grammar is of subordinate character, so the curriculum includes only those elements that are necessary for the understanding and use of anatomical, clinical and pharmaceutical terminology. In the present curriculum there exist three main areas:

- Declension of nouns and adjective, participles and comparison grades to be used in anatomical phrases and writing diagnoses;
- Word formation;
- Pharmaceutical terminology and prescriptions.

Training technology

The various grammatical units are presented through models and exercises for their creative use. Exercises, prepared as protocols for every lesson, are given as homework.

Evaluation is based on continuous assessment tests in class and a test at the end of the academic year.

EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN BULGARIAN

/240 hours during the 1st year and 180 hours during the 2nd year/

The goals of the Bulgarian language course during the 1st year is to obtain basic knowledge and skills in speaking and writing in the modern Bulgarian literary language.

The goals of the Bulgarian language course during the 2nd year is to obtain basic knowledge in medical scientific style, terminology and communication skills related to clinical specialties.

CONCLUSION:

The contents of the curricula is in accordance with the aims of the educational and qualification degree and is based on the principles of interrelation, integration and continuity of the constant accumulation of knowledge about the human organism. The first two years of teaching are based on the fundamental research in the field of medical chemistry, biology, theoretical fundamentals of immunology, basic principles of physical
laws, used in medical apparatuses, the processes in molecular biology, connected with the studying of biochemistry and pathobiochemistry, cytology, histology and anatomy of the human body, biophysics and physiology, medical ethics, a foreign language as well as Latin as far as Latin terminology and the nomenclature of diseases are concerned. The teaching process also begins with the studying of the theory of microbiology, while the process of transition from the fundamental sciences to particular clinical disciplines occurs during the 3rd year of medical studies.
SECOND YEAR

Winter Semester
• Biophysics
• Biostatistics and Informatics
• Medical Biochemistry
• Physiology
• Student Sports

Summer Semester
• Medical Biochemistry
• Physiology
• Anatomy
• Social medicine
• Medical Microbiology

Notes:
• Teaching Social Medicine ends with the 5th winter semester.
• Teaching Medical Microbiology ends with the 5th winter semester.
EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN BIOPHYSICS

The ultimate goal of the course in Medical biophysics is for medicine students to gain basic theoretical and practical knowledge and organizational skills in:

1. The physical principles on which many of the processes in the human body at cellular and molecular level are based.
2. Modern methods of research and influencing these processes in biophysical and biophysico-chemical aspect.
3. Application of these principles and methods in modern medical diagnostics, therapy and technologies.

The necessary minimum of theoretical knowledge on:

• principles of biothermodynamics and quantitative description of the transport of materials and energy, as well as energy and function fusion processes in biological systems;
• principles and physical laws in the formation of spatial structures of biomolecules;
• the connection between the biophysico-chemical characteristics of the molecules, the physical properties of biological membranes and their functions;
• molecular mechanisms of damage in biological systems and the occurrence of oxidative stress under the effect of various biophysico-chemical factors (pollution, radiation, metabolic pathologies, etc.);
• biophysical principles of different types of transport of substances through biomembranes;
• biophysical principles of actively generating different electrical fields in the membranes, cells and tissues;
• passive electrical properties of cells and tissues;
• the principles of some cellular biotechnologies, based on the application of modern biophysical methods - assessment of vitality, biophysical bases of dielectrophoresis, electroporation, electrofusion of cells, separation methods and electromechanical cell manipulation;
• biophysical principles of modern therapeutic methods such as electroacupuncture and electropuncture;

• viscoelastic behavior of solid biomaterials - bones, muscles, blood vessels;

• factors that determined blood viscosity and indicating the relationship between their pathological changes and distortions in the bloodstream in certain groups of diseases - hematological, cardiovascular and cerebrovascular and metabolic.

**The necessary minimum of practical and organizational knowledge and skills to:**

• formulate specific tasks for experimental implementation;

• based on theoretical knowledge on a given topic to justify and formulate the idea of an experimental approach to solve these problems;

• process statistically the experimental results and present them in tables and graphs;

• discuss the importance and application of experimental information about the specific analyzed objects from a biophysical, general biological and medical point of view;

• document precisely the discussion and obtained experimental results in an individual protocol, which is similar in structure and form to a scientific publication.

• become familiar with the specific methods, used in research and clinical laboratories and acquire practical skills and knowledge related to:

• making a monolayer of surface-active substances and determination of the individual characteristics of their molecules;

• conducting medicinal iontophoresis under the human skin and quantifying the amount of the inserted medicine

• using the methodology for studying the viscoelastic properties of the skin;

• determination of acid resistance and age distribution of erythrocytes

• using the method of cell electrophoresis and determining the density of the surface electric charge of cells;

• using a methodology for the study of bioelectric potential differences in model systems;

• using the method for determining the deformability of erythrocytes;
• quantification of erythrocyte aggregation
• measuring the volume concentration of erythrocytes (hematocrit) and establishing a link with the viscosity of the suspensions of the cells, as well as their average size;
• determining the antioxidant activity of medicinal and biological substances;
• determining the permeability coefficient of hemodialysis membrane.

EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN BIOSTATISTICS AND MEDICAL INFORMATICS

• To acquire basic theoretical and problem-oriented knowledge in medical informatics, and skills related to the use of advanced computer systems and software products.

• To acquire the mandatory minimum of knowledge about the nature, principles and logic of statistical analysis, about the cognitive abilities and specific requirements for the use of basic statistical methods in biology, medicine and health care; to develop skills in computer application of the most important statistical methods.

1. To apply the principles and competencies of evidence-based medicine
1.1 Apply evidence to clinical practice.
1.2 Give a critical evaluation of publications of medical literature

2. Use information and information technology in the medical context
2.1 Use computers
2.2 Use software for administrative and medical purposes
2.3 Find necessary information sources
2.4 Store and display information

3. Apply scientific principles, methods and knowledge in medical practice and research
EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN MEDICAL BIOCHEMISTRY

The ultimate goal of the course in Medical biochemistry for students of medicine is to gain basic theoretical and practical knowledge and skills on:

1. Molecular organization of living matter, types, composition and function of basic macromolecules, building the cell - nucleic acids, proteins, carbohydrates, lipids;

2. Principles of bioenergetics and enzymology and their importance for the maintenance of homeostasis in the body;

3. The major metabolic pathways, the connections between them, their regulation, the environmental factors, which affect them;

4. Fundamentals of molecular pathology, the importance of genetic, epigenetic and environmental factors for the emergence of human diseases and the role of biochemical, molecular biological and genetic tests for their diagnosis and treatment.

The necessary minimum of theoretical knowledge on:

• The molecular organization of living matter, the relationship between structure and function of proteins and nucleic acids, carbohydrates, lipids.

• The principles of enzyme action and mechanisms, by which it is influenced by environmental factors as well as the importance of enzymes for metabolism and regulation and the application of enzymes in medical practice;

• The principles of bioenergetics, the importance of environmental factors and the mechanisms, by which they affect the bioenergetic processes in the cell;

• The main metabolic pathways, the connections between them, their regulation, the environmental factors, which affect it;

• The mechanisms of storage and transmission of hereditary information, the interaction of environmental factors with them, the basic mechanisms of occurrence of disorders in them;

• Principles of molecular pathology, the importance of genetic, epigenetic and environmental factors for its occurrence, the importance of molecular genetic heterogeneity for understanding the most common diseases in modern man and their diagnosis and treatment;
• The characteristics of metabolism and metabolic disorders in the liver, muscles, nervous tissue, fat, blood, bones and teeth.

The necessary minimum of practical and organizational knowledge and skills on:

• Knowledge and use of biochemical, molecular biological and genetic methods
• for the isolation, purification, quantification, and study of proteins,
• nucleic acids, carbohydrates and lipids (spectrophotometric, chromatographic, electrophoretic).

• Interpretation of the clinical results, the ability to assess normal states in comparison to pathological changes in the chemical composition of biological samples and the ability to make a diagnosis.

• Knowledge of the setting up, organization and assessment of biochemical and molecular biological experiments. Acquiring skills to work with scientific literature.

• Ability to integrate the theoretical knowledge of basic metabolic pathways and their connection with the pathogenesis of human diseases.

• Knowledge and skills in the application of information and communication technologies in the biomedical sciences, bioinformatics, using public databases (PubMed; OMIM; PDB).
EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN PHYSIOLOGY

The ultimate goal of the Physiology course for students of medicine is to obtain basic and practical knowledge on:

1. The course of the physiological processes on the level of the cells, tissues and organs, functional systems and the human body as a whole;

2. The regulatory mechanisms of the vital functions of the human body, which guarantee its adaptation to the changing internal and external conditions;

3. The methods of studying the main functional systems of the human body and the appropriate interpretation of the obtained results;

The necessary minimum of theoretical knowledge on:

3. the functional structure of each system of the human body based on the various levels of organisation (subcellular, tissue, organic and systemic);

4. the specific functions of blood and muscles and the cardiovascular, respiratory, digestive, urinary, reproductive, nervous and endocrine systems;

5. the physiological mechanisms, which conduct the processes of the systems of the human body. This includes knowledge and understanding of how the transporting and defensive mechanisms of blood work (styptic, inherent and specific immune mechanisms); mechanisms of neurological and muscular tissue; excitation; the mechanism of muscular contraction; the mechanism of the pumping function of the heart and vascular blood flow; the mechanisms of pulmonary ventilation and gas exchange; the mechanisms of digestion and resorption of nutrients in the alimentary canal; the mechanisms of urine formation; the mechanisms, responsible for the male and female reproductive functions; the mechanisms of hormonal secretion and their functioning; the mechanisms, responsible for the sensory, motor, autonomic and other complex functions of the nervous system;

6. the basic mechanisms of maintaining the body’s inner liquid environment (homeostasis);

7. regulatory mechanisms, which integrate and coordinate the functioning of each of the systems and help the human body work as a whole.
The necessary minimum of practical knowledge on:

8. defining the blood type of the erythrocytes;
9. interpretation of the values of main blood indicators;
10. taking and interpreting the readings of blood pressure;
11. auscultation of the acoustic phenomena, accompanying the work of the heart;
12. registration and analysis of electrocardiograms;
13. knowledge of the principles of making up and estimating the food ration;
14. calculation and interpretation of the indicators of the pulmonary ventilation;
15. conducting an audiometric test and interpretation of the obtained results;
16. knowledge of the methods of testing the visual function and interpretation of the obtained results;
17. testing the reflexes of clinical importance in man;
18. calculation and interpretation of the indicators of clinical importance, related to the renal function;
19. application of the dilution principle for estimation of plasm and blood volume;
20. estimation of the indicators of the alcaloid-acidic balance.
EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN HUMAN ANATOMY AND HISTOLOGY

The ultimate goal of the course in Human Anatomy and Histology is for the students to gain a thorough knowledge of the normal structure of organs and systems of the human body. This is a mandatory prerequisite for studying the pathological processes in various diseases.

Student motivation for learning the bulky material in Human Anatomy and Histology is the awareness of the need for detailed knowledge of the structure of the human body, without which their future activities as doctors will be impossible.

The necessary minimum of practical skills and theoretical knowledge

Medical students should:

• be able to prepare the various structures of the human body and thus gain a clear idea of their position, relations, color and texture
• be able to work with a scalpel and tweezers
• know and be able to determine the location of bony and other landmarks in the body
• be able to identify the skeletotopy and sintopy of the various organs
• be able to identify the innervation areas on the surface of the head, neck, torso and extremities
• be able to determine the projections of the major vessels and nerves
• know the location of subcutaneous veins
• be able to recognize the histological (microscopic) structure of organs and make their differential histological diagnosis
• learn to work in teams and perform separate tasks as members of that team.
THIRD YEAR

Winter Semester
• Social medicine
• Medical Microbiology
• Medical Genetics
• Disaster medicine
• Pathophysiology
• Pharmacology
• General Pathology
• Propaedeutics of Internal Medicine
• General and Operative Surgery

Summer semester
• Pathophysiology
• Pharmacology
• General Pathology
• Propaedeutics of Internal Medicine
• General and Operative Surgery
EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN SOCIAL MEDICINE

I. GENERAL GOALS. Knowledge of:
1. The role of nutrition, lifestyle and preventive medicine
2. The epidemiology of most common diseases
3. Ethical principles of the doctor / patient relationship

II. GENERAL LEARNING OUTCOMES / COMPETENCES
1. Carry out outpatient consultations
   1.1. Take accurate and complete medical and psychosocial history of the disease

6. Communicate successfully in a medical context
   6.1. Communicate with patients
   6.2. Communicate with colleagues

7. Apply ethical and legal principles in medical practice
   7.1. Maintain confidentiality
   7.2. Apply ethical principles and evaluation in clinical practice
   7.3. Confirm the occurrence of death, complete a death certificate
   7.4. Appoint autopsy
   7.5. Apply national and European law in clinical practice.

8. Assess the psychological and social aspects of disease
   8.1. Assess the psychological factors in the clinical course and their impact on the disease.
   8.2. Assess the social factors in the clinical course and their impact on the disease.
8.3. Detect stress conditions due to disease.
8.4. Establish alcohol and drugs abuse as well as conditions of dependence on them.

9. Apply the principles and competences of evidence-based medicine.
9.1. Apply evidence in clinical practice.
9.2. Define and carry out the necessary literature overview on a particular issue.
9.3. Critically evaluate medical literature publications.

III. EXPECTED OUTCOMES

KNOWLEDGE

At the end of the course in social medicine student should have knowledge on:

1. The role and place of social medicine in the system of medical sciences.
2. The methods used in social medicine.
3. The nature and classification of the social determinants of health.
4. The systematic approach to the analysis of public health.
5. The main indicators for assessment of public health.
6. Epidemiology of socially significant diseases.
7. The concept of risk factors.
8. Health problems of priority population groups.
9. Types of health systems.
11. Organization of primary and hospital care.
12. The nature and importance of promotion and prevention of health.

PRACTICAL SKILLS:

At the end of the training in social medicine student should be able to:

1. Use the basic methods of social medicine.
2. Apply the methodology for the development of socio-medical research.
3. Make up a plan and a program for empirical research.

4. Write a questionnaire for a sociological inquiry.

5. Make up epidemiological projects using the "case - control" and "cohort" methods.

6. Characterize the impact of personality factors, family background, professional working environment and social environment on the health of the patient.

7. Make up a social history of the individual patient with conclusions and recommendations for the improvement of health.

8. Analyze the family and its structure, the conditions of life, the relationships and health of individual family members.

9. Find out the risk factors affecting the health of the family.

10. Using comparative analysis, assess the individual indicators for population health assessment.

11. Analyze the epidemiological profile of population health.

12. Assess the general practitioner activities.


14. Determine the health needs of priority population groups.

15. Analyze the development of health priorities in the context of the national strategy for population health.
EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN MEDICAL MICROBIOLOGY

The ultimate goal of the course in Medical microbiology for students of medicine is to obtain basic theoretical and practical knowledge and organisational skills on:

1. Pathogenic and opportunistic microorganisms (bacteria, viruses and fungi), which cause infections and infectious diseases in humans;

2. Methods and means of control, antimicrobial chemotherapy and specific prophylaxis of infectious diseases;

3. The principles of microbiological diagnosis of bacterial, viral and fungal infections as well as the organisation and resources of microbiological (bacteriological) and virological laboratories

The necessary minimum of theoretical knowledge on:

1. the morphology, structure, physiology and genetics of of bacteria, viruses and fungi and the approaches used for their laboratory isolation and identification from clinical material and defining their sensitivity to antimicrobial substances;

2. the principles of sterilization and disinfection as well as the methods and ways of its application;

3. the principles of antimicrobial chemotherapy and chemical substances, used for its application- antibiotics, chemotherapeutic and antiviral preparations;

4. the patterns of development and pathogenesis of infection as well as the various types and forms of infectious diseases; factors of virulence of microorganisms;

5. defense mechanisms of acquired and natural immunity against bacterial, viral and micotic infections;

6. the patterns and ways of specific prophylaxis (vaccines) and therapy (immune sera, gamma globulins and adjuvants);

7. main pathogenic and opportunistic bacteria, fungi and viruses, including basic knowledge of epidemiology, pathogenesis and clinical features of the related infections, methods of laboratory diagnosis, antimicrobial therapy and specific prophylaxis;
8. microbiological aspects of infections - organic and systemic: etiology, pathogenesis; basic clinical manifestations; test materials, microbiological diagnosis, immunity and substances for antimicrobial therapy and prophylaxis;

9. typical microflora of the human organism and its physiological and pathological meaning;

10. main principles of microbiological control of the environmental factors (sanitary microbiology).

The necessary minimum of practical knowledge on:

- knowledge of the rules and skills for aseptic activity in microbiological laboratories, dispensaries and hospitals;
- skills for operating an immersion system of the ordinary light microscope, preparing and staining of a microscope preparation;
- knowledge of the rules and skills for taking and sending clinical and other materials for microbiological testing, including the devices, needed for this procedure, and at which stage of the infection so that a living pathogen could be isolated; transportation rules and filling in of the accompanying papers;
- interpretation of the results obtained from the microbiological diagnosis; interpretation of the results, obtained from the isolation of microorganisms of the typical flora of the human organism or saprophytes of the environment;
- instructions for using the main devices for sterilization (dry sterilizers, autoclaves); knowledge of the main groups of disinfectants and antiseptics and the spectrum of their activity and application;
- being familiar with the network of microbiological (bacteriological, virological and parasitological) laboratories in the country, the types of tests they offer, the specificity and sensitivity of the tests and the reliability of results;
- team work with the attending doctor;
EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN MEDICAL GENETICS

The ultimate goal of the course in Medical genetics for students of medicine is to obtain basic theoretical and practical knowledge and organisational skills on:

1. Etiopathogenetic mechanisms of human hereditary pathology, structured in a logical sequence - biological bases of inherited structures; etiology, pathogenesis, inheritance, classification;


3. Clinical and genetic problems of hereditary malignant diseases, mitochondrial diseases and diseases, characterized by dynamic mutations;

4. Modern diagnostics of rare and socially significant diseases using DNA microarray technology and exome sequencing;

5. Modern therapy of inherited diseases - conventional, gene, and target therapy and orphan drugs therapy;

6. Pharmacogenomic approaches to personalized therapy;

7. Prevention of monogenic and polygenic diseases, chromosomal disorders and inherited predispositions. Organization and nature of mass and selective genetic screening;

8. Approaches and indications for prenatal diagnosis;

9. Approaches and indications for preimplantation genetic diagnosis and preimplantation genetic screening;

10. Principles, organization and objectives of genetic counseling;

The necessary minimum of theoretical knowledge:

- To have knowledge of the genetic factors for the occurrence of more frequent monogenic diseases and predispositions to socially significant diseases;

- To interpret the clinical and genetic polymorphism of Mendelian diseases - congenital metabolic diseases, congenital anemia, diseases of the connective tissue and bone disorders, congenital immunodeficiency, neuromuscular disorders, hereditary deafness, monogenic diseases with pulmonary manifestations, hereditary ocular pathology, etc.;
• To interpret the clinical and genetic polymorphism of mitochondrial diseases, diseases linked to dynamic mutations and imprinting.

• To interpret the clinical and genetic polymorphism of chromosomal disorders, microdeletion / microduplication syndromes;

• To have knowledge of the signs of common congenital anomalies, retardation in the physical and neuropsychic development;

• To have knowledge of the genetic causes of infertility and reproductive failures;

• To have knowledge of the genetic factors for predisposition to cardiovascular disease, cancer, endocrine, psychiatric, respiratory diseases, obesity, etc.

• To identify genetic risk in affected families with monogenic or multifactorial disease;

• To gain knowledge about the selection of appropriate clinical, genetic and genomic research for making a postpartum diagnosis of hereditary diseases and predispositions;

• To have knowledge of the advantages and limitations of presymptomatic tests for genetic diseases;

• To have basic knowledge for interpreting cytogenetic, molecular genetic, microarray and genomic diagnostic tests
  • To have knowledge of the indications and techniques for prenatal diagnosis;
  • To have knowledge of the principles of genetic screening and screening programs;

• To be aware of the possibilities of personalized medicine, based on pharmacogenomics;

• To have knowledge of the principles of medical and genetic counseling and prevention of hereditary pathology.

The necessary minimum of practical and organizational knowledge:

• To draw pedigrees for medical purpose, identify the type of inheritance and other clinical and genealogic signs of genetic disorders in the families;

• To determine the mode of inheritance and to assess the genetic risk in Mendelian and multifactorial diseases;

• To identify patients with a predisposition to socially significant diseases;

• To identify, classify and interpret cases of congenital malformations
• Apply basic cytogenetic, molecular cytogenetic and molecular genetic methods of analysis;
• To interpret the data from genetic studies, using various methods;
• To use clinical information to search for various hereditary diseases in databases;
• To develop skills to work in multidisciplinary teams to make up a plan for diagnosis and treatment of genetic disease and behavior towards patients.

EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN DISASTER MEDICINE

1. Training objective:

The increasing importance of natural disasters, socio-economic disasters and the threat of radiological, chemical and biological terrorism in recent years makes it necessary that students, as a result of training in disaster medicine, should acquire knowledge and skills in:

• Biological effects of different harmful factors in disaster situations.
• Diagnostics, sorting, medical care and treatment of traumatic and radiation damage, of intoxication with highly toxic poisons / industrial, agricultural and chemical warfare substances/, the most common epidemic diseases, arising from accidents or resulting from the aggression of biological weapons.
• Medical protection and medical provision for population in disaster situations.

2. General learning outcomes / competences: Acquisition of theoretical and practical skills for organizing, managing and implementing of medical provision for the population in disaster situations.

3. Specific learning outcomes / competences:

Students who have had training in disaster medicine should be able to:

• Implement practical measures in triage, first aid, medical assistance and protection of victims of disasters, accidents, catastrophes and the use of modern weapons.
• Assess the medical environment using radiological, chemical or biological agents, and extreme weather events.

• Guide the preparation of the formations, involved in the rescue and other urgent works in the disaster epicenter.

• Be competent in the diagnosis and treatment of different categories of victims in disaster situations.

**EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN PATHOPHYSIOLOGY**

Pathophysiology is a medical science, which deals with changes in the regulatory mechanisms, associated with the onset, course and outcome of disease. It is a basic and applied discipline that gives insight into the mechanisms of pathological processes and disease, skills for their modeling and studying, builds a foundation for the practical application of knowledge in making medical (clinical) decision and provides guidance on the application of the pathogenetic approach to the treatment of diseases.

The ultimate goals of the course in pathophysiology are for students to gain basic theoretical and practical knowledge of:

1. **General nosology.** Disease - nature, course and outcome, a common etiology and pathogenesis, basic cell damage, reactivity and resistance.

2. **The main types of pathological processes.** Inflammation, fever, allergies, metabolic disorders, disorders of local circulation and of cell growth.

3. **Special and clinical pathophysiology.** General patterns of disorders of individual organs and systems, and mechanisms of diseases with the greatest importance for clinical practice.

The necessary minimum of theoretical knowledge on:

• The basic principles of modeling of diseases. The nature and role of the pathophysiological experiment for elucidation of the pathogenesis of diseases.


• Body reactivity and resistance - mechanisms. Allergic processes, autoimmune diseases, immunodeficiencies.


• Disturbances in local circulation and microcirculation. Hyperaemia, thrombosis, embolism, ischemia, infarction.

• Fever - etiology and pathogenesis. Mechanism of onset and course.

• Etiology and pathogenesis of inflammation. Basic processes: alteration, vascular changes, cell response, proliferation. Mediators of inflammation. Chronic inflammation.


• Pathophysiology of the endocrine system - disorders of the hypothalamic - pituitary system, thyroid gland, parathyroid glands, adrenals, pancreas, gonads. Diabetes mellitus.


The necessary minimum of practical knowledge and skills on:

• the quantitative and qualitative changes in key functional parameters, resulting from impaired regulation mechanisms.

• critical evaluation and analysis of deviations in the regulatory mechanisms in order to identify pathogenic mechanism.

• assessment of the dynamics of (development) of pathological functional changes in order to predict the ultimate outcome of the pathological process.

• the possibility and means (impacts) to prevent and influence the course of the pathological process.

• the use of knowledge of the disease mechanisms for causing a pathogenic and therapeutic approach.

EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN PHARMACOLOGY

The ultimate goals of the course in pharmacology are for medical students to gain advanced theoretical and practical knowledge on:

1. The general principles of pharmacodynamics and pharmacokinetics.

2. The factors affecting the kinetics and mechanisms of action of medicines.

3. Pharmacodynamics, pharmacokinetics, clinical indications, side effects, contraindications and interactions of medicines in modern pharmacotherapeutic groups.


5. Characterization and formulation of pharmaceutical forms.
The necessary minimum of theoretical knowledge on:

- resorption, distribution, metabolism and excretion of drugs
- pharmacological action of the medicines (specific and nonspecific) and the main targets of medicines (receptors, ion channels, enzymes, transport systems, microbial organelles)
- medicines that affect the autonomic nervous system
- medicines that affect the central nervous system
- drugs that affect the cardiovascular and urinary system
- medicines that affect hematopoiesis and hemostasis
- medicines that affect the respiratory system
- medicines that affect the digestive system.
- hormonal medicines.
- antibacterial, antiviral, antifungal, antiprotozoal and anthelmintic drugs.
- immunosuppressants, immunostimulants and antitumor medicines.
- side effects, associated with features of the pharmacodynamics of drugs.
- side effects, associated with features of the pharmacokinetics of drugs (accumulation, displacement from serum proteins, enzyme induction, enzyme inhibition).
- side effects, associated with an altered reactivity of the organism (allergic reactions, pseudo-allergic reactions, inherited enzyme defects)
- pharmacogenic organ toxicity, mutagenic and carcinogenic effects of medicines.
- acute poisoning with medicines and antidotal therapy.
- pharmacology of child age and old age: principles and characteristics.

The necessary minimum of practical knowledge on:

- advantages and disadvantages of solid, liquid, soft and aeriform formulations.
- types of prescription forms and their purpose.
• administration of solid, liquid, soft and aeriform formulations.

• peculiarities of the repeated administration of drugs: tolerance, dependence, tachyphylaxis, accumulation, withdrawal syndrome, resistance, superinfections.

  • peculiarities of the combined application of medicines: pharmaceutical, pharmacokinetic and pharmacodynamic drug interactions.

EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN GENERAL PATHOLOGY

The ultimate goal of the course in general pathology is for medical students to gain theoretical and practical knowledge on:

1. The objectives, methodology and subject matter of the discipline.

2. Basic and universal pathologo-anatomic disease changes on ultrastructural, light microscopic and macroscopic organ level.

The necessary minimum of theoretical knowledge on:

• major ultrastructural pathologic changes of cellular organelles.

• Reversible and irreversible damage to the cell and intercellular matrix, accumulation of endo- and exogenous substances and pigments in normal and pathologic conditions.

• damage to cells, tissues and organs, associated with blood and lymph circulation disorders.

• knowledge of the cellular basis of inflammatory reactions and their regulation.

• tissue-specific inflammatory changes according to the type of infectious agent.

• pathology in the immune response and autoimmune diseases.

• compensatory and restorative tissue and cellular processes in case of disease damage.

• etiologic, pathogenic, histogenic and morphological characteristics of neoplastic diseases (tumors).

The necessary minimum of practical knowledge and skills on:
• the normal histological structure of organs and tissues.

• the basic general pathology changes in the cells on light microscopic level

• the basic general pathology changes in the intracellular matrix on light microscopic level

• the basic histochemical staining methods for demonstrating the deposition of specific extracellular and intracellular substances

• detection and diagnosis of pathological processes on histological preparations

• ability to recreate the microscopic image in a drawing on a pre-established protocol

• detection and diagnosis of pathological processes on macroscopic preparations.

EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN PROPEDEUTICS OF INTERNAL MEDICINE

General goals of the course in Propedeutics of Internal Medicine for medical students (Bulgarian and English speaking students):

The clinical discipline "Propedeutics of Internal Medicine" is an introduction to internal medicine, which aims to develop the knowledge and practical skills of the medical students for taking a medical history (medical interview), for physical examination of the patient system by system, making a working diagnosis and differential diagnosis. Propedeutics of Internal Medicine is a mandatory foundation that students need to master in order to allow the students during the following years of their medical training to develop and enrich their clinical knowledge and skills in various nosological entities. This discipline represents a smooth and logical transition between the preclinical and the clinical disciplines, studied in the following years. The accurate medical history in combination with the accurately conducted physical examination of the patient is a fundamental factor for an adequate diagnostic process. Mastering the methods of the physical clinical trial requires constant hard work with patients under the supervision of qualified teaching staff. This is an ongoing process that encompasses the entire third year of studies of the medical students. It combines the development of fundamental theoretical knowledge and practical skills that develop and improve throughout the academic year.

II. General learning outcomes / competences
The course in Propedeutics of Internal Medicine for medical students aims to:

1. Develop skills aimed at the proper taking of the patient’s history, creating the necessary trust between doctor and patient;

2. Develop skills to take the general condition of the patient

3. Develop skills to make a physical examination system by system (head and neck, respiratory system, cardiovascular system, digestive system, excretory system and skeletal-muscular system) using the basic methods:
   - inspection,
   - palpation,
   - percussion and
   - auscultation.

Mastering these techniques is a turning point in the future development of the students as medical professionals.

III. Specific learning outcomes

The focus of the training in Propedeutics of Internal Medicine is the interpretation of the findings of the inspection, palpation, percussion and auscultation.

At the end of the training every medical student should be able to take a detailed history of the present condition, the primary and past diseases, the familial predisposition and risk factors, to conduct a physical examination systems by system as well as be familiar with the basic principles and rules of conduct of the diagnostic and differential diagnostic process. This includes:

- Summarizing the symptoms into syndromes
- Making a tentative diagnosis
- Making a differential diagnosis
- Arranging the follow-up diagnostic procedures by priority
- Developing skills for presentation and discussion of a clinical case.

In the Department of Propedeutics of Internal Medicine a study circle functions. Students with strong interests have the opportunity to work further with patients, to address difficult diagnostic cases, to acquire and develop skills in preparing a scientific
overview, preparing a case report for publication or presentation at a specialized forum. Materials of the students in the study circle have won multiple prizes in international student research forums.

EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN GENERAL SURGERY

The main goals of the course in General Surgery are mastering the basics of clinical assessment of the patients and the diagnostic process, analysis of the collected data, the making of diagnosis and differential diagnosis, the study of the symptoms of surgical diseases, specific medical terminology, the study of the principles of treatment of surgical patients.

The lecture course includes material on asepsis and antisepsis, main surgical problems / bleeding, trauma, inflammation, burns, oncology, transplantation, minimally invasive surgery, etc./, anaesthesiology, resuscitation.

The practice seminars are conducted at the patient’s bedside, students learn methods for detailed clinical examination - taking history and status, symptomatology of surgical diseases, information analysis, laboratory and apparatus research methods, making a diagnosis, principles of treatment.

During the training what is mastered are basic medical and surgical procedures - the practical application of antiseptic and aseptic conditions, giving first aid in cases of bleeding and clinical death, the basic principles for the treatment of wounds, burns, frostbite, mechanical injuries, determination of blood groups, gastric probing, catheterization of the urinary bladder, making injections, bandages.

The course in General Surgery is based and is closely related to the students’ knowledge in biology, anatomy and physiology, topographic anatomy, pathoanatomy and pathophysiology, pharmacology, studied during I and II year of education or synchronously.

List of the practical skills every student should have mastered at the completion of the training in General Surgery

• General rules for working with patients
• Take a history of the disease
• Assess the general health status
• Assess the specific status of anatomical regions and systems
• Make a diagnosis and a differential diagnosis (on the basis of the theoretical knowledge to date)
• Practical application of aseptics and antiseptics: rules for handling sterile instruments and materials, preparing your hands for surgery
• Resuscitation in cases of clinical death – artificial ventilation and indirect heart massage
• Arrest haemorrhaging – application of an Esmarch band or tourniquet, digital compression of the artery, making a pressure dressing
• Treatment of a wound
• Remove sutures from a wound
• Temporary immobilization of the limb
• Bandage the head, the limbs, the chest
• Determine the blood groups
• Give subcutaneous, intramuscular and intravenous injections
• Cannulation of large blood vessels
• Pleural puncture
• Pericardial puncture
• Abdominal puncture for relief in cases of ascites
• Abdominal puncture in cases of abscess under ultrasound guidance
• Transcutaneous abdominal puncture for taking biopsy under ultrasound guidance
• Administer a gastrointestinal probe
• Administer a Blackmore probe
• Digital rectal examination
• Catheterization of the bladder
• Do an enema
• Incision of abscesses of the skin and subcutaneous fat
• Incision and drainage of abscess cavities in the perianal area
• Motor and manage drainage systems
FOURTH YEAR

MODULAR (CYCLIC) TRAINING SYSTEM

- Diagnostic Imaging, Nuclear Medicine and Radiotherapy
- Hygiene, Environmental and Occupational diseases
- Otolaryngology
- Ophthalmology
- Neurology
- Clinical Pathology
- General Medicine

Internal Medicine:
- Cardiology
- Nephrology
- Pulmonology
- Gastroenterology

Surgery:
- Thoracic Surgery
- Vascular Surgery

Notes:
- Students sit the examination in Internal Medicine with the 5th year.
- Students sit the examination in Surgery with the 5th year.
EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN RADIOLOGY

Imaging is a medical specialty that involves the preparation (using different physical principles) of images of the human body, allowing, in parallel with clinical data, to perform imaging diagnostics and/or invasive and therapeutic procedures under the control of imaging methods. In this respect Imaging is a clinical medical and scientific specialty.

Major sections of imaging are:

- Physical principles of Medical Imaging.
- Thoracic Imaging.
- Cardiovascular Imaging.
- Invasive and Interventional Imaging.
- Skeletal-muscular Imaging.
- Emergency Imaging.
- Neurorentgenology.
- Imaging of the digestive system.
- Urogenital Imaging.
- Oncology Imaging.
- Imaging the breast.
- Paediatric Imaging.
- Maxillofacial Imaging.

The fourth-year students who have completed the course in Radiology should:

- Have knowledge of the principles of image acquisition in the basic methods of diagnostic imaging - conventional roentgenography and rentgenoscopy, ultrasound, computed tomography, magnetic resonance imaging.
• Have knowledge of the imaging anatomy of organs and systems, provided by different imaging modalities and deviations from it.

• Have knowledge of the application of imaging methods in different sections of imaging in the diagnosis of diseases of various organs and systems and the algorithm of their implementation.

• Recognize the imaging symptomatology in acute, life-threatening conditions requiring urgent and immediate follow-up procedures.

• Recognize and interpret basic macromorphological changes, observed using methods of diagnostic imaging.

• Recognize imaging symptomatology in the diseases of the organs and systems in the human body, which are frequent, socially relevant and where imaging is of key importance.

• Have knowledge of the capabilities of imaging techniques for staging disease and monitoring the effects of treatment.

• Have knowledge of the principles and possibilities of interventional procedures performed under the control of the imaging methods.

• Have knowledge of the basic contrast agents used in diagnostic imaging, their pharmacology, the indications and contraindications for their applications, the side-effects and how to fight with them.

• Have knowledge of the principles of the protection of the patient when applying the imaging methods, based on ionizing treatment

EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN NUCLEAR MEDICINE, RADIATION AND MEDICAL ONCOLOGY

The specific goals of training in nuclear medicine are:

• to familiarize students with the principles of administration of radiopharmaceuticals for diagnostic and therapeutic purposes

• to gain practical and theoretical knowledge in the application of diagnostic nuclear medicine techniques in the fields of diseases in oncology, nephrology, cardiology, pulmonology, gastroenterology, surgery, pediatrics, etc.
o to acquire theoretical knowledge of the application of therapeutic nuclear medicine techniques for the treatment of pain in cases of bone metastases, hyperthyroid conditions and carcinomas of the thyroid

o to become familiar with the principles of hybrid imaging modalities -SPECT-CT and PET-CT and their diagnostic application

o to be able to develop a diagnostic algorithm for certain diseases and to identify appropriate nuclear medicine methods

• The specific goals of training in radiotherapy are:

o to familiarize students with the types of radiotherapeutic methods and principles of their application

o to be familiar with the indications and contraindications for the use of radiotherapeutic methods and the possible complications due to their application

o to be familiar with the theoretical and practical application of radiotherapeutic methods in tumors of the breast, lungs, rectum, brain, hematological disorders, etc.

o to be able to develop the therapeutic algorithm for certain tumors and identify appropriate radiotherapeutic methods.

EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN HYGIENE, MEDICAL ECOLOGY AND NUTRITION

The ultimate goals of training students in the discipline of Hygiene are the following:

1. To acquire basic theoretical and practical knowledge in the protection and enhancement of people’s health and working capacity.

2. The knowledge and skills in hygiene predominate in creating good working and living conditions for people.

3. An important objective is to achieve a healthy lifestyle in all aspects and activities of society.

The necessary minimum of theoretical and practical knowledge on:
• Mastering the hygiene methods for sampling, analysis and evaluation of air pollution as a risk factor for population health.

• Learning the principles of hygienic assessment of the microclimate and its effects on the human body.

• Assessment of drinking water according to complex indicators adopted in domestic and international regulations.

• Learning the basic methods for purification, decontamination and correcting drinking water quality.

• Introduction to the hygiene requirements and events aiming at improving the living environment.

• Studying the methods of ongoing sanitary control in health care institutions for the prevention of nosocomial infections.

• Learning the basic methods and criteria for the assessment of dietary intake and nutritional status / by product sets, body mass index and fat mass/.

• Hygiene requirements for catering establishments in respect to storage, processing and marketing of food products. Evaluation of food in these establishments.

• Acquisition of basic knowledge about the expertise of food.

• Acquiring knowledge and skills for adequate actions in the event of an "outburst" of foodborne illness.

• Understand and master the basic methods for testing and evaluating the physical and neuro-psychological status of adolescents.

• Master the skills, knowledge and criteria to assess the severity and specificity of work.

• Preparation of a physiologically reasonable regimen of work and rest to prevent fatigue.

• Implementation of methods for assessing the work environment factors - physical and chemical / noise, vibration, electromagnetic fields, toxic chemical factors /.
I. Goals of the course in Occupational Diseases

Students receive theoretical and practical training in the field of occupational diseases.

The curriculum includes the study of the impact of work environment factors on the health of workers, the main groups of occupational diseases, their clinical and etiological diagnosis, early symptoms of early detection and treatment of diseases, the criteria for assessing the professional nature of the disease, the main normative documents in the field of occupational diseases. Particular attention is paid to the expertise of working capacity in occupational diseases. Emphasis is placed on medical prophylaxis of occupational diseases, including the preliminary professional selection of incoming staff, periodic medical examinations, dispensary, registration and reporting of occupational diseases.

II. GENERAL AND SPECIFIC LEARNING OUTCOMES / COMPETENCES IN OCCUPATIONAL DISEASES

1. Clinical status of patients with suspected occupational disease:

1.1. Taking an occupational history of disease
1.2. Analysis of the occupational characteristics of the patient

2. Make a clinical assessment of the patient:

2.1. Specific syndromocomplex
2.2. Nonspecific syndromocomplex

2.3. Distinguish the impact of occupational factors on the overall pathology

3. Make a program for paraclinical examinations:

3.1. Depending on the individual case, order toxic chemical, hematologic, clinical chemical, immuno-allergic, functional, instrumental, etc. investigations

3.2. Interpretation of basic hematology and clinical chemistry methods for the diagnosis of occupational diseases: determination of reticulocytes, punctured erythrocytes and Heinz bodies, morphology of red blood cells, determination of enzyme activity.

3.3. Basic knowledge of toxic chemical methods for the determination of heavy metals and metabolites of organic solvents in biological environments.
3.4. Evaluation and selection of a suitable biomarker of exposure and/or effect depending on the type, severity and nature of the intoxication.

3.5. Interpretation of the results discussed with the diagnosis and correlation with relevant clinical syndromocomplex.

4. Students need to learn to make:
   4.1. Diagnostic plan
   4.2. Working diagnosis
   4.3. Differential diagnosis

5. To offer an effective treatment to the patient:
   5.1. Give antidotal therapy
   5.2. Give symptomatic treatment

6. Make informed decisions for making exposition and elimination tests, depending on the health of the workers.

7. Independent interpretation of these tests:
   7.1. Pulmonary function test (PFT)
   7.2. Blood gas analysis
   7.3. Skin allergy tests (SAT) with domestic and occupational allergens.
   7.4. Allergy immunological tests
   7.5. Interpretation of radiographs of silicosis and asbestosis
   7.6. Audiometry in professional auditory neuropathy.

8. Use of Information Technology
   8.1. Work on computers
   8.2. Completion of a medical health record
   8.3. Keeping accurate and complete medical records

9. Development of preventive programs depending on contaminants in the workplace.

10. Expertise of working capacity – study the basic normative documents and how to fill them in, depending on the needs of patients.

   10.1. Temporary reassignment
   10.2. Permanent reassignment
10.3 Filling in a quick notice for reporting occupational disease
10.4. Referral to a medical committee to determine disability.

**EDUCATIONAL GOALS AND OUTCOMES OF THE COURSE OF THE EAR, NOSE AND THROAT DISEASES**

Structure-determining theoretical knowledge on :

1. Issues related to nosological units:
   • Definition
   • Classification - basic clinical / pathoanatomical classifications
   • Pathology - pathogenesis of disease, the specific pathoanatomical and pathophysiological processes, defining the nosological unit; characteristic anatomical and physiological characteristics, important for the course of the disease
   • clinical picture
   • diagnosis - necessary diagnostic tests to determine the diagnosis
   • differential diagnosis - theoretically distinguish the nosological units, close in clinical picture and localization
   • treatment – basic methods of treatment
   • complications
   • prophylaxis, prevention and early diagnosis

2. Issues, related to fundamental knowledge relevant to the discipline:

Additional theoretical knowledge - common and problematic aspects of the nosologies, clinically significant for general practice:

This additional theoretical knowledge emphasizes aspects of the nosological unit, important for general medical practice.

• Analytical differential diagnosis - identify the main differential diagnostic difficulties, the determination of specific pathognomonic signs for the differentiation of nosologies from one another, define a set of tests to differentiate nosologies from one another and comment on the differences in their test results; Interdisciplinary differential diagnosis
• differentiate primary from secondary diseases - search for a causal relationship between co-morbid conditions, determine the possible underlying conditions that occur as trivial primary ones

• interpretation of the results of various specific test / diagnostic methods related to the diagnosis of the disease

• Indications and contraindications of different types of treatments and manipulations - definition of indications (criteria) and contraindications for administering specific treatment / intervention; a way of assessment of each of the criteria, criteria for administering conservative versus operative treatment / palliative versus radical treatment

• Specific treatment strategies - to identify specific therapeutic strategies (conservative / operational; radical / palliative) for different stages and manifestations of disease, to write the necessary prescriptions and appointments for consultation and/or treatment with specialists from other disciplines. Interdisciplinary treatment strategies.

• Operating techniques - description of surgical techniques, steps and stages, possible complications

• Emergency measures preventing an imminent threat to the life of the patient due to the natural evolution of the disease or complication

Structure - determining practical knowledge and skills on how to:

• Conduct a comprehensive examination of the patient: history and status

• Perform only a certain method (or several methods) of the whole status, which is crucial for the diagnosis of the nosological unit

Additional practical knowledge and skills on how to:

• Make certain manipulations; participation in surgical interventions

Otology

• Clinical anatomy of the middle ear. Clinical anatomy of the inner ear. Physiology of the auditory analyzer, physiology of the vestibular analyzer

• Non-inflammatory diseases of the external ear - othaematoma, cerumen, foreign bodies in the external auditory canal

• Inflammatory diseases of the external ear - otitis externa, perichondritis pinna
• Chronic otitis – mesotympanitis. Chronic otitis - epitympanitis
• Non-inflamatory diseases of the vestibular analyzer - toxic, traumatic, vascular
• Inflammatory diseases of the vestibular analyzer
• Otosclerosis
• Meniere's disease
• Extradural and subdural abscesses
• Otogenic meningitis
• Otogenic sepsis - thrombophlebitis of the sigmoid sinus
• Cavernous sinus thrombophlebitis
• Otogenic cerebral abscess
• Otogenic cerebellar abscess
• Sensorineural hearing loss
• Damage to the hearing from noise and vibration
• Treatment of deafness

Rhinology
• Clinical anatomy of the nose and paranasal sinuses
• Physiology of the nose and paranasal sinuses
• Foreign body in the nose, a boil at the entrance of the nose, epistaxis
• Fracture of the nasal bones, hematoma and abscess of the nasal septum
• Acute rhinorrhea
• Chronic rhinorrhea
• Ozena
• Maxillary sinusitis – acute, chronic and of dental origin
• Frontal sinusitis - acute and chronic
• Distortion of the nasal septum
• Mucocele and piocele
• Orbital complications of sinusitis
• Allergic and vasomotor rhinosinusitis
• Nasal polyps
• Malignant tumors of the nose and paranasal sinuses

Pharynx and oral cavity
• Anatomy and physiology of the pharynx. Angina - catarrhal, follicular, lacunar
• Virus angina, angina in the case of a blood disease, ulcer - membranous angina of Plough - Vincent
• Chronic pharyngitis. Chronic tonsillitis. Peritonsillar abscess, retropharyngeal abscess, Lateropharyngeal abscess, Tumors of the nasopharynx, of the oropharynx, of the hypopharynx

Throat
• Clinical anatomy of the larynx
• Physiology of the larynx
• Subchordal laryngitis
• Acute stenosis of the larynx
• Chronic stenosis of the larynx
• Tracheotomy
• Laryngeal paralyses
• Benign tumors of the larynx
• Malignant tumors of the larynx,
• Scleroma respiratorium
• Esophagus, trachea and bronchi
• Anatomy and physiology of the esophagus
• Foreign bodies in the trachea and bronchi
• Foreign bodies in the esophagus
• Burns in the esophagus
• Occupational diseases of the upper respiratory tract
• Specific diseases in otorhinolaryngology
• HIV / AIDS in otorhinolaryngology
• Practical knowledge and skills learned
• Otoscopy
• Rear rhinoscopy
• Indirect laryngoscopy
• Interpretation of audiogram
• Interpretation of Tympanometry
• Front nasal tamponade
• Front rhinoscopy
• Mesopharyngoscopy
• Palpation of the neck
• Study of spontaneous nistagmus
• Study of statokinetis
• Study of hearing with voice and whisper
• Study of hearing with tuning forks
EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE OF OPTHALMOLOGY

Goal: A medical student must acquire knowledge to competently conduct a basic eye examination and basic manipulations in ophthalmology, and to be able to recognize emergencies, requiring prompt treatment.

CONTENTS:
I. FOUNDATIONS AND PRINCIPLES IN OPTHALMOLOGY
II. REFRACTION
III. EYELIDS, LACRIMAL SYSTEM AND ORBIT
IV. CORNEA, SCLERA AND UVEA
V. RETINA AND VITREOUS BODY
VI. LENS AND CATARACT
VII. INTRAOCULAR PRESSURE AND GLAUCOMA
VIII. PEDIATRIC OPTHALMOLOGY AND NEUROOPTHALMOLOGY
IX. INJURIES AND EMERGENCY
X. OCULAR MANIFESTATIONS OF SYSTEMIC DISEASES

I. FOUNDATIONS AND PRINCIPLES IN OPTHALMOLOGY

Medical student must be able to recognize the structures of the normal human eye and their functions, to know the main symptoms in ophthalmology, as well as to perform a basic eye exam.

1. Anatomy of the eye and its adnexa:
   • Eyelids
   • Sclera
   • Cornea
• Limbo
• Iris
• Pupil
• Conjunctiva
• External eye muscles
• Anterior chamber
• Lens
• Ciliary body
• Vitreous body
• Retina
• Macula
• Optic nerve
• Choroid
• Optic disc

2. To study visual acuity:

Medical student should understand the meaning of the study; be able to explore visual acuity for close and far-away objects, with or without correction; with both eyes and for each eye separately, with or without stenopeic hole. It is not assumed to perform an objective examination of refraction (sciascopy).

3. Visual Inspection:

Students must be able to distinguish normal from abnormal position of the eyelids, canthus, to recognize the conjunctiva, sclera, cornea, iris.

4. To investigate pupil reaction:

The medical student should have knowledge of the reflex arc of the pupillary reaction to light, to measure pupil diameter, to examine the direct and indirect pupillary reaction to light, to examine the pupil reaction for close answer.

5. To investigate ocular motility:
Medical students should be familiar with the function of the external eye muscles, to be able to study eye movements in the six main directions.

6. Be able to use the direct ophthalmoscope:

Medical students should understand the effect of the direct ophthalmoscope, with which arm the study is performed, to be able to explore the pupil reflex, to scan the basic structures of the fundus of the eye - optic nerve, large vessels, parts of the retina and macula.

7. To dilate the pupils:

Medical students should understand the physiological basis of expanding of the pupils; to have knowledge of different drops for dilation of the pupils and their action.

8. To explore the visual field of the patient through confrontation test:

Medical students should know the normal limits of the visual field, be familiar with basic terms - isopter, scotoma, blind spot, to be able to explore the rough visual field of the patient.

9. To be able to turn the upper eyelid of the patient:

Medical students should know why they are doing the manipulation and be able to carry it out.

10. To be able to take a medical history of a patient with ophthalmic problem:

Medical students should be familiar with the main manifestations of ophthalmic diseases - low vision, photophobia, blepharospasm, lacrimation, redness.

Acquired competence:

Medical students should:

• Have knowledge of eye anatomy

• To explore the visual acuity of the patient

• To explore the visual field of the patient (confrontation test)

• To explore pupil reactions to light and close answer

• Know how to conduct direct ophthalmoscopy
• To interpret the pupil light reflex
• To be able to dilate pupils and to understand the meaning of dilatation
• Be familiar with the main causes of reduced vision
• Be familiar with the main characteristics of the eye fundus
• Be able to turn the patient’s upper eyelid
• Be able to take the history of a patient with ophthalmic problem
• Know the main indications for referral of a patient to a specialist

II. REFRACTION

Medical students should understand the human eye as an optical system.

1. The human eye as an optical system
   • Physical refraction
   • Clinical refraction
   Medical students should know the optical abilities of the human eye, the effect of age and size of the eye on the refraction of light.

2 . Pupil size and its influence on visual acuity

3 . Refractive status of the eye
   • Emetropia
   • Hypermetropia
   • Myopia
   • Astigmatism
   • Presbyopia
   • Accommodation
   The medical student has to recognize the different refractive states of the human eye and how normal refraction changes with age.

4 . Correction of refraction anomaly
• Spherical correction
• Cylindrical correction

Medical student should know the different types of correction and when what correction is prescribed.

5. Contact lenses

Medical students should know the basic types of lenses and the indications and contraindications for their use.

6. Refractive surgery (only theoretically)

Medical students should be familiar with the modern methods of surgical treatment of refractive anomalies.

Acquired Competences:

Medical students need:

• To understand and distinguish the refraction status of the human eye (emetrypoy, hypermetropia, myopia, astigmatism, presbyopia)
• To explore visual acuity with correction
• To be familiar with the modern methods for the treatment of refractive anomalies.

III. EYELIDS, LACRIMAL SYSTEM AND ORBIT

1. Eyelids

• Anatomy, physiology, blood supply and innervation
• Investigation
• Diseases

2. Lacrimal system

• Anatomy and Physiology
  o Glands
  o Lacrimal film
o Innervation

b) Study

c) Diseases

- Nasolacrimal obstruction in childhood
- Syndrome "dry eye"

3. Orbit

a) Anatomy and Physiology

b) Diseases

- Exophthalm
- Enophthalm
- Grave's Disease
- Orbital cellulitis
- Trauma of the orbit

Acquired competence

Medical students should:

- Be able to distinguish normal from abnormal eyelid position
- Be familiar with the normal structure and function of the lacrimal system
- Be familiar with the signs of obstruction of the naso-lacrimal ducts, be familiar with the structure of the orbit and recognize the major diseases, affecting the orbit.

IV. Cornea, sclera and uvea

1. Cornea

a) Anatomy and Physiology

b) Corneal reflex

c) Diseases
- Keratitis (viral, bacterial)
- Keratopathy (nubecula; macula; leukoma)

2. Sclera
   - Anatomy and Physiology
   - Diseases

3. Uvea
   - Anatomy and Physiology
   - Uveitis
     - Front
     - Intermediate
     - Rear
     - Panuveit
   - Treatment of uveitis
     - Local therapy
     - Parabulbar application
     - Systemic treatment

Acquired competence

Every medical student needs:

- To be familiar with the structure and optical properties of the cornea
- To identify corneal opacities
- Be familiar with the main types of uveitis
- Be familiar with the treatment options for uveitis
V. Retina and vitreous body

1. Symptoms suggestive of vitreoretinal disease
   • Flashes
   • Floaters
   • Distortion
   • Sudden or rapidly progressive loss of vision

2. Anatomy and Physiology of the retina and vitreous body
   • Photoreceptor cells - types and locations
   • Blood supply of the retina
   • Layers of the retina
   • Structure of Vitreous body
   • Macula

3. Ophthalmoscopy
   • Direct
   • Indirect

4. Normal eye fundus
   • Papilla of optic nerve
   • Macula
   • Vessels
   • Retina

5. Abnormal eye fundus
   • papilloedema
   • occlusion of a. centralis retinae
   • thrombosis of v. centralis retinae
d) haemorrhage in the retina

e) macular degeneration

f) Changes in the eye fundus in cases of hypertension

g) Changes in the eye fundus in cases of diabetes

Every medical student should:
- Know the difference between direct and indirect ophthalmoscopy
- Be able to use the direct ophthalmoscope
- Be able to distinguish normal from abnormal fundus (direct ophthalmoscopy)
- Diagnose the basic manifestations of ophthalmic diseases, affecting the retina and vitreous body.

Acquired competence

Every medical student needs:
- To be familiar with the anatomy and function of the retina and vitreous body
- To carry out direct ophthalmoscopy
- To identify normal and abnormal fundus

VI. Lens and cataract

1. Anatomy and physiology of the lens
a) Location
   - Normal
   - Dislocation
b) Optical properties
c) Structure
d) Attachment apparatus

2. Symptoms, associated with the presence of cataracts
• a slow progressive loss of vision
• Painless loss of vision

3. Examination of the lens by direct ophthalmoscopy
• Assessment of pupil reflex
• Transparency of optical media

4. Cataracts
• Types
  o Congenital
  o Acquired
  o In systemic diseases
  o In cases of trauma
  o In cases of inflammation of the eye
• Degree of maturity
  o Juvenile, starting
  o Mature
  o Hypermature
  o Morgagnian cataract
• Complications of untreated cataracts

5. Treatment of cataract
• Surgical removal
• Implantation of an intraocular lens

6. Presbyopia
• Definition
• Opportunities for treatment
Acquired competence

Every medical student needs:

- To be familiar with the anatomy and physiology of the human lens
- To be familiar with the main events of presbyopia
- To know what the current treatments for patients with presbyopia are
- To diagnose the presence of cataracts (if possible) by lightening with direct ophthalmoscope
- To be familiar with the modern methods of treatment of cataract

VII. Intraocular pressure and glaucoma

1. Humor
   - Production
   - Circulation
   - Intraocular pressure
     - Normal values
     - Methods of measurement
   - Trabecular meshwork and anterior chamber

2. Glaucoma
   - Types
     - Primary
     - Secondary
     - Open-angle
     - Closed-angle
     - With high pressure
     - In normal pressure
• Causes for damage to visual functions
  o damage to the optic nerve
  o damage to the cornea

• Take a history of glaucoma patients
  o Risk factors for development
  o Complaints of patients

• Methods for testing of patients with glaucoma
  o measurement of the intraocular pressure
  o Measurement of central corneal thickness
  o Computer perimetric examination of the visual field
  o ophthalmoscopy (direct)
  o gonioscopy (only theoretically)
  o OCT (only theoretically)

• Modern methods of treatment
  o Conservative (types of local therapy)
  o Operational (basic types)

Acquired competence

Every medical student should:
• Be able to explore the visual acuity of a patient with glaucoma
• Be able to (roughly) interpret a computer perimeter test
• Know how to measure intraocular pressure (theoretically)
• Be able to measure intraocular pressure by palpation
• Know what the early changes in glaucoma patients are
• Know what the modern methods of diagnosis of glaucoma patients are
• Know what the modern methods of treatment of glaucoma patients are

VIII. PEDIATRIC OPHTHALMOLOGY AND NEUROOPHTHALMOLOGY

1. Anatomy and physiology of the external eye muscles

• M. rectus medialis
• M. rectus lateralis
• M. rectus superior
• M. rectus inferior
• M. obliquus superior
• M. obliquus inferior
• M. levator palpebrae superior

Medical students should know the prehensile places of individual muscles, know the basic action of each muscle (adduction, abduction, elevation, depression).

2. Blood supply of the external eye muscles:

• Arterial
• Intravenous

Medical student should know the main arterial and venous vessels of the external eye muscles.

3. Innervation of the external eye muscles:

• N. Oculomotorius
• N. Trochlearis
• N. Abduces
Medical students should know the innervation of each of the external eye muscles.

4. Amblyopia
   - In strabismus
   - In refractive anomalies - anisometropia, ametropia
   - In visual deprivation

Medical students should be able to recognize different forms of strabismus, and opportunities for therapeutic response.

5. Strabismus
   - Comitant strabismus
   - Incomitant strabismus
     - Tropia
       - Esotropia
       - Exotropia
     - Hypertropia
     - Hypotropia
   - Phoria
     - Esophoria
     - Exophoria
   - Investigation of a patient with strabismus
     - Corneal reflex
     - Cover test
   - Pseudostrabismus
     - Epicanthus
Medical students should know the basic terminology strabology, to distinguish the basic forms of strabismus, to be able to examine a patient with strabismus.

6. Study the vision in children
   - For non-verbal children
     - Fixation with each eye separately
     - Orientation in space
   - In children of verbal age
   
Every medical student should be able to explore the vision of children of non-verbal and verbal age.

7. Leukocoria
   - Congenital cataracts
   - Retinopathy of prematurely born infants
   - Retinoblastoma

8. Dysfunction of the naso-lacrimal system
   - Persistent membrane of Hasner
   - Investigation of children with suspected obstruction of SLS
   - Test with fluorescein

9. Afferent visual system
   - Pre-chiasmal lesions
   - Chiasmal lesions
   - Retro-chiasmal lesions

10. Autonomic innervation of the eye
    - sympathetic innervation
• parasympathetic

Acquired competence
Every medical student should:
• Be able to explore the vision of children of non-verbal and verbal age
• To detect the presence of amblyopia
• To diagnose patients with strabismus
• To establish the existence of a "white " pupil
• To recognize a dysfunction of the naso- lacrimal system
• Be familiar (theoretically ) with the perimetric defects in the lesion of visual sensory pathways
• Be able to diagnose the disorder in the function of the pupil

IX. INJURIES AND EMERGENCY CASES

1. Injuries
• Injuries to the orbit
• Injuries to the eye
  o blunt trauma
  o lacerated contusion trauma
2. Emergencies
• Burns
  o Behavior in cases of chemical burns ( acids, alkalis , detergents )
• Syndrome of the " red eye"
• Papilloedema
  o Direct ophthalmoscopy
• Glaucoma attack
  o External features
  o Palpable measurement of IOP

Acquired competence
Medical students need:
• To recognize emergencies in ophthalmology
• To know how or react in cases of chemical burns to the eyes
• To diagnose patients with the "red eye" syndrome
• To be able to identify the presence of papilloedema with a direct ophthalmoscope
• To measure the palpable ocular pressure of the patient with glaucoma attack

X. Ocular manifestations in systemic diseases
1. Diabetes
   • anterior segment
     o Cornea
     o Lens
   • posterior eye segment
     o Retinopathy
2. Arterial hypertension
   • Retina
     o Angiopathy
     o Angiosclerosis
     o "Macular star"
   • Ischemic opticopathy
3. Thyroid-associated ophthalmopathy

- Pathogenesis
- Clinical manifestations
  - Exophthalm
  - Eyelid retraction
  - Eye movement disturbances
  - Increased intraocular pressure
  - Diathyroid opticopathy

Acquired competence

Medical students need:
- To identify ophthalmoscopic changes in the fundus in diabetes
- To identify ophthalmoscopic changes (including early) in hypertension
- To diagnose exophthalm, eyelid retraction, eye movement disturbances
EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN NEUROLOGY

Neurology is a clinical discipline which studies the functions and dysfunctions of the nervous system that regulate the activity of other organs and systems.

1. Structure-determining theoretical knowledge

Neurology studies the pathogenesis, pathology and pathophysiologica processes in various nosological units, classification, clinical picture, diagnosis, differential diagnosis, treatment, prevention and complications, following major neurological diseases.

• Cerebrovascular disease / ischemic and haemorrhagic stroke, vascular dementia /
• Diseases of the peripheral nervous system - neuralgia, neuritis, neuropathy, polyneuritis and polyneuropathy
• Pain syndromes - neuropathic pain, radiculopathy, headaches
• Inflammatory diseases of the CNS - meningitis, encephalitis and myelitis
• Autoimmune diseases - multiple sclerosis, myasthenia, acute inflammatory demyelinating polyradiculoneuropathy, chronic inflammatory demyelinating polyradiculoneuropathy
• Epilepsy
• Extrapyramidal disease - Parkinson's disease, Parkinson-Plus syndromes, dystonia, etc.
• Degenerative diseases of predominantly cortical localization - Alzheimer's disease, fronto-temporal dementia, diffuse Lewy body disease, dystonias
• Degenerative diseases of the upper and lower motor neurons and of the spinal cord
• Diseases of the muscles

2. Fundamental knowledge, related to neurology

The subject of fundamental neurology are the anatomo-physiologic features of the central nervous system, the peripheral nervous system and the autonomic nervous system and the specific neurological activities such as:
• Reflex activity
• Sensory functions
• Extrapyramidal system
• Muscle tone
• Coordination of movements
• Cranial nerves
• Visual sensitivity and nerves that control eye movement
• Auditory and vestibular sensitivity
• Higher cortical functions
• Autonomic nervous system
• Reticular formation, sleep and wakefulness

3. Additional theoretical knowledge

To make analytic differential diagnosis the medical student needs to know the indications and possibilities of basic laboratory and instrumental methods in neurology and to interpret the results of:

• Electroencephalography
• Electromyography
• Evoked potentials
• Doppler sonography
• Neurorentgenology
• Neuroophthalmology
• Neurootology
• Neuropsychology
• Liquorology
The student in neurology should know the indications and contraindications of various treatments and manipulations. Special attention is paid to the behavior in cases of status epilepticus, coma, cerebral edema and intracranial hypertension, stroke, vertigo crisis, acute neuroinfections, severe muscle weakness, acute neuromuscular respiratory paralysis, acute spinal cord compression, etc.

Medical students should be able to differentiate primary from secondary diseases of the nervous system. This requires knowledge of related disciplines such as psychiatry, neurosurgery, neuroradiology, neuropsychology, neuroophthalmology, neurootology, neurogenetics, neuropsychology, etc.

It is also necessary to have knowledge of the various neurological complications of somatic diseases, intoxication, occupational hazards, etc.

EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN CLINICAL PATHOLOGY

The ultimate goals of teaching clinical pathology to medical students are to acquire theoretical and practical knowledge on:

1. Pathological findings in the organs and as a complex in the body and in particular diseases and nosological units.

2. Clinical and patho-morphological parallel of the diseases by systems.

3. Clinical and morphological methods for testing and diagnosis of the organs by systems.

The necessary minimum of theoretical knowledge on:

- Pathological and anatomical characteristics of diseases of the cardiovascular system
- Pathological and anatomical characteristics of diseases of the digestive system
- Pathological and anatomical characteristics of diseases of the hematopoietic system
- Pathological and anatomical characteristics of diseases of the respiratory system
- Pathological and anatomical characteristics of diseases of the urinary system
- Pathological and anatomical characteristics of diseases of the genitourinary system, pathology of pregnancy and the newborn
• Pathological and anatomical characteristics of diseases of the infectious diseases

The necessary minimum of practical knowledge and skills on:

• macroscopic organ diagnostics to detect disease changes

• macroscopic differential diagnosis of the organ - specific diseases by nosologies

• technique of the pathological and anatomical autopsy with comment on the findings by organs and the making of the pathological and anatomical diagnosis and medical conclusion

• comparative analysis of the pathological and anatomical diagnosis / medical conclusion and clinical data / medical conclusion

• technique for fixation and processing of surgical biopsies

• interpretation of archival theme autopsy and biopsy cases with comments on the clinical and patho-morphological parallel

• development of thematic tasks ( essays ) on a given topic

EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN GENERAL MEDICINE

Acquired skills and competences:

General medicine (GM) is an academic and scientific discipline and clinical specialty with its own educational content, research, evidence base and clinical activity, oriented to primary care. It is committed to solving the most common problems of the family, the health care for women, children, the elderly and terminally ill. General medicine is not a collection of medical concepts but combines patient care that is personalized, continuous and comprehensive. GM aims to provide an initial, continuous, comprehensive and coordinated care for all patients, families and communities in the contest of the biomedical, psychological, social and natural understanding of health. The basic approach in the general practitioner’s daily practice is holistic, focusing on both the physical and biological components of the disease and on its psychological and social dimensions.

As a specialty, GM covers a wide range of basic theoretical knowledge and practical skills in the use of prophylactic and therapeutic and diagnostic methods and procedures.
in various fields of medicine. In addition, as a practical medical activity it has major
differences, when compared to the other specialties:

I. First contact with the health care system, with free access, for any health problem ,
regardless of age, gender or other characteristics of the patient.

II. Coordinator and advocate for the patient in the healthcare system. Coordinating,
effective and efficient use of resources in the health system by interacting with other
health care professionals,, assuming the role of the patient’s advocate when
necessary.

III. Responsibility for the health of the community as a whole.

IV. Make a decision that accounts for the frequency of the disease in the community.

V. Early detection of health problems. The GP manages unstructured health problems
in the early stages of their development , which may require urgent intervention .

VI. Simultaneously address both acute and chronic health problems of the patient .

VII. Health promotion through appropriate and effective interventions. The GPs apply
the prevention approach to their practice with their primary objective being to protect the
health and prevent diseases to the people, who have selected him , ie GPs work not
only with patients but also with healthy people from the patient list .

VIII. Continuous and constant relationship over time. The GPs are responsible for the
continuity and duration of care, depending on the patient's needs .

IX. Patient- centered approach, focused on the individual, their family and the
community in which they live.

X. Relationship physician - patient. In general practice a unique process of consultation
is established, which is lengthy and is based on effective communication between
doctor and patient .

XI. Consideration of the health problems in their physical, psychological, social, cultural
and existential aspects. The GP provides integrated health promotion, disease
prevention, treatment , rehabilitation and supportive care for the individual and their
family in physical , psychological and social terms.

The educational activities of the Department of GM involve working with students ,
trainees and residents in general medicine . A feature of teaching GM is taking a
decision in determining the individual approach and adequate communication with the
patient. Training methods include seminars, discussions, case studies , role plays, small
group work and work with simulated patients.
Specific educational goals in the training of General Medicine are formed by the core competences needed to work as a general practitioner.

A. To manage the health problems of patients at the level of primary health care (refers to characteristics I and II) -

1. To deal with diverse types of health problems in patients of different ages and diseases of different organs and systems.

2. Coordination of care with other health care professionals at the level of primary care.

3. Appropriate use of the resources of the health care system.

4. Providing access to other health care services when needed.

5. To advocate for the patient in the health care system.

B. To be oriented towards the community (refers to characteristic III)

1. To try to balance the health needs of the individual and those of the community in accordance with available resources.

C. To be able to solve specific problems (related to characteristics IV and V)

1. To coordinate the decision of the health problem with the disease prevalence data in the community.

2. To collect targeted information and interpret information from the medical history, physical examination and investigations and to create an appropriate management plan for the health problem in coordination with the patient.

4. To be adaptable and apply appropriate principles by gradually expanding the range of tests, use of time as a tool and toleration of uncertainty.

5. To intervene in emergency if necessary.

6. To deal with diseases that may be presented by a patient at an early stage and at an undifferentiated phase.

7. To use efficient and effective diagnostic and therapeutic methods.

D. Comprehensive care. Be able to implement a comprehensive volume of activities (refer to characteristics VI and VII).

1. To manage simultaneously multiple complaints and illnesses, both acute and chronic in the same patient.
2. To promote health, to prevent disease in an appropriate manner.

3. To coordinate health promotion, prevention, treatment, palliative care and rehabilitation.

D. Implement person-centered care (refers to characteristics VIII, IX and X)

1. To comply with the environment in which the patient lives and his health problem develops.

2. To carry out consultation on the basis of an effective doctor-patient relationship and show respect for the autonomy of the patient.

3. To communicate, prioritize and act in cooperation, achieved with the patient.

4. To provide continuous and uninterrupted care.

E. Apply a holistic model (refers to characteristic XI).

1. To use the bio-psycho-social approach taking into account cultural and existential aspects.

The necessary knowledge and competences during the training in general medicine in the IV year:

During the training of fourth-year students they acquire knowledge and competences that will enable them to:

1. To understand general medicine as a specific branch of medicine, its specific body of knowledge and skills, its specific techniques and approaches

2. To study critically and deeply analyze medical literature in regard to the specific concept in general medicine

3. To learn and master the use of various communication techniques needed to conduct the consultation in general practice, adapted to the specific contingent of patients

4. To be aware of, know the importance of and implement screening programs of socially significant diseases in general medicine

5. To develop prevention programs

6. To understand what it is to be a patient, understand the responsibility of the GP

7. To maintain the dignity and respect for the rights of patients in all conditions
8. To master the practice of patient-centered medicine in the context of family and community

9. To analyze accurately and continuously the doctor-patient and the physician-physician relationships.

10. To properly identify the health needs of the patient, family and community.

11. To understand the patient's complaints both physically and behaviorally

12. To study modern therapeutic knowledge and develop their skills.

13. To assess carefully the capacity of family members and close friends to care for patients.

14. To be able to build diagnostic and therapeutic algorithm and to guide the patients with unstructured health problems in general practice.

15. To be familiar with the possibilities and the need for palliative care and psychological support in specific patient groups.

Necessary knowledge and competences acquired during the training in general medicine for fourth-year students during their pre-diploma traineeship:

In the course of their medical training the students have acquired the necessary structure-determining theoretical knowledge in the individual nosologies - definition, classification, pathology, clinical picture, diagnosis and differential diagnosis, treatment methods and specific outcomes, monitoring and prophylaxis.

The key competences, acquired in the course of the pre-diploma traineeship, are related to specific activities in general medical practice:

1. Treatment of the patient's medical record and prophylaxis screening.

2. Write prescription forms as required by the NHIF. Reimbursement of medicines.

3. Targeting outpatients for clinical and instrumental investigations.

4. Consult with a narrow specialist. Indications and relations with the GP.

5. Pre-operative preparation of patients.

6. Monitoring of patients after hospital discharge.

7. Follow-up of dispensary patients.

8. Chronically ill patients in general practice.
The additional theoretical knowledge in the following basic areas:

1. Analytic differential diagnosis - determining the main differential diagnostic problems, identifying the characteristic features for distinguishing the diagnoses of nosologies from one another, determining the indications for doing laboratory and imaging tests in the context of the diagnostic algorithm, interdisciplinary differential diagnosis. A major emphasis is placed on non-structured complaints during the first consultation with the patient in the general practice.

2. Interpretation of the results of various specific investigations / groups of diagnostic methods, related to the disease diagnosis

3. Evaluation of treatment options - advantages and disadvantages to maximize efficiency

4. Tracking the effect of applied treatments, related to the symptoms and prognosis of the patient. Creating secondary prevention programs, corresponding to the competences of GPs

5. Creating programs to care for patients with chronic and terminal illnesses, teamwork and interdisciplinary approach.

EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN INTERNAL MEDICINE

Knowledge of basic nosological units in Internal Medicine

1. Respiratory diseases (Pulmonology and Phlebology)

   1. Acute bronchitis, tracheobronchitis, bronchiolitis
   2. Chronic obstructive pulmonary disease / COPD / Chronic bronchitis, pulmonary emphysema
   3. Pulmonary fibrosis and pneumosclerosis. Pneumoconiosis
   4. Respiratory failure
   5. Pneumonia. Bacterial and nonbacterial pneumonia
   6. Bronchiectasis (bronchiectatic disease)
   7. Suppurative lung disease. Lung abscess
   8. Pulmonary thrombembolism
10. Pleurisy
11. Pulmonary granulomatosis. Sarcoidosis
12. Primary and secondary tuberculosis of the lung
13. Fungal diseases of the lung
14. Diseases of the mediastinum

II. DISEASES OF THE CARDIOVASCULAR SYSTEM (cardiology)
1. Heart failure - Congestive and hypodebit; left-sided and right-sided, acute and chronic.
2. Acute and chronic pulmonary heart disease
3. Cardiogenic shock
4. Pulmonary hypertension.
5. Rheumatism. Rheumocardiitis
6. Diseases of the mitral valve - mitral stenosis, mitral insufficiency.
7. Tricuspid defects - stenosis and insufficiency
8. Diseases of the aortic valve - aortic stenosis, aortic insufficiency
12. Hypertension - essential and secondary.
14. Chronic ischemic heart disease - stable angina pectoris
15. Ischemic heart disease - acute coronary syndromes without ST-segment elevation.
16. Ischemic heart disease - acute coronary syndromes with ST-segment elevation.
17. Rhythm disorders - classification, electrophysiological mechanisms, antiarrhythmic drugs.
20. Conduction disorders
23. Tumors of the heart
25. Peripheral arterial disease

III . Diseases of the digestive system ( GASTROENTEROLOGY )
1. Diseases of the esophagus – spectrum and general characteristics
2. Achalasia and other functional ( motor ) disorders of the esophagus
4. Hiatal hernia
5. Gastroesophageal reflux disease . Esophagitis and Barrett's esophagus . infectious esophagitis
6. Cancer of the esophagus
7. Diseases of the stomach and duodenum -spectrum and general characteristics
8. Acute and chronic gastritis . Infection with Helicobacter pylori
10. Stomach tumors - types and characteristics . Stomach cancer.
11. Lymphoma, stromal and endocrine tumors of the digestive system.
12. Upper and lower gastrointestinal bleeding.
13. Diseases of the small intestine - spectrum and general characteristics
14. Maldigestion and malabsorption syndrome
15. Celiac disease
16. Diseases of the colon - spectrum and general characteristics
17. Chronic inflammatory bowel disease - Crohn's disease, ulcerative colitis. Complications
18. Ischemic colitis and post-radiation colitis
19. Diverticulosis and diverticulitis
20. Chronic nonspecific colitis / Irritable Bowel Syndrome
21. Benign tumors of the colon - polyps / adenomas, polyposis
22. Colon cancer
23. Diseases of the rectum and anus. Hemorrhoids
24. Liver disease – spectrum and general characteristics
25. Acute hepatitis and acute liver failure
26. Chronic viral hepatitis
27. Autoimmune hepatitis
28. Autoimmune cholestatic liver diseases. Primary biliary cirrhosis and primary sclerosing cholangitis.
29. Toxic and drug-induced hepatitis
30. Intrahepatic cholestasis
31. Hepatic steatosis. Nonalcoholic fatty liver disease / Nonalcoholic steatohepatitis
32. Alcoholic liver disease. Steatosis, alcoholic hepatitis and cirrhosis
35. Hepatic cirrhosis.
37. Budd-Chiari Syndrome. Portal Vein Thrombosis
38. Liver tumors - benign and malignant. Primary liver cancer. Liver metastases.
39. Diseases of the gallbladder and biliary tract - spectrum and general characteristics
41. Cholangitis , cholangiohepatitis
42. Tumors of the biliary system and papillae Vateri
43. Syndrome of extrahepatic cholestasis
44. Diseases of the pancreas - spectrum and general characteristics
45. Acute pancreatitis
46. Chronic pancreatitis
47. Tumors of the pancreas. Pancreatic cancer
48. Tuberculosis of the digestive system

IV . Urinary system diseases ( NEPHROLOGY )
1. Glomerulonephritis . Chronic glomerulonephritis
2. Nephropathies in systemic connective tissue diseases and systemic vasculitis and in other diseases
4. Acute and chronic urinary tract infection / pyelonephritis
5. Tuberculosis of the kidneys
6. Chronic non-infectious interstitial nephritis
7. Balkan endemic nephropathy
8. Kidney stones ( nephrolithiasis )
11. Renal amyloidosis


15. Tumors of the kidney and urinary tract, incl. the prostate gland

16. Genetic and hereditary diseases of the kidney. Polycystic disease, elderly patients

V. DISEASES of the endocrine system and metabolism (Endocrinology)

1. Diabetes mellitus type 1 and type 2. Complications

2. Obesity and metabolic syndrome. Dyslipoproteinemia/hyperlipoproteinemia


5. Diseases of the adrenal gland. Hyper- and hypocorticism


8. Endocrine emergencies

VII. Blood disorders (Hematology)

1. Anemia. Macrocytic and megaloblastic anemia

2. Iron deficiency anemia

3. Anemia of chronic disease


5. Hemoglobinopathies
6. Aplastic / hypoplastic anemia
7. Agranulocytosis
8. Acute leukemia
10. Chronic lymphocytic leukemia
11. Waldenström's macroglobulinemia
12. Multiple myeloma
13. Chronic myeloid leukemia
14. Polycythemia vera
15. Haemorrhagic diathesis.
16. Essential thrombocytopenia
17. Thrombocytopenias
19. Pathophysiology of disseminated intravascular coagulation
20. Treatment with cytostatic and immunosuppressive agents. Anticoagulant therapy.

VII. DISEASES OF THE SKELETAL-MUSCULAR SYSTEM AND CONNECTIVE TISSUE (RHEUMATOLOGY)
1. Rheumatoid arthritis
2. Juvenile chronic arthritis
3. Septic arthritis
4. Psoriatic arthritis
1. Reactive arthritis (Reiter's disease - arthritis, urethritis and conjunctivitis)
2. Behcet's disease
3. Carpal tunnel syndrome
4. Erythema nodosum
5. Fibromyalgia
6. Humero-scapular periarthritis
7. Gout and pseudogout
8. Acute osteomyelitis
9. Osteoporosis
10. Paget's disease of bone, osteitis deformans
11. Polymyalgia rheumatica
12. Temporal arteritis, giant cell arteritis
13. Polymyositis / dermatomyositis
14. Deforming osteoarthritis
15. Chondromalacia of the patella
16. Genu varum/ valgum
17. Achilles tendonitis
18. Pes planus
19. Henoch–Schönlein purpura / subgroup of hypersensitivity vasculitis /
20. Reflex sympathetic dystrophy / Sudeck’s atrophy /, complex regional pain syndromes
21. Intervertebral disc herniation
22. Lumboischialgia
23. Spinal deformity / kyphosis, scoliosis, lordosis, incl. Juvenile kiphoscoliosis = Scheuermann Disease/
24. Ankylosing spondylitis
25. Stenosis of the spinal canal / cervical, lumbar /
26. Spondylarthrosis, spondylosis
27. Spondylolisthesis
28. Sjogren's disease / Sicca syndrome with arthritis, lupus erythematosus, scleroderma/

29. Systemic sclerosis, progressive scleroderma

30. Systemic lupus erythematosus

31. Polyarteritis nodosa / Churg-Strauss syndrome, Takayasu’s disease/

32. Wegener's granulomatosis

VIII. Allergic diseases (ALLERGOLOGY)

1. Allergic immunopathies.

2. Asthma

3. Hypersensitivity pneumonitis

4. Drug allergy

5. Anaphylactic shock

6. Serum sickness

7. Allergies to insect stings

8. Hereditary angioedema

IX. TOXICOLOGY

1. Basic principles of treatment of poisoning. Detoxification -purification, antidote and resuscitation and organo-protective tools and methods

2. Non-drug poisonings

3. Poisoning with some pesticides

4. Medicinal poisoning

5. Poisoning, caused by insects, snakes and mushrooms

6. Acute alcohol intoxication.
H. MEDICINAL THERAPY

1. Treatment with NSAIDs and pain medications in Internal Medicine
2. Antibacterial therapy in internal diseases
3. Treatment with diuretics in Internal Medicine
4. Treatment with glucocorticoids in Internal Medicine
5. Treatment with immunomodulators in Internal Medicine
6. Treatment with cytostatics.

Additional knowledge

It supports the making of the diagnosis, differential diagnosis, as well as treatment and work capacity

1. Clinical Laboratory and Immunology, Genetics and Molecular Biology
2. Microbiology and Parasitology
3. Pathological anatomy
4. Imaging investigations
5. Invasive endoscopy, biopsy and other tests
6. Functional investigation
7. Pharmacology and Clinical Pharmacology
8. Surgery, orthopedics
9. Oncology
10. Geriatry
11. Infectious diseases
12. Social Medicine

General Knowledge

1. Terminal conditions
- Euthanasia, suicide
- Palliative sedation

2. Information / treatment
- Treatment of the polymorbid chronically ill patient
- Assessment of working capacity
- Prescribing physical therapy
- Prescribing work therapy
- Assessment of driving ability, incl. minimum medical standards for drivers
- The logistics of laboratory tests in ambulatory practice
- International classification of diseases and work capacity, disability and health
- Establishing the causes and mechanisms of exitus letalis at the place of death

Specific additional knowledge

Pulmonology
1. Constellations of laboratory research in pulmonology

2. Instrumental diagnostic methods in pulmonology: noninvasive - roentgenography, CT, MRI, radioisotope, ultrasound, invasive - pleural puncture, bronchoscopy, biopsy, etc.

3. Microbiological / parasitological diagnosis of pulmonary diseases. Tuberculin diagnostics

4. Histological and cytological diagnosis

5. Methods for the testing of respiratory function - pulmonary function tests, blood gas analysis

6. Therapeutic treatments - the therapeutic pleural puncture, manipulations under endoscopic and other control

Cardiology
1. Constellations of laboratory test in cardiology.

2. Instrumental diagnostic methods in cardiology: noninvasive - roentgenography, ultrasound with Doppler, CT and MRI, radioisotope, invasive – cardiac catheterization / coronary angiography, oesophageal ultrasound, etc.

3. Electrocardiogram (ECG), working ECG sample, ambulatory Holter-monitored ECG, ambulatory Holter monitoring of blood pressure and heart rate, etc.

4. Microbiological/parasitological diagnostics in cardiology

5. Therapeutic manipulations - therapeutic pleural puncture, electrical cardioversion, coronary angiography with dilatation / stent placement, pacemaker placement and other manipulations

Gastroenterology

1. Constellations of laboratory tests in gastroenterology

2. Instrumental diagnostic methods in gastroenterology: noninvasive – roentgenography / contrast radiography; ultrasound with Doppler, CT and MRI; invasive - endoscopy (esophago-gastro-duodenoscopy, papilloscopy, enteroscopy, colonoscopy, sigmoidoscopy, sigmoidoscopy, endoscopic retrograde cholangiography) with biopsy, endoscopic ultrasonography, abdominal puncture, capsule enteroscopy, liver biopsy, capsule enteroscopy, stomach probing, duodenal probing, etc.

3. Microbiological and parasitological diagnosis in gastroenterology

4. Histological and cytological diagnosis

5. Functional testing - esophagus, stomach, intestine, liver, biliary system, pancreas

6. Therapeutic manipulations - putting a relieving nasogastric tube, placing the Blackmore probe in cases of bleeding, therapeutic abdominal puncture; inserting medicinal substances in the peritoneum, manipulations under ultrasound guidance - punctures of various cystic and other lesions, abscesses, destruction of tumors, etc.; endoscopic - mucosal resection, polypectomy, endoscopic hemostasis, ligation of varices, dilation, prosthetics, extraction of foreign bodies / stones in the bile ducts and pancreatic duct, endoscopic drainage, destruction of tumors and others, percutaneous gastro / eunostomy, injection of pharmaceuticals

Nephrology

2. Instrumental diagnostic methods in nephrology: non-invasive – ultrasound with Doppler, CT, MRI, roentgenography (intra-venous urography), invasive - renal biopsy, etc.


6. Therapeutic manipulation – catheterization of the bladder, puncture/drainage under ultrasound guidance, hemodialysis and peritoneal dialysis, etc.

**Endocrinology**

1. Constellations of laboratory tests in endocrinology.

2. Anthropometric studies.

3. Instrumental diagnostic methods in endocrinology: noninvasive - ultrasound, CT, MRI, roentgenography, radioisotope, osteodensitometry; Invasive – biopsy, etc.

4. Functional testing of endocrine glands - static and dynamic hormonal tests, blood glucose profile and glycated hemoglobin.

5. Cytological diagnosis.

**Hematology**

1. Constellations of laboratory tests in hematology.

2. Microscopy (erythrocyte morphology, complete blood count with differential).

3. Determination of blood groups.

4. Instrumental diagnostic methods in hematology: noninvasive - roentgenography, ultrasound, CT and MRI, etc.; invasive - (bone marrow biopsies, etc.)

5. Histological and cytological diagnosis.

6. Therapeutic treatments - blood transfusion, infusion of bioproducts, etc.
Rheumatology
1. Articular status - of upper and lower limb, of the spine
2. Constellations of laboratory tests in rheumatology
3. Instrumental diagnostic methods in rheumatology: non-invasive - ultrasound, vascular investigations, CT, MRI, roentgenography, osteodensitometry, Dolorimetry; invasive - puncture, synovial, cutaneous muscular, bone biopsy, etc.
4. Examination of synovial fluid
5. Histological diagnosis
6. Therapeutic treatments - therapeutic puncture, intra-articular and other injection of medicines, etc.

Allergy
1. Taking and reading skin samples
2. Functional examination of breathing

Toxicology
1. Taking material from biological products for chemical toxicological analysis, chemical toxicological diagnostics
2. Dialysis methods of treatments in acute poisoning
3. Doing gastric lavage.

Necessary minimum of practical knowledge and skills that students should master (practical minimum):
1. Work with a patient in the clinical setting:
   1. Anamnesis, objective examination
   2. Establish a diagnostic and differential diagnostic plan. Interpretation of results
3. Establish a treatment plan.

4. Filling in medical record, making medical conclusion, prescription and writing a referral.

5. Training the patient for conduct in the home setting.

II. Performing diagnostic and therapeutic procedures:

1. Registering blood pressure and pulse

2. Registering echocardiography with interpretation of results

Performing semiquantitative urinalysis, calculating creatinine clearance

3. Determination of blood group

4. Installing the nasal catheter

5. Placing the oxygen mask and supplying oxygen

6. Performing tuberculin diagnosis

7. Performing subcutaneous, intramuscular and intravenous injections

8. Taking, storage and transport of biological products (blood, urine, secretions and excretions)

10. Measuring blood sugar with a glucometer.

11. Calculating body mass index, measuring abdominal circumference and waist-hip ratio.

12. Administration of insulin.

13. Recognition of normal cells in peripheral blood.

III. Interpretation of specific laboratory constellations in cases of:

1. Anemic syndrome.

2. Inflammatory syndrome

3. Neoplastic syndrome
4. Nephrotic syndrome
5. Dyslipidemia
6. Disturbed carbohydrate metabolism.
7. Renal function - acute and chronic renal failure
8. Cholestasis syndrome, elevated liver enzymes.
9. Viral hepatitis
10. Effusions in body cavities
11. Hepatic Insufficiency
12. Coronary syndrome
13. Pulmonary embolism.
15. The results of chemical and toxicological analyses.
16. Life-threatening conditions.

IV. Knowledge of the capabilities of imaging, invasive and non-invasive methods of investigation:
1. Ultrasonography
2. Endoscopy
3. X-ray
4. CT
5. Working and Holter ECG
6. Osteodensitometry
7. Biopsy methods of investigation
8. Skin allergy tests
9. Spirometry
V. Practical approach to:
1. abdominal pain
2. diarrheal syndrome
3. constipation
4. jaundice
5. ascites
6. swelling
7. oliguria
8. hypertensive crisis
9. acute coronary event
10. comatose condition
11. life-threatening situations
12. clinical death, cardio-pulmonary resuscitation.
13. acute exogenous intoxication
14. acute liver failure
15. melaena, haematemesis, rectorrhagia.

Theoretical knowledge:
1. Be able to describe the epidemiology, etiology, pathogenesis, pathophysiology, pathological anatomy, clinical manifestations (clinical picture), diagnosis, differential diagnosis, treatment, prognosis, evolution, treatment and prognosis of specific diseases, treated by internal medicine
2. Knowledge—to be able to explain the diagnostic approach to the most common clinical symptoms and objective events in Internal Medicine
3. Knowledge— to identify the characteristics of the functioning medical team
4. Knowledge - to explain the general psychosocial factors, influencing the disease and treatment

5. Knowledge - to identify the major ethical and legal issues, related to the end of life, to explain the general principles of palliative care - pain and other symptoms.

6. Skills - To make a complete and focused history and physical examination of patients, hospitalized with internal diseases

7. Skills - To shape the medical documentation, incl. summary of the case and recommendations for diagnostic tests and therapy.

8. Skills - to synthesize a list of problems, differential diagnosis, diagnostic strategy and treatment plan for major diseases in internal medicine

9. Skills - to interpret laboratory and diagnostic tests

10. Skills - to work as members of the treatment team

11. Skills – to be able to write a complete and accurate decursus morbi.

12. Skill - to treat the most common chronic disease conditions and risk factors and in outpatient settings (e.g., hypertension, diabetes, gastritis, asthma/COPD, pyelonephritis, osteoporosis, osteoarthritis, allergic reactions, anemia).

13. Skills – to demonstrate clear and organized skills of communication and interpretation in dealing with patients during the oral presentation of cases, description of cases and clinical follow-up.


15. Attitudes - to accept responsibility for competence development, both in terms of scientific and medical aspects of the profession and of humanity.

16. Attitudes - demonstrate responsiveness to medical and psycho-social needs of the patient, incl. ethical care and confidentiality

17. Attitudes - to demonstrate honesty and integrity in all dealings with patients, their families, colleagues and others.

18. Attitudes - to demonstrate professionalism on the job - accuracy and discipline, reliability and responsibility in the performance of official duties

19. Attitudes - to be respectful to the members of the treatment team.
How is the achievement of the specific training objectives measured?

Students are graded according to the objectives of training in internal medicine in terms of knowledge, skills and professionalism.

Components of self-assessment in the middle of the cycle, including the OSCE (Objective Structured Clinical Examination) sessions in small groups, sessions for direct observation and assessment of clinical skills, self-assessment test. Further, evaluation by the assistant professors, and finally, a test, a practical and oral examination are performed.

FORMS OF CONTROL OF STUDENTS’ KNOWLEDGE

1. Placement test
2. Reporting clinical cases to the assistant professor
3. Reporting to a professor or associate professor during the rounds
4. Reporting and discussion during the thematic lesson
5. Final test
EDUCATIONAL GOALS AND LEARNING OUTCOME OF THE COURSE IN SURGERY

The goals of the course in Surgery are for students to:

1. Acquire theoretical knowledge and skills in the aetiology, pathophysiology, pathogenesis, pathological anatomy, clinical presentation and disease progression in patients with surgical disease.

2. Mastery and application of methods for diagnosis and differential diagnosis, for conservative and operative treatment in the case of advanced pathological process, as well as the follow-up, prognosis and recovery of treated patients.

3. Mastery of knowledge and skills to carry out primary and secondary prevention and promotion of surgical patients.

4. Acquiring additional knowledge and skills in the methods for functional endoscopic, ultrasound, radiological and invasive diagnostics in the field of surgical infection, trauma, surgical oncology.

5. Familiarization and training in the modern methods, used in surgical practice, such as the technique and methods of laparoscopic and mini-invasive procedures and operations.

The learning outcomes of the course in Surgery include acquisition of the following theoretical and practical knowledge and skills

THEORETICAL WORK

1. Knowledge of the anatomical and physiological peculiarities of the child and the adult organisms with surgical disease.

2. Knowledge of the basic principles of normal anatomy and physiology of the body.

3. Knowledge of the specifics of history taking and clinical examination of surgical patients.

4. Knowledge of the basic methods of primary and secondary prevention and promotion of surgical patients.

5. Knowledge of all the peculiarities of the main nosological units in surgery
6. Knowledge and differentiating the patients with urgent surgical illness and the subsequent therapeutic and operation tactics.

7. Acquiring knowledge of basic concepts and nosological units in surgery:


• Surgical bleeding - types. Compensatory reactions of the organism in cases of blood loss. Criteria for assessing the volume of blood loss - clinical symptoms, hemodynamic and hematological parameters.

• Methods for permanent and temporary bleeding control. Rules and technique to stop bleeding from wound surfaces.

• Blood transfusion. Doctrine of blood groups. Methods and rules for determining the blood group. Samples for blood group compatibility. Complications in cases of blood transfusion and overcoming them. Indications and technique of arterial blood transfusion.

• Genetic problems in surgery.

• The teaching of trauma. Types of trauma - definition and classification. Traumatism - types.

• Treatment of injuries. Primary surgical treatment - purpose and technique. Indications and contraindications for suturing the treated wound. Early and deferred suture. Secondary sutures - early and late.

• Acute purulent, putrefactive and anaerobic infections. Causative agents, resistance, hospital strains. Local tissue processes - stages in their development. Clinic picture and treatment in the infiltrative stage. Suppuration stage - abscesses and phlegmonous suppuration – Pathologic and anatomical and clinical characteristics, treatment.


• Benign and malignant tumors of epithelial and mesenchymal origin.

• Laboratory and instrumental diagnostics of oncological diseases. Morphological diagnosis. Principles of the diagnostic algorithm.

• Local anesthesia. General and local and regional anesthesia.


• Clinical and laboratory diagnosis in patients with diseases in visceral and urgent surgery.

• Congenital and acquired diseases of the neck - torticollis, cervical rib, congenital cysts and fistulas. Thyroid diseases - etiopathogenesis, clinical characteristics, diagnosis, treatment. Indications for surgical treatment. Thyroid cancer - clinical characteristics, diagnostics, treatment.

• Inflammatory, benign and malignant breast diseases - etiopathogenesis, forms, clinical characteristics and surgery.

• Inflammatory, benign and malignant lung and heart diseases - etiopathogenesis, forms, clinical characteristics and surgery.

• Teachings of the hernias of the anterior abdominal wall – classifications, common pathogenesis, anatomical elements, most common locations. Hernia of the white line, umbilical and inguinal hernias - mechanism of occurrence, surgical treatment.

• Benign and malignant oesophageal diseases - etiopathogenesis, forms, clinical characteristics and surgery. GERD. Congenital and acquired diaphragmatic hernias.

• Benign and malignant stomach diseases - etiopathogenesis, forms, clinical characteristics and surgery.


• Benign and malignant bowel diseases - etiopathogenesis, forms, clinical characteristics and surgery. Meckel’s diverticulum.

• Appendicitis. Pathological and anatomical and clinical forms. Diagnosis, surgical tactics and treatment. Atypical forms.


• Benign tumors of the rectum and anus. Operational methods. Transanal microsurgery.


• Benign and malignant tumors of the liver. Clinical characteristics, diagnosis, and surgical treatment.


• Inflammatory, benign and malignant tumors of the gallbladder. Clinical characteristics, diagnosis, and surgical treatment.

• Tumors of the bile ducts and papilla of Fateri. Clinical characteristics, diagnosis, treatment. Obstructive jaundice. Liver failure.

• Inflammatory, benign and malignant tumors of the pancreas. Clinical characteristics, diagnosis, and surgical treatment.


• Emergency surgery. Definition, volume, location in the ICU. Organization and comprehensive approach to the treatment of emergencies and conduct of the surgeon.

• Bleeding from the gastrointestinal tract. Classification. Diagnosis and differential diagnosis. Tactics, nonsurgical and surgical treatment.

• Mesenteric thrombosis (arterial, venous) - clinical characteristics, diagnostic and treatment options. Short bowel syndrome.

• Ileus - definition and classification. Mechanical ileus - forms of obstructive ileus and strangulation ileus, clinical characteristics, diagnosis and treatment.

• Peritonitis - definition and classification. Types of peritonitis - clinical characteristics, diagnosis and treatment.
• Laparoscopic surgery. Laparoscopic anatomy of the anterior abdominal wall. Types of laparoscopic techniques, risks, complications (early and late) and their treatment.

8. Knowledge of the basic principles of organization for the operating room, and the surgical instruments - instrument groups, use of different instruments and manipulation rules.

9. Knowledge and application of the most commonly used modern methods of diagnosis and treatment in surgery and interpretation of their informativeness.

10. Knowledge of the indications for the use of antibacterial agents and all essential medication groups, used in surgery.

11. Knowledge of basic medical and social problems and health needs of the patients with surgical disease.

PRACTICAL SKILLS

1. History taking and targeted surgical status.

2. Skills for palpation of peripheral tumor formation and anatomical regions / eg. thyroid gland/.


4. Determination of blood groups

5. Examination and assessment of hematological, instrumental and invasive tests.

6. Technique of taking venous blood and intravenous administration of medicines.

7. Placing an intravenous line.

8. Bladder catheterisation.

9. Insertion and aspiration of nasogastric tube


11. Injecting tetanus anatoxin protein (TAP) and reporting the sample.

12. Placing and controlling an oxygen mask.

13. Installing a gas tube.
14. Performing a cleansing enema.
15. Determination of the type and quantity of parenteral and enteral nutrition.
16. Monitor control of vital signs.
17. ECG conducting and reporting.
18. Determination of a postoperative diet.
19. Applying a dry sterile dressing.
20. Rigorous primary wound therapy.
21. Suture of the skin and subcutaneous layer.
22. Taking part in surgical interventions of limited or great complexity.
FIFTH YEAR

MODULAR (CYCLIC) TRAINING SYSTEM

Internal Medicine:
• Endocrinology
• Toxicology
• Allergology
• Rheumatology
• Hematology

Surgery:
• Surgery
• Pediatric Surgery
• Oral and Maxillo-facial Surgery
• Plastic Reconstructive Surgery

• Obstetrics and Gynecology
• Pediatrics
• Dermatology and venerology
• Clinical Pharmacology
• Clinical Laboratory
• Clinical Immunology
• Neurosurgery
• Orthopedics and Traumatology
EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN OBSTETRICS AND GYNECOLOGY

Definition of the specialty of gynecology and obstetrics, competences and skills:

The specialty of gynecology and obstetrics is a set of competences and skills that are realized in the therapeutic, diagnostic, prophylactic, mentoring, expertise, research and teaching activities in terms of:

- physiological processes
  - fertilization
  - pregnancy, childbirth and the postpartum period
  - maturation, cyclic function and aging of the female reproductive system
  - abnormalities in these processes
  - other diseases, involving the female reproductive system.

The obstetrician gynecologist should have mastered all the basic knowledge and skills of the specialty of obstetrics and gynecology.

Most medical activities in obstetrics and gynecology are surgical. Obstetrics and gynecology is a surgical specialty. The specialist in obstetrics and gynecology should have mastered some basic knowledge and skills of the specialty of general surgery.

The female reproductive system is in a close embryonic and anatomic topographic relation with the urinary system. The specialist in obstetrics and gynecology should have mastered some basic knowledge and skills of the specialty of urology.

Significant part of the medical activities in obstetrics and gynecology, including medical care during every delivery, is practiced in conditions of emergency. The specialist in obstetrics and gynecology should have mastered some basic knowledge and skills, specific to emergency medicine, and the specialty of Anesthesiology and Resuscitation.

Provision of maternity care involves medical activities, directed to an offspring (embryo, fetus, newborn). The specialist in obstetrics and gynecology should have mastered some basic knowledge and skills of the specialty of neonatology.

In our daily practice of medicine, the specialist of obstetrics and gynecology is working closely with specialists in general and clinical pathology (including cytopathology), microbiology, clinical immunology, immunology, medical oncology, forensic medicine, social medicine and health management. They should be prepared to communicate at
a highly professional level with these specialists. To do this, they need basic knowledge in the field of the corresponding medical specialties.

Training goals in Obstetrics and Gynecology:

After completion of the course to acquire the specialty of Obstetrics and Gynecology, the physician should be able to provide highly qualified and specialized medical care, including surgical interventions on:

• the healthy female population, in order to protect and improve the sexual and reproductive health in the different periods of a woman's life

• women, in whom pregnancy, delivery and the postpartum period (puerperium) are without complications or increased risk

• women, in whom pregnancy, delivery and the post-partum period (puerperium) have deviations, complications or increased risk to the mother and/or fetus

• the newborn till it is taken care of by the system of neonatal care

• women with gynecological diseases

• reproductive couples in connection to the realization of their reproductive function

• women, suffering from extragenital diseases (somatic or psychiatric), combined with pregnancy and obstetric and gynecologic nosologies.

Specializing in the clinical specialty of obstetrics and gynecology, the physician acquires theoretical knowledge and practical skills.

Theoretical knowledge

1. Female reproductive system (FRS)

Structure (anatomy and histology) of the external and internal genitalia

• Bone pelvis in women - structure, anatomy, size

• Topographic anatomy of the vulvar and perineal area and the pelvis

• Menstrual cycle and regulation of reproductive function in women

Stages in the development of FRS

• Embryology of FRS

• FRS in a newborn, in pre-pubertal and pubertal age
• Menopause and senium

Congenital anomalies of the FRS

2. FUNDAMENTALS OF HUMAN REPRODUCTION

• Human gametes
• Endocrinology and Pharmacology of Reproduction
• Fertilization, preimplantation embryo, implantation

3. Pregnancy, childbirth, puerperium

Normal pregnancy

• History of pregnancy
• Changes in a woman’s organism during pregnancy
• Changes in the lifestyle of the pregnant woman

Normal delivery

• Anatomical and physiological bases of delivery
• Pharmacology of delivery
• Elements of delivery: fetus, delivery tract, labour forces
• Biomechanics of labor in various malpositions of the fetus
• Periods of labour

Physiological puerperium

• General somatic and mental processes
• Processes, affecting the reproductive system and the breasts

4. Reproductive and sexual health (RSH)

• Methods to protect RSH
• The importance of the obstetrician gynecologist in RSH protection activities for the population
• Socially significant diseases and conditions, affecting RSH
• Temporary and permanent disability, caused by pregnancy and diseases of the FRS. Maternity protection

5. Legal framework for medical care in the specialty

Regulatory framework for the practice of the specialty
• Laws
• Medical standards in Obstetrics and Gynecology
• Demographic statistics. International classification of diseases. Morbidity and mortality in major obstetric and gynecological nosological units and groups.

• Rights and responsibilities of the midwife
• Rights and obligations of the doctor - gynecologist
• Rights and responsibilities of the patient and her family
• Informed consent

6. Natal care

Investigation methods in obstetrics. Interpretation of results.
• Clinical investigation methods
• Indirect Imaging
• Diagnosis of pregnancy
• Electrophysiological testing methods. Functional diagnostics
• Prognosis of pregnancy and childbirth
• Invasive diagnostic methods
• Laboratory tests
• Intrapartum diagnosis of the fetus

Management of normal birth
• Admission of a woman in labor in hospital
• Childbirth preparation
• Methods for managing delivery
• Managing period I
• Managing period II
• Managing period III and the early post-placental period
• First examination of the newborn
• Record-keeping, associated with birth

Managing the puerperium
• Postpartum rounds
• Discharge of a postpartum woman from hospital

7. Risks and complications of pregnancy, birth and puerperium

High risk pregnancy
• Factors, determining the risk of pregnancy
• Multiple pregnancy
• Breech, oblique and transverse position of the fetus
• Narrow pelvis
• Pregnancy and genital diseases
• Pregnancy and extragenital diseases
• Post-term pregnancy
• High infectious risk in obstetrics
• Dispensary observation of pregnancy with an increased risk

Oedema, proteinuria and hypertensive conditions during pregnancy, childbirth and puerperium

Extragenital disease manifestations and problems, associated with pregnancy
• Vomiting and other gastrointestinal problems of the pregnant woman
• Vascular complications during pregnancy
• Skeletal-muscular and neurological problems of the pregnant woman

Pathology of implantation
• Ectopic pregnancy
• Abnormalities in the attachment of the placenta

Diseases of the fetus and fetal appendages
• Trophoblastic disease
• Isoimmunization disease
• Congenital malformations and diseases
• Diseases of the fetal appendages and amniotic fluid
• Placental insufficiency
• Antepartum and intrapartum fetal asphyxia
• Intrauterine fetal death

Premature labour
• Miscarriage
• Preterm birth
• Recurrent pregnancy loss

Intrauterine infection in obstetrics
• Septic abortion and postpartum endometritis
• Premature rupture of fetal membranes, amnionitis
• Puerperal endometritis

Atypical or pathological birth
• Dynamic dystocia
• Pelvic-fetal disproportion
• Delivery in cephalic malpositions
• Breech birth
• Birth in oblique and transverse position
• Delivery in multiple pregnancies
• Delivery of a fetus with low birth weight or a big fetus

Placental pathology and early post-placental period. Postpartum hemorrhage.

Birth trauma of the mother and infant

Pathology of the puerperium
• Puerperal infections
• Venous complications in the puerperium
• Postpartum pathology of lactation and the breast

8. OPERATIVE OBSTETRICS

Operations for retention of pregnancy

Abortion and the evacuation of the uterine cavity
• Dilation of the cervix - methods
• Curettage and vacuum aspiration
• Local (extra-ovular and intra-ovular) application of medications
• Sectio parva

Induction and support of parturition
• Induction and stimulation of labor
• Amniotomy
• Expression in the fetus

Operations to expand the delivery tract

Operations to change the position of the fetus

Operations to complete the natural birth
• Use of forceps
• Vacuum extraction of the fetus
• Manual extraction of the fetus in breech
• Embryotomy
Surgery in the third period of birth and early post-placental period
Caesarian operation

9. CLINICAL GYNECOLOGY

Investigation Methods in Clinical Obstetrics and their Interpretation
• Clinical investigation methods
• Colposcopy and episcopy
• Indirect Imaging
• Invasive diagnostic methods
• Laboratory tests

Symptoms and syndromes in clinical gynecology
  - Genital fluorine
  - Pelvic pain
  - Genital bleeding

Gynecological Endocrinology
• Dysfunctional uterine bleeding
• Polycystic ovarian disease
• Hypoovarism
• Gonadal dysgenesis
• Pathology of puberty
• Pathology of menopause. Castration syndrome

Inflammatory diseases of the female genital organs
• Sexually transmitted infections
• Vulvitis, colpitis, cervicitis, bartholinitis
• Pelvic inflammatory disease
• Specific inflammatory diseases
Ectopic growth of epithelial tissue
• Ectopic cervix and its evolution
• Endometriosis
Static diseases of the female reproductive organs and pelvic floor
Urinary incontinence. Fistulas.
Tumors of the female reproductive organs and their precursors
• Benign tumors and cysts of the vulva, vagina and uterine ligaments
• Uterine fibroids
• Intraepithelial neoplasia (VIN, VaIN, CIN)
• Polyps and endometrial hyperplasia
Cancer of the vulva and the female urethra
• Cancer of the cervix
• Endometrial cancer
• Ovarian Tumors
• Sarcomas and mixed tumors of the female genital organs. Rare genital cancers
Diseases of the female reproductive organs in children and adolescents
10. Gynecological emergencies
Syndromes and nosological units, responsible for emergency in obstetrics and gynecology
• Septic and hemorrhagic shock
• Coagulation disorders
• HELLP- syndrome
• Eclampsia
• Amniotic embolism
• Placenta praevia
• Abruptio placentae
• Acute intrauterine fetal asphyxia
• Uterine rupture
• Acute abdomen
• Polytrauma and injuries in women with late pregnancy

11. Operative Gynecology

Care for patients before and after gynecological surgery
• Admission, preoperative preparation and postoperative care
• Discharge and dispensary observation of gynecological patients

Instruments and general operative technique
• Operating sets for gynecological operations

Work organization and equipment in the operating room for operations with upper, lower and laparoscopic access
• Gynecological laparotomy
• Restoration of the abdominal wall. Drainages.

Abdominal gynecological operations without hysterectomy
• Operations for ectopic pregnancy
• Cystectomy
• Other operations on adnexa
• Myomectomy

Hysterectomy
• Total abdominal hysterectomy
• Vaginal hysterectomy
• Radical hysterectomy
• Trachelectomy
Minor gynecological operations with lower access
• Operations in cases of Bartholin’s cysts and abscesses
• Colpocentesis
• Plastic cone biopsy of the cervix
• Abrasion test
Surgical correction of anatomic relationships
• Operations for static disease and stress incontinence
• Restoring patency to the fallopian tubes
• Operations in obstruction, shortening or absence of vagina
• Operations in cases of uterine malformations
Laparoscopic and laparoscopic - assisted operations
Pelvic surgery
12. PATHOLOGY OF REPRODUCTION
Infertility
• Tests for the infertile couple
• Anatomical causes of female infertility
• Endocrinological infertility in women
• Male Infertility
• Immunological and other sterility
Assisted Reproduction
• Drug effect on fertility in the male and female
• Artificial insemination and fertilization
• Embryo transfer
• Selective embryocide (fetal reduction)

13. Prophylactic and screening programs in the specialty of obstetrics and gynecology

Pregnancy monitoring
Prevention of pre-term termination of pregnancy
Prophylactic gynecological examination
Family planning
• Contraceptive methods and tools
• Individual choice of contraception
• Termination of pregnancy on request and for medical indications

Screening for congenital anomalies of the offspring

Other prophylactic activities
• Prevention of nosocomial infections
• Prevention of thromboembolic complications
• Prevention of isoimmunization disease
• Prevention of pre-term termination

14. Interaction with other medical specialties

Anesthesiology and Reanimation
• Labor analgesia
• Intraoperative and postoperative analgesia in obstetrics and gynecology
• Intensive treatment and intensive care

Neonatology
• Care for a normal full-term newborn
• Newborn in a depressed state. Resuscitation of the newborn.
• Pre-term newborn and a newborn with low birth weight
• Other diseases of the newborn
• Intensive care of the newborn

General Surgery
• Damage to the abdominal organs during gynecological operations
• Appendicitis and appendectomy
• Acute abdomen
• Diffuse peritonitis
• Surgical disease during pregnancy
• Basics of mamology

Urology
• Damage to the urinary system in gynecological operations
• Urinary incontinence
• Cystoscopy

Clinical laboratory, incl. hormonal diagnosis

Microbiology

Forensic medicine
• Criminal abortion
• Sexual abuse and violence

DIAGNOSTIC AND THERAPEUTIC SKILLS

Obstetric ambulatory care
• diagnosis of pregnancy
• tracking of normal pregnancy
• dispensary observation of pregnant women
• consulting the pregnant woman
• antenatal screening of congenital disorders
• prevention of pre-term termination
• ambulatory monitoring of postpartum women

Gynecological ambulatory care
• diagnosis and treatment of major gynecological symptoms (genital fluorine, pelvic pain, genital bleeding)
• conducting a gynecological examinations
• Basic methods of treatment for infertility
• using assisted reproductive techniques
• diagnosis and treatment of problems of the transitional ages

Family Planning
• counseling and use of contraceptive methods and means
• counseling for termination of unwanted pregnancy
• diagnosis, treatment and prevention of sexually transmitted infections
• counseling for violations of sexual function

Obstetric prenatal clinical care
• Prognosis in pregnancy and childbirth
• Choosing a birth method; indications for planned Caesarean section
• Diagnosis, treatment and definition of obstetric conduct in nosological units, determining pregnancy and birth with an increased risk
• Differential diagnosis and conduct in pre-term termination in an early stage
• Conduct in pre-term termination in an advanced stage
• Diagnosis and treatment of hypertensive conditions during pregnancy
• Determining obstetric conduct during pregnancy, combined with extra gestational diseases (genital and extragenital)
• Diagnosis and definition of obstetric conduct in prematurely fractured membranes and amniotitis

• Diagnosis and obstetric conduct in chronic placental insufficiency

• Intensive care in obstetrics

Maternity clinic

• admission of a woman in labor in hospital

• diagnosis of birth

• prognosis of birth, indications for emergency caesarean section

• managing birth by period

• midwifery

• first newborn care

• management in the early post-placental period

• diagnosis and obstetric conduct in labour complications in all the periods

• anesthesia in obstetrics

• Intensive care in obstetrics

Postpartum clinic

• hospital monitoring of physiological and pathological puerperium

• diagnosis and treatment of disorders of lactation

• delayed treatment of delivery trauma and other complications of childbirth

Neonatology

• diagnosis of the newborn

• care and feeding of the newborn

• diseases of the newborn and their treatment

• neonatal intensive care
Gynecological clinic

- clinical care, diagnosis and treatment of the main groups of gynecological diseases and individual nosological units
- preparation for gynecological surgery
- management of the postoperative period
- diagnosis and management of intraoperative and postoperative complications
- intensive care in obstetrics
- multidisciplinary consilium for oncology patients

PRACTICAL SKILLS

1. Termination of pregnancy on request
2. Evacuation of the uterine contents
3. Targeted biopsy of the cervix
4. Tissue destruction of the cervix
5. Separated diagnostic abrasion
6. Placement or removal of an intrauterine contraceptive
7. Cerclage
8. Termination of pregnancy in the II trimester
9. Management of normal birth
10. Successful induction of labor
11. Episiotomy and episiorrhaphy
12. Colpoperineorrhaphy following delivery
13. Trachelorrhaphy after birth
14. Instrumental revision of the uterine cavity
15. Manual inspection of the uterine cavity
16. Manual extraction of placenta
17. Uterine - vaginal tamponade
18. Using outgoing tongs
19. Vacuum extraction of the fetus
20. Manual assistance for breech birth
21. Abdominal cesarean section
22. Rerrhaphy of a episiotomy wound or abdominal obstetric gynecologic surgery
23. Surgery for ectopic pregnancy
24. Ovarian cystectomy
25. Abdominal myomectomy
26. Total abdominal hysterectomy
27. Radical hysterectomy
28. Vaginal hysterectomy
29. Front and / or rear vaginal plastic
30. Conization of the cervix
31. Laparoscopy ( diagnostic or operative )
32. Hysteroscopy ( diagnostic or operative )
33. Hysterosalpingogram ( X-ray or ultrasound )
EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN PEDIATRICS

The goals of the course in pediatrics are:

1. Acquisition of knowledge and skills to monitor and control the physical and neuro-psychological development of the child.

2. Acquisition of knowledge and skills for diagnosis, treatment and rehabilitation of major diseases in childhood.

3. Acquisition of knowledge and skills for conducting primary and secondary prevention and the promotion of children's health.

The learning outcomes of Pediatrics include acquisition of the following theoretical and practical knowledge and skills.

THEORETICAL KNOWLEDGE

1. Knowledge of the anatomical and physiological characteristics of the child organism during the different periods of childhood.

2. Knowledge of the basic principles of the normal physical and neuro-psychic development.


4. Knowledge of the rational nutrition in childhood.

5. Knowledge of the immunization calendar. Indications in contraindications for vaccination.

6. Knowledge of the characteristics of history taking and clinical examination of the child.

7. Knowledge of the characteristics of all major nosological units in pediatrics:
   • jaundice in the newborn;
   • congenital infection in the newborn;
   • acquired infections and sepsis in the newborn;
   • major neurological diseases in the newborn;
• major pulmonary disease in the neonatal period / congenital anomalies, hyaline membrane disease, bronchopulmonary dysplasia, aspiration syndrome, etc. /.

• major diseases of the cardiovascular system in the newborn.

• Clinical and laboratory characteristics of the most common respiratory diseases / acute and chronic inflammatory diseases, asthma, congenital abnormalities, tuberculosis, parasitosis, foreign body in the airways /.

• Interpretation of a chest X-ray of a child

• Acute and chronic respiratory failure in children - causes and conduct;

- Clinical and laboratory status of the most common diseases of the blood / main nosological units in the category "anemia in childhood", leukemias, primary hemorrhagic diseases /.

• The most common solid tumors in children.

• Clinical and laboratory status of the most common diseases of the digestive system and liver / chronic gastritis, gastroduodenitis, peptic ulcer, chronic hepatitis, coeliac disease, cystic fibrosis, etc. /

• Clinical and laboratory status of the most common diseases of the excretory system / urinary tract infections, acute nephritic syndrome, chronic glomerulopathies, etc. /

• Differential diagnosis of vomiting;

• Differential diagnosis of hematuria and proteinuria;

• Acute respiratory insufficiency and chronic respiratory insufficiency;

• Clinical and laboratory status of the most common diseases of the cardiovascular system / congenital cardiac abnormalities, infectious diseases, infarction, hypertension, arrhythmias and conduction disturbances /.

• Diagnosis and treatment of heart failure;

• Clinical and laboratory characterization of the most common diseases of the connective tissue and joints / rheumatic disease, juvenile chronic arthritis, SLE, dermatomyositis, vasculitis, reactive arthritis, etc. /

• Clinical and laboratory characteristics of the most common disorders of the endocrine system / diabetes, growth retardation, congenital hypothyroidism, thyrotoxicosis, obesity, etc. /.
• Pathology of puberty;
• Mass neonatal screenings - criteria for inclusion of nosological units, goals, methodology, referring the patients diagnosed by the screening to a specific clinic;
• Genetic counseling – indications, purpose, organization;
• Basics of metabolic diseases – features, inheriting
• Ways of inheriting, characteristic of AD, AP, HS dominant and HS recessive traits;
• The most common monogenic diseases and factors, affecting the development of the phenotype in such diseases;
• Clinical manifestations of the common numerical and structural chromosomal abnormalities;
• Clinical and laboratory characteristics of the most common diseases of the nervous system / seizures and epilepsy in children, cerebral palsy, familial traumatic palsy, neuromuscular diseases/;
• Diagnosis, differential diagnosis and management of critically ill comatose child;

8. Indications for application of the most common modern methods of diagnosis in pediatric patients and their informativity and interpretation.

9. Knowledge of the indications and the administration of antibacterial agents and other major groups of drugs in children and their side effects.

10. Knowledge of the readings for physical and other non-pharmacological methods in children.

11. Knowledge of the major health problems of the child population in Bulgaria

PRACTICAL SKILLS
• Taking medical history and targeted status of a newborn, infant or child over 1 year of age.
• Determination of gestational age.
• Performing anthropometric measurements and evaluation of physical development.
• Skills for palpation of the thyroid gland.
• Measurement of blood pressure in children incl. using the flush method.
• Counting the peripheral blood cells.
• Determination of blood groups.
• Routine examination, including determination of the specific gravity of urine, cell count in the urine—ordinary and centrifuged.
• Taking and evaluating the articular status/swelling, temperature, range of motion, centimetry and anglemetry.
• Technique of taking venous blood and intravenous administration of drugs.
• Intravenous cannulation
• Administration and reading a Mantoux sample.
• Setting and controlling an oxygen mask.
• Use of Pulse Oximetry to determine the saturation of oxygen.
• Taking a nose or throat swab.
• Determination of peak expiratory flow rate with peak flow meter (PEF-meters).
• Reporting scarification sample.
• Placing a nasogastric and oro-gastric tube and duodenal probing.
• Installing a gas tube.
• Performing a cleansing enema.
• Parenteral and enteral nutrition.
• Monitor control of vital parameters
• Making and reading an ECG.
• Determination of the dietary regimen of a diabetic child.
• Taking the neurological status of an infant and child, and evaluation.
• Knowledge of GCS (Glasgow coma scale) and determining the extent of loss of consciousness in a severely sick and critically ill child.
• Skills to refer a patient to genetic counseling.
• Taking a genealogic status.
• Physical examination in cases of a dysmorphic syndrome.
GENERAL AND SPECIFIC EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN DERMATOLOGY

Introduction:

• Title of the course: Skin and Venereal Diseases

• Duration of the training cycle Skin and Venereal Diseases, 3 weeks of classes.

Definition of specialty competences and skills

• Dermatology is the science that studies the diseases of the skin and its appendages, and the methods for their diagnosis, treatment and prevention.

• Venereology is a science that studies the diseases transmitted through sexual contact and their methods of diagnosis, treatment and prevention.

• In the Republic of Bulgaria "Dermatology and Venereal Diseases", "Dermatology", "Dermato-venereology" as well as "Dermatology and Venerology" are used as synonyms for the same specialty.

• During the three-week period of training the student should acquire a number of theoretical knowledge and practical skills about the structure and function of normal skin, skin appendages and the visible mucous membranes, pathological processes in different layers of the skin, their diagnosis, differential diagnosis and treatment.

• An important and integral part of the course is Venereology. The student should know the epidemiology, clinical presentation, diagnosis and treatment of sexually transmitted diseases.

• The students acquire these theoretical and practical skills gradually over the learning cycle as they sit two colloquia and an examination by an examination committee.

Learning Objectives

Medical students must acquire knowledge to perform basic dermatological examination, performance and interpretation of basic laboratory diagnostic methods and therapeutic treatments, and acquire knowledge of emergencies in dermatology.

Theoretical knowledge
The theoretical material for the cycle of Dermatology is distributed over three sections in general dermatology, special dermatology and venereology.

General dermatology

In the general dermatology section the student should master the following knowledge:

• Structure of the epidermis (anatomical and histological structure).
• Structure of the dermis and subcutis (anatomical and histological structure).
• Skin appendages.
• Circulation and nervous apparatus of the skin.
• Visible mucous membranes - oral and genital (anatomical and histological structure).
• Keratinization.
• Melanogenesis.
• Physiology of the Skin. Protection, temperature regulation, secretory, excretory and immune function of the skin.
• Methods of study of skin diseases.
• Rash spots.
• Thick patchy rash.
• Exudative rash.
• Rash due to the violation of the integrity of the skin.
• Waste rash. Rashes due to changes in the number and size of the structural components of the skin.
• Main histopathological processes in the epidermis.
• Main histopathological processes in the dermis and subcutis.
• External medicinal formulations - essential.
• External medicinal formulations - component.
• Oral medical treatment of skin diseases.
• Physical methods for the treatment of skin diseases.
Special dermatology

The section Special dermatology includes the largest amount of theoretical knowledge of the discipline. It covers basic dermatological nosological entities, their clinical presentation, diagnostic methods, differential diagnosis and therapy. Skin diseases are studied in separate groups, according to their etiology and pathogenesis - artificial dermatoses, infectious dermatoses (virus infection, bacterial diseases, fungal infections, parasitosis), erythema-squamous dermatoses, allergic and autoimmune dermatoses, connective tissue disease, benign and malignant tumors of the skin.

- Dermatoses caused by external factors.
- Photodermatoses.
- Erythema multiforme exudativum. Erythema nodosum.
- Psoriasis.
- Pityriasis rosea.
- Lichen planus pigmentosus.
- Dermatitis herpetiformis.
- Pemphygus.
- Urticaria. Quincke's edema. Strophulus.
- Eczema. Occupational dermatoses.
- Atopic dermatitis.
- Eczema seboroicum.
- Lupus erythematosus.
- Scleroderma.
- Chronic venous insufficiency of the lower extremities.
- Purpura ( Henoch - Schonlein purpura Morbus ). Periarteritis nodosa.
- Dyschromia ( hyperchromia, vitiligo ).
- Diseases of hair ( alopecia, hypertrichosis ) and nails.
- Diseases of the sebaceous glands (seborrhea, acne, rosacea).
- Benign tumors of the skin (nevi, fibromas, lipomas, hemangiomas, pre-cancers).
- Malignant tumors of the skin: basal cell carcinoma, squamous cell carcinoma.
- Melanoma malignum.
- Infections with human papillomaviruses. Molluscum contagiosum.
- Staphylodermia (folliculitis, furuncle, carbuncle, hidradenitis).
- Streptodermia (impetigo, erysipelas, ecthyma).
- Mucocutaneous tuberculosis.
- Leprosy.
- Keratomycosis (Pityriasis versicolor). Mycoses on smooth skin and nails.
- Candidiasis.
- Lyme disease.

Sexually Transmitted Diseases

Knowledge and skills that are acquired during training in venereology is important for future medical practice because they are socially significant.

STDs - classification, epidemiology, social significance.
- Syphilis, etiology, pathogenesis, epidemiology.
- Diagnosis of syphilis.
- First period of syphilis.
- Second period of syphilis.
- Third period of syphilis.
- Congenital syphilis - early.
- Congenital syphilis - late.
• Treatment of syphilis. Criteria for cure.
• Gonococci in women - acute, chronic, complications, treatment.
• Gonococci in children - ophthalmia, vulvo-vaginitis.
• Urethritis and its complications.
• Trichomoniasis. Chlamydiasis.
• Balanitis, vulvitis.
• AIDS - etiology, epidemiology.
• AIDS - cutaneous and mucosal manifestations.
• Scabies. Pediculosis.

Practical exercises

Practical skills are mastered during the practical course. These include:

• Methods for the investigation of patients with skin diseases. Taking a history. Dermatological status.

• Rash units due to a change in skin color. Rash units for vitiligo, ephelides, purpura, rosacea. Solid rash units for lichen planus pigmentosus, urticaria, erythema nodosum, neurodermatitis, veruce vulgares, basal cell carcinoma, squamous cell carcinoma, melanoma malignum, fibroma.

• Exudative rash units. Rash units for herpes simplex, herpes zoster, pemphigus, dermatitis herpetiformis. Rash units due to violations of the integrity of the skin. Rash units for pemphigus, ulcus cruris, eczema chronicum, syphilis primaria.

• Waste rash units. Rash units for psoriasis, impetigo, herpes zoster, ichthyosis. Rash units due to deterioration of the tissue. Changes in cases of keloids, scleroderma, acne conglobata.

• Formulations for topical administration. Main (powders, liquids, oils, oil-similar substances) and components (powders, solutions, aerosols, mixtures, liniments, creams, unguents, pastes).

• Pyoderma (streptodermia and staphylodermia). Parasitic dermatoses (scabies and pediculosis).


• Mycosis. Pityriasis versicolor, ringworm, microsporia, favus, epidermophyton, candidiasis.


• Autoimmune blistering diseases, pemphigus, pemphigoid, dermatitis herpetiformis. Colloquium.


• Erythema and erythema-squamous dermatoses. Erythema nodosum, erythema multiforme exudativum, psoriasis: pityriasis rosea, lichen planus pigmentosus

• Diseases of the skin appendages. Alopecia, hypertrichosis, onychomycoses, onychodystrophy, acne, rosacea.


Practical skills and knowledge

• Upon completion of the cycle of Skin and Venereal Diseases, students acquire these practical skills and knowledge:

• Taking a dermatological history.

• Examination of the skin—macroscopically and with a lens.
• Knowledge of basic groups of rash units and making a dermatological status of the skin and visible mucous membranes.

• Use of the methods of vitro pressure, systemic scraping, study of dermographism.

• Knowledge of basic formulations for topical dermatological therapy

• Conduct and report on allergy testing, scarification test, intradermal test, epicute test.

• Taking material for microbiological examination from the urethra of a male and from the urethra and cervix of a woman.

• Preparation of a colored microscope slide on Gram and using methylene blue.

• Search for micelles, skin and nails of the native preparation with 30% potassium hydroxide.

• Curettage of molluscum, cryotherapy.

• Treatment of infestations, scabies and pediculosis.

GENERAL AND SPECIFIC EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN CLINICAL PHARMACOLOGY AND THERAPEUTICS

DEFINITION OF THE SPECIALITY OF CLINICAL PHARMACOLOGY AND THERAPEUTICS:

Clinical Pharmacology and Therapeutics is a scientific discipline and a separate medical specialty that studies and evaluates the effects of medicines in people, both in terms of the general population and in specific subgroups and individual patients. This assessment is based on the relationship between the therapeutic effects (benefits) and adverse events (risks) as it includes the analysis of the value of therapy.

In accordance with Annex 5.1.3., 5.1.4. and 5.3.3. of Directive 2005/36/EC of the European Parliament and of the Council of 04.04.2001 on the recognition of
professional qualifications, the specialty Clinical Pharmacology and Therapeutics is included in group (Ia): "Medical specialties with predominant therapeutic orientation."

Goals of the course in Clinical Pharmacology and Therapeutics:

The main goal of the course in the specialty of clinical pharmacology and therapeutics is to develop the practical skills of students for an efficient, safe and cost-effective pharmacotherapy, based on objective criteria, taking into account the individual characteristics of patients.

To achieve this goal, certain theoretical knowledge and practical skills should be acquired by medical students:

Necessary theoretical knowledge:

1. Knowledge of the principles and approaches to the rational choice of medicines;
2. Knowledge of the WHO concept for selecting personalized medicines (P-drug);
3. Knowledge of approaches to monitor the effectiveness and safety of drug therapy;
4. Knowledge of the basic principles of applied pharmacokinetics;
5. Knowledge of the basic principles of pharmacoepidemiology;
6. Knowledge of the basic principles of pharmacoeconomics;
7. Knowledge of the specifics of drug therapy in patients with specific physiological conditions: childhood, pregnancy and lactation, elderly patients;
8. Knowledge of the basic principles and approaches to planning and conducting clinical trials of drugs;
9. Knowledge of the ethical and legal requirements for planning and conducting clinical trials of drugs;
10. Knowledge of the procedures for registration of medicinal products in the EU.
THE NECESSARY THEORETICAL SKILLS:

1. Selection and administration of personalized medicines (P-drug) in patients with:
   - essential hypertension;
   - coronary heart disease;
   - heart failure;
   - respiratory infection;
   - infection of the urinary tract;
   - bronchial asthma;
   - pain syndrome;
   - diabetes.

2. Tracking the effectiveness and safety (monitoring) of ongoing pharmacotherapy.

3. Skills to adequately communicate with patients regarding ongoing pharmacotherapy.

LEARNING OUTCOMES

As a result of the course in clinical pharmacology and therapeutics, medical students should be able to:

1. select and administer rational pharmacotherapy, based on objective criteria, consistent with the individual characteristics of patients;

2. monitor the effectiveness and safety of conducted pharmacotherapy;

3. estimate the "risk-benefit" ratio during treatment with medicines;

4. assess the 'cost-effectiveness' in treatment with medicines;

5. conduct adequate communication with patients, regarding their prescribed therapy in connection with improving their compliance.
EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN CLINICAL LABORATORY

Educational goals:

1. TRAINING THIRD-YEAR MEDICAL STUDENTS:
   • Students should master the principles of chemical composition testing of urine (with an express test)
   • Students should learn to perform microscopic examination of urine sediment
   • Students should acquire knowledge on the clinical significance of the results of haematological investigations - blood cell counts, hemoglobin and hematocrit tests, ESR, leucogram and normal morphology of bone marrow cells

2. TRAINING FIFTH-YEAR MEDICAL STUDENTS:
   Students acquire knowledge about:
   • Basic principles of clinical laboratory diagnostics:
     o Organization of work in the clinical laboratory
     o Standardization of the pre-analytic stage. To explore the possible sources of errors.
     o Basic requirements for quality of laboratory results and principles of error control in the analysis stage
     o The concept of reference values and the basic requirements for their application in clinical practice
   • Major hematologic laboratory tests:
     o Methods to test the most commonly used laboratory hematology indicators
     o Principles of automated hematology analyzers
     o Sources of errors in the three stages of laboratory testing, pre-analytic, analytic and post-analytic
     o Normal range of haematological laboratory indicators
     o Interpretation of laboratory results
   • Laboratory diagnosis of anemia:
• Clinical laboratory methods for detection and diagnosis of anemia
• Approaches and consistency in the use of laboratory methods
  • Laboratory diagnostics of leukemia:
    • Clinical laboratory methods for detection and diagnosis of acute and chronic leukemias
    • Methods for differentiation of acute and chronic leukemias and consistency in their application
  • Non-malignant diseases of leukocytes. Infectious mononucleosis. Multiple myeloma. Waldenstrom macroglobulinemia:
    • Morphological characteristics of congenital and acquired non-malignant leukocyte disorders
    • Clinical laboratory diagnosis of infectious mononucleosis
    • Clinical laboratory diagnosis of multiple myeloma and Waldenstrom macroglobulinemia
  • Hemostaseology
    • Indicators and research methods in hemostaseology and their clinical significance
    • Main sources of error in the pre-analytic stage of laboratory testing
    • Ways to express the results of PT (prothrombin time)
  • Laboratory investigations of the kidneys:
    • Methods for functional examination of the kidneys, based on the concentration and depuritization function and their clinical relevance
  • Clinical laboratory diagnosis of liver diseases:
    • Basic laboratory indicators for testing the functions of the liver
    • Laboratory diagnostic programmes of the most common liver diseases
  • Laboratory diagnosis of the cardiovascular system:
    • Risk factors for diseases of the cardiovascular system and coronary disease, in particular.
    • Abnormal lipid metabolism
o Possibilities of clinical laboratory to complement the diagnosis of myocardial infarction with the other used methods – ECG, etc.

• Laboratory diagnosis of endocrine diseases:

o Possibilities of clinical laboratory for diagnosis and monitoring of treatment of diseases of the endocrine glands

LEARNING OUTCOMES IN CLINICAL LABORATORY:

1. LEARNING OUTCOMES OF III YEAR MEDICAL STUDENTS:

• Students have the competence to chemically analyse urine

• Students have the competence to make microscopic examination of urine sediment

• Students have knowledge of the clinical significance of the results of haematological investigations - blood cell counts, hemoglobin and hematocrit tests, ESR, leucogram and normal morphology of bone marrow cells

2. LEARNING OUTCOMES FOR FIFTH-YEAR MEDICAL STUDENTS:

• Students have the competence to independently interpret clinical laboratory results in different nosological units.

• Students have knowledge of the laboratory constellations in the relevant medical conditions
GENERAL AND SPECIFIC EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN CLINICAL IMMUNOLOGY

Structure-determining theoretical knowledge:

1. On issues related to nosological units (diseases):
   • Definition - Clinical Immunology studies the human immune system in normal and pathological states - specific diagnostic process, based on historical data, current status and the treatment, applied currently in order to make a definitive diagnosis, order the necessary additional tests and treatment.
   • Classification – The object of training are the changes in the immune system in immunodeficiency diseases, autoimmune diseases, cancer and infectious diseases, problems, related to the transplantation of organs, tissues and cells, immune modulation and vaccine prophylaxis.
   • Pathology - Basic etiopathogenesis of major immunodeficiencies, autoimmune diseases, cancer and infectious diseases, transplantation immunology are studied.
   • Clinical features - the most common and characteristic symptoms of nosological units.
   • Diagnosis - The specific immunological methods are applied and results are interpreted.
   • Differential diagnosis – It is based on clinical follow-up and immunological investigation.
   • Treatment - Identify indications for immune substitutive or immune modulating therapy, perform drug monitoring and monitoring of disease activity.
   • Complications - Study the most common complications - chronic inflammations, associated with immunodeficiency; autoimmune diseases, affecting multiple organs and systems; complications, associated with immunosuppressive therapy, reactions of transplant rejection.
2. In matters, related to fundamental knowledge of the discipline:

• Study of the structure and function of the organs of the immune system.

• The study of the main cells of the immune system - T and B lymphocytes, NK cells, intercellular interactions, the role of cytokines.

• Antigenicity, immunogenicity, immunoregulatory (Ir) genes.

• Features of antigens and antibodies, antigen-antibody reaction, immunoglobulin class, complement system and activation pathways.

• The major histocompatibility complex (MHC) - structure and function, primary and secondary immune response, congenital and acquired immunity.

• Main problems of transplant immunology.

• Definition of the terms: immune tolerance, immune paralysis, active and passive immunity, natural immunity.

• Types of immune responses and underlying diseases.

• Anaphylaxis and atopy.

• Genetic and hormonal factors in autoimmune diseases. Immunodiagnosis and immunotherapy.

• Immunity in cases of tumors. Immunotherapy in cases of tumors.


ADDITIONAL theoretical knowledge (clinically relevant common and problematic aspects of nosologies in Clinical Immunology, important for general practice):

• Analytical differential diagnosis – To study the basic differential diagnostic difficulties in immunodeficiency states, the characteristic immunological criteria for diagnosis and determination of the activity of autoimmune diseases, problems with immunological monitoring of transplants. The interdisciplinary nature of the specialty Clinical...
Immunology determines the need for a broad differential diagnosis and consultation with many scientific discipline specialists.

• Differentiate primary from secondary diseases – To determine the cause - effect relationship in affecting the immune system due to the cytostatic and immunosuppressive therapy in autoimmune diseases, tumors, transplantation. Differentiation of primary and secondary immunodeficiency diseases.

• Interpretation of results from various specific studies – To study the importance of the diagnosis and prognosis of the disease in various immunoassays.

• Indications and contraindications of various treatments – To assess the need of immune-substitutive therapy in immune deficiencies, and possible side effects of treatment. To assess the application of the basic immunomodulatory drugs. To analyze the adverse effects of immunosuppressive therapy.

EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN NEUROSURGERY

Clinical diagnostic skills

Neurological examination of a neurosurgical patient: assessment of mental status, speech and cognitive functions, a study of cranial nerves of the central and peripheral sensory functions, of motor functions, normal and pathological reflexes, cerebellar function and gait.

Fundamentals of diagnostic neuroimaging

• Recognition of traumatic vertebral findings - fractures, dislocations.

• Differentiation of computerized images of neural tissue, blood, air, oil, fluid and bone tissue.

• Recognition of specific disease entities such as epidural, subdural and intracerebral hematoma, subarachnoid hemorrhage, brain tumors and hydrocephalus, using neuroimaging investigations.
Diagnosis and treatment of trauma of the central nervous system

- Knowledge of and application of the Glasgow Coma Scale.
- Recognition of the brain herniation syndromes with cranial trauma, incl. Cushing reflex, stem effects and changes in vital signs, the effects of the focal volume processes, dislocations of the medial structures and their effects.
- Recognition and urgent conduct in: - brain concussion, brain contusion and diffuse axonal injury; - acute epidural and subdural hematoma, incl. surgical indication; - penetrating CBT, incl. firearm injury
- Knowledge of the principles of treatment of open, closed and basal cranial fractures, incl. liquorhea and chronic subdural hematoma (in children and adults).
- Understanding the pathophysiology of intracranial hypertension, cerebral perfusion and the influence of blood pressure, blood gas and fluid-electrolyte balance.
- Interpretation of X-rays in spinal trauma.
- Knowledge of the principles of conduct in acute spinal trauma, incl. immobilization, steroids and systemic measures.
- Knowledge of the criteria for spinal instability and indications for decompression and stabilization surgery.

Diagnosis and treatment of intracranial volume processes (brain tumors, abscesses, cysts)

- Knowledge of the relative rate and localization of the major types of primary and secondary tumors of the brain.
- Understanding the common clinical manifestations and specific syndromes in cases of extra-axial and intra-axial brain tumors, as well as the significance of the various diagnostic methods (laboratory tests, neuroimaging investigations, tumor biopsy).
- Understanding the general strategies for the treatment of brain tumors (surgery, radiosurgery, radiotherapy and chemotherapy).
- Recognizing the clinical manifestations of brain abscesses and focal infections as well as knowledge of the basic principles of treatment.

Diagnosis and treatment of vascular diseases of the CNS
• Knowledge of the basic principles of a nontraumatic intracranial hemorrhage: vasculopathy, hypertension, cerebral aneurysm, vascular malformations, tumors and coagulopathy. Recognizing the signs of the subarachnoid, parenchymal, and intraventricular hemorrhage.

• Application of diagnostic tools in the evaluation of acute headache (CT and MRI, the role of lumbar puncture and cerebrospinal fluid samples).

• Understanding the natural history, general strategies and algorithms of the diagnostic and therapeutic behavior in cases of brain aneurysms and arteriovenous malformations (cerebral angiography, open surgery, endovascular procedures, radiosurgery and treatment of cerebral vasospasm).

• Knowledge of the etiological factors for cerebral ischemia, including atherosclerosis, heart disease, arterial dissection, fibromuscular dysplasia, vasculitis, venous thrombosis, and hematological disorders.

• Knowledge of the diagnosis and monitoring of pathology of cervical carotid artery occlusion, using noninvasive methods, of the indications for more invasive diagnostic tests and cerebral angiography and carotid endarterectomy.

Diagnosis and treatment of non-traumatic and degenerative spinal diseases

• Recognition of radiculopathy and myelopathy, including sauda equina syndrome.

• Knowledge of the etiopathogenesis, diagnosis and indications for surgical treatment of cervical and lumbar disc herniation, osteoarthritis, spondylolisthesis.

• Differential diagnosis and treatment of tumors (primary tumors and metastases) of the vertebral column.

Knowledge of the diagnosis and treatment of damage to peripheral nerves - traumatic nerve damage as well as the so-called entrapment neuropathies (carpal tunnel syndrome, compression of the ulnar nerve, "thoracic outlet", meralgia paresthetica), their etiology, conservative behavior and indications for surgery.

Diagnosis and treatment of hydrocephalus and craniospinal dysraphism

• Understanding the etiology and symptoms of hydrocephalus in children and adults as well as the difference between the communicating and obstructive hydrocephalus, knowledge of the various ways of treatment.
• Knowledge of common syndromes of spinal dysraphism, their neurological manifestations and broad principles of conduct.

• Knowledge of indications and possibilities for surgical treatment of craniosynostosis

**Functional neurosurgery**

• Knowledge of the characteristics of the trigeminal and glossopharyngeal neuralgia and facial hemispasm, indications and methods of surgical treatment.

• Knowledge of indications and possibilities for surgical treatment of neuropathic and cancer pain.

• Knowledge of indications and possibilities for surgical treatment of Parkinson's disease.

• Understanding the general classification of epileptic seizures, definition of pharmacoresistant epilepsy, and the general options for surgical treatment of epilepsy, including invasive electrodes, resective surgery and disconnection surgery.

**EDUCATIONAL GOALS AND OUTCOMES OF THE COURSE IN ORTHOPEDICS AND TRAUMATOLOGY**

Goal: Medical students should acquire skills, which enable them to conduct a competent clinical examination of the musculoskeletal system (MSS) and solid knowledge about the major congenital deformities and acquired pathological changes of MSS. In the course of training, the medical student needs to get knowledge about the most common musculoskeletal injuries, the basic principles of their emergency treatment in outpatient care, and the implementation of basic manipulations, used in diagnosis and treatment.

**CONTENTS:**

I. Orthopedic status. Basic principles of conservative and surgical treatment in orthopedics and traumatology

II. Congenital illness of the musculoskeletal system

III. Avascular necrosis
I. Orthopedic status. Basic principles of conservative and surgical treatment in orthopedics and traumatology

Medical student should have knowledge of the anatomy of the normal human musculoskeletal system, its function, innervation and blood supply; knowledge of the main symptoms in the specialty, to perform an orthopedic examination and to have skills for the basic principles of sustainable transport and immobilization of limbs.

1. Clinical review of MSS:

To be able to take medical history of a patient with an orthopedic trauma:

Medical students should be familiar with the basic manifestations of musculoskeletal disease - pain, oedema, abnormal gait, limited volume of movements, impaired function, etc.

Visual Inspection:

Students should be able to distinguish the normal from the abnormal position of the body and limbs; to determine the position of the patient in bed, to recognize typical congenital and acquired abnormalities - varus and valgus angular deformity, torticollis, scoliosis and kyphosis, congenital hypo- and aplasia of the limbs, high position of trochanter major, and syndactyly and polydactyly, congenital equinovarus, etc.

1. Determining the longitudinal axes of the limbs, their anatomical and geometric length and girth:

Medical students should know the basic anatomic landmarks in determining the length of the limbs, to distinguish absolute, geometric and relative difference in the lengths, to determine the difference in the volume of the limbs.

Study of the passive and active movements of the joints:
Medical students should be familiar with the functions of the shoulder, elbow, wrist, hip, knee joints, art. talocruralis and art. talocalcaneonaviculars, the small joints of the hands and feet. They should study their movements in the three major planes. They should know your muscles and be able to examine muscle strength. They should fix permanently restricted movements in a plane - contractures and be familiar with the main types of - muscular, joint, desmogenic and other contractures.

Normal and abnormal types of gait:

Medical students should distinguish the normal biped movement from the most common pathological gaits - spastic, lame, "duck" and others. The students should understand the Trendelenburg's symptom and its relationship with gait disturbance.

To have knowledge of the basic imaging diagnostic methods, used in orthopedics and traumatology:

Medical students should understand the informative value of the X-ray, CT and MRI, ultrasound in the diagnosis of orthopaedic trauma diseases.

2. Basic principles of conservative and operative treatment in orthopedics and traumatology:

Medical students should know and apply the techniques of plaster immobilization – with or without padding, circular and splint. They should know the symptoms of the compartment syndrome and the behavior in case it occurs. They should know the principles of manual reposition and indirect and direct extension.

Medical students should master the emergency treatment of musculoskeletal injury - taking peripheral pulse and the sensory examination, placing transport immobilization.

At the end of the course, the medical student should have knowledge of the operative methods of treatment - osteosynthesis, endoprosthesis, external fixation, tendon suture, arthroscopy, etc.

Acquired competences:

Medical students should:

• Be familiar with the anatomy of the musculoskeletal system and the physiologic range of motion in joints

• Be able to take the history of the patient with an orthopedic trauma problem
• Explore the orthopedic status including: examination at rest, when standing and moving, explore a volume of movements with angulemetry, determine the difference in the length of the limbs.

• Investigate the patient’s gait

• Interpret the results of diagnostic imaging studies of the musculoskeletal system

• Know how to put plaster immobilization and take it off with mechanic and electric plaster cutter

• Be familiar with the basic rules of first aid for traumatic injuries of the musculoskeletal system

• Be familiar with the basic operative methods of treatment in orthopedics and traumatology

• Know the main indications for referral of a patient to a specialist

II. Congenital diseases of MSS

Medical students should know the basic congenital deformities of MSS

4. Lower limb

a) Congenital and developmental dysplasia of the hip joint (the old term - congenital dislocation of the hip joint).

Medical students should know the provoking etiology, to differentiate the three pathologic and anatomic forms of the disease - dysplasia, subluxation and dislocation, to know and apply the diagnostic symptoms of Marx, Ortolani, Barlow and Palmer. They should investigate the difference in the length of the limbs and determine the adductor contracture of the hip joint. They should know the ultrasound signs of disease and freely interpret the Putti’s radiographic triad. They should be able to put abduction equipment for neonates. They should know in detail the principles of prevention of disease in neonates and be familiar with the principles of surgery.

b) congenital equinovarus

Medical students should know the most common congenital equinovarus and planovalgus feet. They should be able to freely use the concepts planus, equinus, varus, valgus, supination and pronation. They should know the principles of treatment.

2. Upper limb
a) Syndactyly and polydactyly

Medical students have to recognize the various anomalies, to differentiate them from the amniotic band syndrome, to have knowledge of the principles and limits of surgical treatment.

3. Vertebral column, shoulder girdle and anterior thoracic wall

a) Spina Bifida

Medical students have to recognize the forms of disease.

b) Torticollis

Medical students should have knowledge of the most common form of myogenic torticollis, to master the methods of passive treatment and passive therapeutic exercise of the newborn. Medical students should have knowledge of the technique for surgical correction and when to apply it.

c) Pectus carinatum and pectus excavatum

Medical students should have knowledge of the different types of deformity, conservative ways of correction and when what adjustment to use.

Acquired competence

Medical students should:

• Understand and distinguish congenital and acquired pathological conditions of the hip joint.

• Carry out prophylaxis of hip dysplasia, according to the Ordinance of the Ministry of Health.

• Explore the orthopedic status of the newborn and infant.

• Be familiar with modern methods of imaging diagnosis of congenital anomalies.

• Apply conservative methods of treatment for various congenital deformities.

III. Avascular necrosis

Medical students should have knowledge of the pathogenesis of aseptic changes in the epiphysis and apophysis in children and adolescents, of the clinic in various stages of disease development and can determine them by X-ray.

They should have knowledge of the most common socially significant locations:
- Proximal femoral epiphysis – Legg-Calve-Perthes disease
- Processes of the vertebral bodies -Scheuermann's disease
- Processes of the tuberositas tibiae - Osgood-Schlatter disease
- Apophysitis Calcanei.

Acquired competences

Medical students should:
- Be able to distinguish the normal from the pathologically altered epiphysis and apophysis.
- Be familiar with the normal X-ray structure of the growing child's bone.
- Distinguish Perthes disease from other common diseases of the hip joint in children and adolescents.

IV. SCOLIOSIS

In the course students of medicine should master the investigation of the spine, understand the current problems of diagnosing scoliosis and other spinal deformities - kyphosis and lordosis, have knowledge of the methods of treatment - conservative and operative, their therapeutic indications and the timing of treatment.

Acquired competence

Every medical student should:
- Independently perform a health check for scoliosis.
- Have knowledge of the classification of scoliosis and related therapy.
- Be familiar with the main types of kyphosis and lordosis.

V. Systemic and localized musculoskeletal dysplasia

Basic nosologies:
- a) achondroplasia
- b) imperfect bone formation
- c) multiple exostosis
d) Coxa vara adolescentium and coxa vara congenita

e) Blount's disease

f) Madelung's disease

Every medical student should:

- Know the difference between the physiological and pathological angular deformities of the lower limbs and associated nosologies.

- Know the normal physiological growth and development of the MSS.

Acquired competence

Every medical student should

- Determine varus and valgus deviations of the limbs.

- Be familiar with changes in the X-ray skeletal dysplasias, studied in the course.

- Know how to center in cases of profile X-ray projection of the hip joint.

VI. Degenerative joint diseases

Studied diseases:

a) Coxarthrosis

b) Gonarthrosis

c) vertebral osteochondrosis, cervico - and spondylarthrosis.

Investigation of a patient with osteoarthrosis:

a) Orthopedic status with anglemetry, Thomas test, FABER test.

b) Examination of gait, lameness

c) Radiographic study of the hip and knee joints, of the spine.

Principles of treatment

a) Conservative

- Medical

- Physiological and physical therapy
- Orthotic
b / Surgical.

Acquired competence

Every medical student should:
- Have knowledge about the relevance of degenerative joint diseases
- Be able to independently diagnose coxarthrosis and gonarthrosis
- Have knowledge of what the modern methods of treatment are.
- Be familiar with the modern methods of medicinal treatment and how to administer therapy.

VII. DISEASES OF OVEREXERTION

During the course the medical student acquires knowledge of the most common periarthritis, tendovaginitis, insertionitis and bursitis of the musculoskeletal system.

Nosologies
a) periarthritis of the shoulder and hip
b) tennis elbow
c) stenosing tendovaginitis
d) bursitis in the knee
e) tendinitis and insertionitis of the Achilles tendon.

1. History taking.
- Risk factors for development
- Patients’ complaints

2. Methods for the study of patients with periarthritis, bursitis, tendovaginitis and insertionitis:
- Measuring the volume of active movements
- Use of specific tests

3. Modern methods of treatment:
- Conservative (types of local therapy)
- Operational (basic types)

Acquired competence

Every medical student should:
- Be able to examine patients with diseases of overexertion
- Be able to assess the etiological cause
- Know what the current treatments for these diseases are

VIII. TUMORS AND CANCER RELATED DISEASES OF THE MSS

The most common tumors of the bone are studied:

Benign:
- osteoid osteoma
- osteoma
- osteochondroma

Malignant:
- osteosarcoma
- chondrosarcoma
- Ewing sarcoma

Cancer related:
- Solitary bone cyst

Medical students should know the classification of bone tumors and be familiar with the specific age characteristics, the main subjective complaints, clinical imaging and abnormalities in laboratory indicators in regard to the studied nosologies:
Acquired competence

Every medical student must:
- Be able to determine the X-ray signs of malignant bone tumors.
- Be familiar (theoretically ) with the modes of treatment of these bone pathologies.

IX. Musculoskeletal trauma

Traumatology is an essential part of the training of medical students and takes up half of the content of the course. In the program the students study:

a) Types of musculoskeletal trauma:
- Distortions
- Traumatic dislocations
- Fractures

b) Major clinical features of musculoskeletal traumas
    - Abnormal mobility, crepitus , angular deformities , impaired function, etc.
    - X-ray image of fracture

c) Specifics of trauma in childhood

d) Open fractures

e) Principles of treatment
    - Pre-hospital care, emergency treatment
    - Conservative treatment - plaster immobilization, extensions , manual reposition .
    - Surgical treatment - theoretical principles.

The study of trauma follows a topographic principle:
- Fractures of the spine
- Fractures of the clavicle and scapula
- Fractures of the humerus
- Dislocation of the shoulder joint
- Fractures of the bones of the forearm
- Fracture of the radius in a typical location
- Damage to the tendons and nerves of the upper limb
- Fractures of the pelvis
- Fractures of the femoral neck fracture and pertrochanteric fractures
- Intra-articular and diaphyseal fractures of the femur
- Fractures of the tibia and fibula
- Soft tissue lesions of the knee joint
- Ankle injuries

Acquired competence

Medical students should:
- Recognize emergencies in traumatology.
- Know how to respond to first aid - temporary hemostasis, study of peripheral pulses and sensation.
- Diagnose fractures and dislocations in patients.
- Be able to perform temporary immobilization in fractures and know the principles for transportation to a specialist.
- Be able to set a dislocated shoulder joint.
- Be able to perform a surgical wound dressing and remove the skin sutures, observing principles of asepsis and antisepsis.
- Know Sudeck’s syndrome and be able to remove plaster casts.
SIXTH YEAR

MODULAR (CYCLIC) TRAINING SYSTEM

- Infectious diseases, epidemiology, medical parasitology and tropical diseases
- Urology
- Anesthesiology and Intensive Care
- Forensic Medicine
- Physiotherapy and Rehabilitation
- Psychiatry
EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN INFECTIOUS DISEASES

The ultimate goal of the course in infectious diseases is for medical students to gain basic theoretical and practical knowledge and organizational skills on:

- The etiology, epidemiology, pathogenesis, clinical diagnosis, differential diagnosis, prevention and treatment of infectious diseases.
- Acquisition of knowledge and skills to diagnose and treat the most common infectious diseases.
- Mastering the knowledge and skills to carry out specific prevention, control and promotion of public health.

The learning outcomes of the course in infectious diseases include the following necessary minimum of theoretical knowledge on:

1. The etiological agents of infectious disease.
2. The pathogenesis of infectious diseases according to the mechanisms of pathogenicity of the causative organism and the reactivity of the organism.
3. Knowledge of the basic epidemiological features of infectious diseases according to the mechanisms of transmission.
4. Knowledge of the circumstances of history taking and clinical examination of patients with infectious diseases:
   - Influenza and acute respiratory diseases;
   - Bacterial infections with pulmonary localization;
   - Gastro-intestinal infections;
   - Viral hepatitis;
   - Infections of the skin and soft tissue;
   - Syndromes related to lymph nodes;
   - HIV- infection and AIDS, infections in the immunocompromised;
   - Zoonoses;
• Rickettsioses;
• Borrelioses;
• Viral hemorrhagic fevers;
• Neuroinfections;
• Septic shock

5. Compiling a differential diagnostic plan and therapeutic behavior in case of the most common infectious diseases.


7. Interpretation of laboratory results of microbiological examinations of samples from patients with infectious diseases.

8. Interpretation of the results of imaging and instrumental studies in infectious diseases.


10. Knowledge of the immunization calendar of Bulgaria, indications and contraindications for specific prophylaxis.

The learning outcomes of the course in infectious diseases include the following necessary minimum of practical knowledge on:

1. Skills for personal prevention when working with patients with suspected or confirmed infectious diagnoses.

2. History taking, including the required minimum of epidemiological data in patients with infectious diseases.

3. Determining the objective status in patients with infectious diseases.

4. Performing muscular and subcutaneous injections.

5. Venipuncture and intravenous administration of medications.

6. Placing peripheral venous cannulation.
7. Determining blood groups.
8. Making and reporting a Mantoux sample.
10. Counting peripheral blood cells.
11. Proper sampling of biological materials for microbiological examination.
12. Placement of a nasogastric tube and oro-gastric and duodenal probing.
13. Installing a gas tube.
14. Performing a cleansing enema.
15. Parenteral and enteral nutrition.
16. Performing enteral and parenteral rehydration in patients with dehydration syndrome.
17. Monitor control of vital parameters.
18. Making and reading an ECG.
19. Determining the neurological status of patients with infectious diseases.
20. Knowledge of GCS (Glasgow coma scale) and determining the extent of loss of consciousness in severely sick and critically ill patients with neuroinfections.

EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN EPIDEMIOLOGY

1. General goals

Epidemiology is the medical science of the epidemic process in any infectious disease and mass socially significant (considered non-communicable) diseases.

Infectious diseases are a historical category, characterized by continuous development. Their evolution is the result of the variability of pathogens, infectious and epidemic processes in macro-organisms. Changeability and parasitism are crucial factors for the
continuity of this epidemic process under the influence of socio-economic and natural conditions of people's lives.

Epidemiology was established as an independent medical specialty in the first decades of the twentieth century, and then continuously developed as a major discipline in the field of preventive medicine. A major driver for this development is the social epidemiology needs to combat infectious diseases whose incidence continues with a variety of social and environmental impact.

In methodological terms using epidemiology students study the characteristics and the prevention of infectious and mass socially significant (non-infectious) diseases.

The subject of epidemiology as a discipline encompasses ecology, biology and genetics of the pathogen microorganisms as well as the study of the causes of mass epidemic processes determined by biological, social and environmental factors. The study of these most complex biosocial processes is and will always be a necessary component of general education and specialization of medical professionals in the field of preventive medicine.

Modern mass, including global, distribution of many infectious diseases and their continual evolutionary changes determine the need for the study of effective anti-epidemic measures to combat these diseases, prevalent in human society.

2. General learning outcomes - competences

The study of epidemiology by students will give them the opportunity to acquire professional competence, i.e. specific set of knowledge and skills, regarding the etiology, mechanisms of infection, risk factors and pathways through which infectious diseases spread. These competences are needed to make an epidemiological diagnosis and to take measures at the onset of these diseases in accordance with the characteristics of the "Private epidemiology" chapter for the decrease, elimination and liquidation of these diseases.

3. Specific learning outcomes - competences

The course in epidemiology should provide students with the following competences:

• To know and apply epidemiological methods and approaches in specific epidemic outbreak or in the area where emerging epidemic situations have occurred.

• To create a clinical and epidemiological thinking to make an epidemiological diagnosis of the concrete epidemic process.
• To formulate principles and approaches to organize and realize anti-epidemic measures in the specific epidemic situation.

• To carry out epidemiological analysis and epidemiological prognosis for the purposes of epi-supervision as a dynamic anti-epidemic event.

• To carry out scientific and practical analysis - situational and periodical about the status and results of the fight against infectious diseases.

• To organize and carry out preventive immunizations. Immunization calendar. Efficiency. Post-vaccination reactions and complications.

• To conduct epidemiological studies and health surveillance (quarantine) of contact persons in epidemic outbreaks, regardless of the specifics of their professional competence.

• To apply the methodology of epidemiological research in epidemic outbreaks, epidemics, and natural and nosocomial focal infections.

• To know the methods, means and control over the performance of disinfection, sterilization, disinsection and deratization.

• To organize and process monitoring information on the prevalence of infectious and mass socially significant (non-infectious) diseases by methods of analytic epidemiology.

• To carry out preventive activities to reduce and eradicate infectious diseases.

EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN UROLOGY

Definition of the specialty of urology, competences and skills:

The specialty of urology is a set of competences and skills that are realized in medical diagnostics, prevention, mentoring, expertise, research and teaching in terms of:

Diseases of the genitourinary system, including

• Oncology
• Urolithiasis
• Congenital anomalies
• Plastics
• Infertility
• Extracorporeal shock wave lithotripsy
• Endoscopic surgery and treatments
• Laparoscopic and robotic operations
• Transplantation

Urology is a surgical specialty. The urology specialists should have mastered basic knowledge and skills in the specialty of urology.

The specialist in urology should have mastered some basic knowledge and skills of the specialty of general surgery:

- in connection with the common surgical interventions, mostly cystectomies, when after removal of the bladder it is necessary to provide for urine removal (derivation) by using various segments of the gastrointestinal tract (stomach, small intestine, colon).

- in connection with the training of a specialist in urology there exists a necessary theoretical and practical minimum.

In the daily practice of medicine, the specialist in urology works in close cooperation with specialists in nephrology, general and clinical pathology - microbiology, clinical immunology, immunology, medical oncology, forensic medicine and health management, anesthesia, intensive care, clinical laboratory, and all surgical specialties. They should be prepared to communicate at a high professional level with these professionals. Therefore, they need basic knowledge in the fields of these specialties.

GOALS OF THE COURSE IN UROLOGY:

After completion of the course in the specialty of urology, the physician should be able to provide highly qualified and specialized medical care, including surgery on:

• Kidney
• Ureters
• Bladder
• Prostate
• Urethra
• Male reproductive system
• Endoscopic manipulations and operations
• Ureteroscopy
• Cystoscopy
• Percutaneous nephrolithotomy
• Placing of a cyctofix
• Nephrostomy
• Placing a stent
• Training in Laparoscopic and Robotic Urology
• Performing lithotripsy

Specializing in the clinical specialty of urology, the doctor acquires theoretical knowledge and practical skills.

Theoretical knowledge

I. GENERAL SECTION

1. Anatomy of the upper urinary tract

2. Anatomy and physiology of the lower urinary tract

3. Anatomy and physiology of the reproductive system of the male

4. Diagnosis of uro-genital diseases / rentgenological, radiological, instrumental, ultrasound, etc. /

II. SPECIAL SECTION

1. Congenital anomalies of the genitourinary system.
3. Specific inflammatory diseases of the urinary and reproductive systems.
5. Tumors of the urinary tract and genital organs of the male.
6. Traumas to the urinary and reproductive systems.
8. Andrologic diseases and infertility.
10. Acute and chronic renal insufficiency.

III. OPERATIVE UROLOGY
2. Surgery of the ureter.
5. Surgery of the penis and urethra.
8. Laparoscopic and robotic urological surgery.

LEGAL FRAMEWORK OF MEDICAL CARE IN THE SPECIALTY
Legal basis for the practice of the specialty

1. Legal Basis
2. Medical Standard in Urology
4. European guidance for the practice of Urology
5. Rights and obligations of the doctor - urologist
6. Informed consent

PROGRAM for mastering the minimum of practical knowledge and skills in Urology

1. Work in an outpatient facility:
   • taking a history and determining the status of a urologic patient
   • assessment and orientation to the necessary additional specialized studies
2. Participation in the diagnostic treatment process
   • digital rectal exam of the prostate
   • catheterization of the bladder with a soft catheter
   • irrigation of indwelling catheter
   • assisting in performing cystoscopy / view of the bladder, catheterization of ureteral ostium, taking bladder biopsy /
   • ultrasound
3. Preparation and participation in surgery:
   • processing of the operation site
   • suture
• treatment of surgical wound
• removal of sutures
• applying compresses in cases of orchiepididimitis and phlebitis
• catheter placement and replacement
• stent placement and replacement

4. Manipulations in diseases of the scrotum and the penis
• puncture in cases of hydrocele
• puncture of renal cysts
• reposition the foreskin in phimosis and paraphimosis
• local application of medications in induratio penis plastic

Practical minimum
1. Catheterization of a male
2. Cystoscopy
3. Ureteroscopy
4. Replacing a PVC catheter, placing a cystofix
5. Assisting in operations in small, medium and large urological interventions
6. Circumcision
7. Operations in cases of hydrocele
8. Catheterization of the ureters
9. Sectio alta - cystostomy, extraction of a stone
10. Lithotripsy of a stone in the bladder
11. Taking an open biopsy of the testicle
12. Endoscopic manipulation / Transurethral resection of the prostate (TURP), Tutor /
13. Lumbotomy
14. Pielotomy
15. Access to the ureter
16. Orchiectomy
17. Operations in cases of varicocele
18. Electroincision in cases of ureterocele
19. Adenomectomy
20. Nephrectomy
21. Plastic surgery in hydroureter
22. Ureterocutaneostomy
23. Ureterocutaneostomy
24. Nephrostomy
25. Cystostomy
26. Nephrectomy for kidney tumors
27. Operations on the scrotum
28. Continental derivations of urine after cystectomy
29. Partial resection of the kidney
30. Participation in the team, making a kidney transplant
31. Puncture of renal cysts under ultrasound guidance
32. A biopsy of the prostate gland
33. Biopsy of the urinary bladder

DIAGNOSIS AND TREATMENT SKILLS

Urology is the first specialty in the historical development of medicine, which implemented endoscopic treatments.

Every urologist with specialty should master to perfection:
• urethro cystoscopy
• ureteroscopy as a diagnostic treatment tool in cases of urethral strictures - congenital or acquired
• abnormalities of the urethra
• tumors of the urethra
• sclerosis of the bladder neck - congenital or acquired
• adenoma and carcinoma of the prostate gland
• ureteral catheterization
• placement of a stent in the ureter
• incision of an ureterocele
• diagnosis of bladder tumors and foreign bodies, diverticula of the bladder and taking clamp biopsy
• transurethral resection / TUR / of urethral strictures
• resection of bladder tumor and of the neck of a bladder diverticulum
• resection of ureterocele

In the presence of concretion in the urethra or bladder, mechanical breakage of the concretion is done using special tools - punch Lithotripter / rodent / and large mechanical Lithotripter / type breaker /.

If there are problems in the ureter and renal pelvis of the kidney / concretion , stricture , tumor / ureteroscopy should be done and in case of visualization of concretion it should be broken with laser, ultrasound or taken out with a pinch.

Performance of PDD diagnostics of tumors of the urinary bladder.

Another mandatory procedure that must be mastered by every urologist is percutaneous nephrostomy and percutaneous nephrolithotomoy, as well as placing a cystofix / puncture of the bladder in cases of failure to catheterize/.

In the training process each graduate student should get enough skills and knowledge of ultrasound of the organs of the genitourinary system and the puncture of renal cysts.
They should learn to do retrograde pyelography - insertion of a catheter into the ureter through the ureteral ostium in the ureter and the renal pelvis.

The same procedure is followed when placing a stent / DJ /, as well as for its replacement, unilaterally or bilaterally.

SYLLABUS

FOR EXAMINATION FOR COMPETITIONS FOR THE SPECIALTY OF UROLOGY

2. Anatomy of the male reproductive system - the scrotum and its contents, penis.
3. Physiology of the formation and excretion of urine.
4. Physiology of the male reproductive system.
5. Rentgenologic investigations.
6. Radioisotope investigations in urology.
7. Angiographic investigations of the genitourinary system. Embolisation.
8. Ultrasound in urology.
10. Laboratory methods of investigation in urology: urine, blood, prostate secretions, ejaculate.
11. Microbiological and parasitological tests in urological practice.
15. Disorders of micturition:
16. Functional testing of the bladder and its sphincter.
17. Urinary tract infections and endotoxin shock.
19. Antibiotics and uroanticeptics - applications in urology.
20. Preoperative assessment of the condition of urological patients.
22. Intensive care in the postoperative period of urological surgery.
23. Anesthesia in urology.
25. Chronic renal failure.
28. Congenital malformations of the genitourinary system.
29. Types of access for the surgical treatment of benign prostatic hyperplasia.
30. Inflammatory diseases of the bladder and kidneys.
31. Varicocele, fertility disorders.
32. Physiology of micturition.
33. Interoperability of the kidney - nephrostomy and nephrectomy.
34. Urolithiasis, etiology, epidemiology, clinical features, types of theories of stone formation.
36. Lithotripsy in urology.
37. Hydronephrosis - clinical picture, diagnostics, operations.
39. Types of surgical interventions to remove concretions from the kidney and ureter - ESWL and surgery.
40. Operational access and plastic operations on the ureter.
41. Kidney tumors - parenchymal and urothelial and ureteral.
42. Traumas to the kidneys and ureters.
43. Tuberculosis of the kidney and urinary tract.
44. Tuberculosis of the genital tract in males.
45. Plastic operations in congenital and acquired diseases of the pyeloureteral segment.
46. Methods for reimplantation of the ureter into the urinary bladder.
47. Adenoma of the prostate gland, medicinal and operative treatment - open operations transurethral resection, laser ablation.
48. Prostate cancer - radical prostatectomy, laparoscopic, robotic.
49. Bladder tumors - diagnosis and treatment - PDD, diagnostics.
50. Transurethral resection of bladder tumors.
51. Cystectomy, types of urine derivation.
52. Genitourinary fistulas.
53. Operations in cases of hypospadias and epispadias.
54. Operations in cases of renovascular hypertension.
55. Operations in cases of cryptorchidism.
56. Diseases of the penis - phimosis, induratio penis plastica, candidomas, priapismus.
57. Orchitis and epididymitis.
58. Testicular tumors.
59. Urethritis and prostatitis.
60. Traumas to the kidneys and ureters.
61. Traumas to the urinary bladder and urethra.
62. Traumas to the scrotum and its contents.
63. Testicular tumors.
64. Priapismus.
65. Tumors of the penis.
66. Sexual disorders in men
67. Hydrocele
68. Urinary incontinence in women and men
69. Male infertility
70. Parasitic diseases of the urinary and male reproductive system
71. Specific diseases of the male reproductive system - Syphilis and AIDS

GENERAL AND SPECIFIC GOALS AND LEARNING RESULTS OF THE COURSE IN ANESTHESIOLOGY AND INTENSIVE CARE

Structure - determining theoretical knowledge:

1. On issues, related to nosological units (diseases):

Anesthesiology and Intensive Care is an independent medical specialty and important section of clinical medicine. Its subject are the patients meant for surgery (all surgical fields) and patients with life-threatening disorders of vital functions. Its scope is interdisciplinary.

The modern physician should know and master the methods of anesthesia and/or sedation in different types and scope of operations, diagnostic and therapeutic procedures.

The modern physician is obliged to be able to use the methods of restoration and maintenance of vital functions - breathing and circulation, regardless of the scene (hospital or out of it), to distinguish between the concepts of clinical, biological and brain death.

Cardiopulmonary resuscitation is performed, following specific rules (algorithms) that are studied during the cycle of anesthesiology and intensive care.

Therapeutic approaches to such severe conditions, such as hypovolemic, septic, anaphylactic shock, are the subject of intensive care.

Conducting infusion therapy and parenteral and mixed nutrition are also studied during the cycle of anesthesiology and intensive care.
Some knowledge and practical skills (ventilation techniques, techniques of endotracheal intubation, cannulation of peripheral and central venous pathways, of an arterial vessel, cardiac massage, placing an airway, etc.), acquired during the cycle of anesthesiology and intensive care, are of great use for medical students in their future activities.

The knowledge of the treatment of acute (perioperative) and chronic pain, which is socially significant, is of particular importance.

2. On issues, related to basic knowledge for the discipline.

The modern physician should have knowledge on:

• The main types of anesthesia - general and local, the tools and techniques of inhalation anesthesia, of general balanced anesthesia, maintenance of anesthesia and monitoring of the patient during anesthesia, waking up from anesthesia;

• The use of muscle relaxants during general anesthesia and monitoring of the neuromuscular block;

• Perioperative monitor control of the vital functions, of the depth of anesthesia, monitor programs, information expert systems;

• Clinical Pharmacology of medicines - anesthetics, opiate and non-opiate analgesics, muscle relaxants, cardiotonics, antiarrhythmic medications, synthetic catecholamines, antihypertensives, diuretics, hemostatic drugs, NSAIDs, corticosteroids, etc.;

• To have knowledge of the methods of treatment of major life-threatening conditions - respiratory and cardiovascular failure, violations of water-electrolyte and acid-base balance;

• To be familiar with the principles of oxygen therapy;

• To have knowledge of the methods of treatment of the more common emergencies in other medical specialties;

• To be familiar with the principles of total parenteral and mixed nutrition;

• To be familiar with the theory and practice of basic and advanced life support;

• To be familiar with the details of the theory, practice and administrative organization of organ donation; conditioning of the donors;

• To be familiar with the principles of treatment of acute perioperative pain, management of chronic pain and the use of anesthetic agents and techniques;
Anesthesiology and intensive care as an interdisciplinary specialty forms wide, professional communication skills.

THE NECESSARY MINIMUM OF PRACTICAL SKILLS

1. General knowledge
   • The concept of the subject and the possibilities of the specialty "Anesthesiology and Intensive Care."

2. The newly graduated doctor should know and be able to treat emergencies in:
   • Acute respiratory disorders and pulmonary arrest;
   • Acute cardiac disorders and cardiac arrest;
   • Acute incidents and clinical death: suffocation, arrhythmias and myocardial infarction, embolism and cardiac tamponade, drowning and drowned people, electric shock, thunder-struck patients, acute poisoning.
   • Acute hemorrhagic and hypovolemic conditions;
   • Shock - hypovolemic, septic, allergic, cardiogenic;
   • Severe life-threatening disturbances in the acid-base balance;
   • Techniques of anesthesia for outpatients;

3. Techniques to be mastered by the newly graduated doctor
   • CPR with mouth-to-mouth breathing;
   • Artificial pulmonary ventilation using the portable equipment of the "Ambu" type
   • Endotracheal intubation;
   • Coniotomy;
   • Extrathoracic compression of the heart;
   • Extrathoracic electrode defibrillation of the heart;
   • Providing intravenous lines for infusion;
• providing infusion therapy;
• basic principles of electrolyte replacement and parenteral nutrition in the acute period;
• determination of blood groups and blood substitution;
• local infiltration anesthesia;
• wire anesthesia of the fingers;
• access in axillary brachial plexus block;
• inclusion in first aid teams in emergency situations.

Progress examination of acquired knowledge is done by conducting a colloquium, which includes all study material, focusing on conducting cardiopulmonary resuscitation.

After completion of the cycle of anesthesiology and intensive care (three weeks), an examination is conducted using a test.

For students, interested in the specialty, a circle of Anesthesiology and Intensive Care, headed by Prof. S. Georgiev, has been established. Dr. Sabahov is in charge of the study circle.

There are also elective modules on the topics "Treatment of post-operative pain" and "Anaesthesia in normal birth"

Supplement:
1. Examination syllabus in anesthesiology and intensive care for sixth-year students of medicine.
2. Programme of seminars in anesthesiology and intensive care.
3. Programme of lectures on anesthesiology and intensive care.
4. Programme of seminars.
EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN FORENSIC MEDICINE AND DEONTOLOGY

1. EXPLANATORY NOTES

- Definition of the specialty – Forensic medicine is a combination of medical science and practice that studies, develops and implements the discussion of medical and biological questions, arising during the preliminary proceedings and the investigation and trial of criminal and civil cases. Forensics has a highly applied character based on medical science and practice, including all medical fields and specialties with a direct result - making forensic committee expertises and complex ones, which are the material basis in the relevant procedural rules to solve and provide arguments in criminal and civil cases.

- The goal of the training of medical students and dentists as well as specialists in forensic medicine and pathology and anatomy is to establish forensic facilities, develop the judgment and reasoning of students and future professionals who have theoretical knowledge and practical skills to work independently or together with forensic doctors and consultants in hospitals and experts on medico-biological problems, encountered in the work of the investigation and judiciary bodies.

The training is aimed not only at students but also at future physicians, regarding the establishment of a basis for evaluation in traumatology, toxicology, thanatology and medical deontology.

- Training of medical students takes place in three successive cycles of 15 days with lectures and workshops, and for dental medicine students with regular lectures and practical training under the program of the corresponding department of the Medical University - Sofia.

- The training of students includes different forms:

  o Lecture course - 30 hours for medical students in each cycle
  o Practical classes - 45 hours for medical students in each cycle
  o Lecture course - 14 hours for dental medicine students in the academic year
  o Practical classes - 21 hours for dental students in the academic year.

The training is theoretical and practical and covers all the main sections of the specialty of forensic medicine.

- The site of training. The facility for the training of students in medicine and dentistry is the Department of Forensic Medicine and Deontology – MU -Sofia with a complex of
autopsy room, laboratories - forensic, histology, DNA analysis, for evidence, serological and clinic for examination of live persons, as well as 5 classrooms and a library. In these units the practical training of students within the general program of Forensic Medicine and Deontology is realized, and the specific educational goals of the training in the various sections of the course are attained.

Thematic program

I. GENERAL PART includes the following sections:

1. Definition, objectives, methods, content and importance of forensics. Historical development of forensic medicine and forensic expertise.

2. Procedural foundations and organization of forensic expertise

- Appointment of forensic examination
- Types of forensic examination
- Experts - procedural rights, obligations and responsibility.
- Objects of forensic examination
- Forensic documentation
- Forms of organization of the forensic examination.

Students are introduced to the main tasks and methods of the specialty of forensic medicine and to all changes in the procedural requirements under the regulations of the Criminal Procedure Code, Criminal Code, Civil Code, Civil Procedure Code, on their possible future employment as experts.

II. SPECIAL PART - contains the following sections and topics:

1. Forensic Traumatology.

- Injuries from hard blunt objects.
- Injuries from vehicles.
- Injuries to a person during falling.
- Injuries from sharp objects.
• Injuries from firearms and explosives.
• Head trauma in forensics (forensic neuro-traumatology).
• Vital and post-mortem injuries.
• Cause and genesis of death from mechanical trauma.

2. Disability and death from extreme temperatures and electricity.
• Injuries from cold temperatures - general and local action.
• Injuries from high temperatures - general and local action.
  o Possibilities to burn a human body.
• Disability and death by electrocution.
  o Disability and death by technical electricity.
  o Disability and death by atmospheric electricity.

3. Mechanical asphyxia.
• Mechanism and genesis of death in mechanical asphyxia.
• General morphological signs of death from mechanical asphyxia.
• Mechanical asphyxia by compression
  o Mechanical asphyxia by compression of the neck:
    - Hanging
    - Throat cutting
    - Strangulation.
  o Mechanical asphyxia by compression of the chest and abdomen / immobilization asphyxia /
• Mechanical asphyxia by obstruction:
  o Asphyxia by compressing open airways
  o Asphyxia by obstruction of airways
- Drowning
  o Asphyxia in close confinement.
  o Autoerotic asphyxia

4. Forensic Toxicology.
   • General Toxicology
     o Toxicodynamics and toxicokinetics
     o Forensic autopsy and evidence of poisoning.
     o Forensic classification of poisons and poisoning.
   • Special Toxicology
     o Poisons of predominantly local action
       - Corrosive poisons
     o Poisons of predominantly resorptive action
       - Destructive poisons
       - Hematotropic poisons
       - Functional poisons
       - Acute poisoning with ethyl alcohol.
       - Poisoning by substances, causing addiction and dependence on them.
       - Poisoning by pesticides.
     o Food Poisoning
       - Poisoning of bacterial origin
         - Bacterial toxicoinfections
         - Bacterial intoxications
       - Poisoning of non-bacterial origin
         - Poisoning by mushrooms.
The specific educational goals of the course for students include not only theoretical exposure to forensic issues, but daily practical training in each room on every body, meant for forensic examination. Additionally a thorough discussion of each case is conducted as well as a multimedia presentation of similar cases. This is related to the purpose of acquiring a knowledge base, which is necessary for every graduate in medicine and dentistry to most accurately reflect the symptoms, first aid, resuscitation and treatment of cases that ended in death.

5. Forensic examination of living persons.

- Forensic examination of injuries under the Criminal Code.
  - Medical and biological characteristics of severe injury
  - Medical and biological characteristics of moderate injury.
  - Medical and biological characteristics of mild injury.
- Forensic examinations of gender, sexual acts and sexual crimes.
  - Establishing gender. Intermediate genital conditions.
  - Reproductive disability in men and women.
  - Expertise to establish pregnancy, childbirth and abortion.
  - Forensic examination in sexual offenses.
    - Fornication
    - Rape
    - Sexual perversions.

The specific objectives in this section of the forensic examination are to acquaint students with the problems of biomedical characteristics and estimates of injuries, resulting from domestic and criminal incidents, a methodology for assessing the mechanic genesis of the received traumatic injuries, their timing and other specific forensic issues.

- Forensic examination in controversial parental origin
  - Blood group expertise
DNA expertise

Expertises in contentious parental origin are an essential part of the activities of the Department of Forensic Medicine and Deontology. Only in the DFMD - MU -Sofia there continue to be carried on blood -group investigations, including the study of erythrocyte, serum and enzyme factors, with the primary objective of practical and theoretical training of students in determining the blood group and Rh, which is important in their general medical training and practice. A specific task of teaching is to know the possibilities of DNA expertise and the practice demonstration of the results of these studies in relation to controversial issues in parental origin, personality identification, bio-medical study of organic products on physical evidence, identification of perpetrators in sexual crimes using autosomal and Y- chromosomal markers.

- Forensic examination for identification of a person
  - Identification of a corpse.

The main goal in this direction is to acquaint students with the practical demonstration of the methodology for the identification of individuals using bone remains, dental status, single teeth and primarily through DNA analysis to ensure the knowledge base and training of future physicians, possibly involved in the inspections of crime scenes or in expertise commissions in relation to these issues.

6. Forensic examination of a cadaver / Thanatology /.

- Dying and death.
- Diagnosis of death and preparation of medical certificate of cause of death.
- Post mortem changes.
  - Early post mortem changes.
  - Late post mortem changes.
- Identifying the time of death.
- Organization and stages of the forensic medical examination of a cadaver.
  - Initial observation of a cadaver at the place where found.
  - Study of the cadaver during autopsy.
  - Re-autopsy and exhumation.
o Investigation of cadavers of unknown persons, mutilated, dismembered corpses and skeletons

- Forensic examination of dead newborns.
- Forensic examination of cadavers of people, who died of non-violent, sudden death.
- The role of the physician in determining the kind of violent death and other legal issues.

One of the main groups of problems of the forensic specialty is the specific training of students on the subject of Thanatology. Training is conducted in two main directions, namely, observation of signs, which in their entirety are the basis for recording death and are an important factor in establishing the time of death and the differentiation of early, late and conserving cadaveric changes, clinical, biological and brain death. A specific goal is not only to acquaint students with opportunities for diagnosis but also with regulations on new concepts in the assessment of clinical conditions that give justification for prolonged coma, brain death, and total brain death, which have lately emerged as essential terminology and justification to organ and tissue donation.

7. Forensic examination of physical evidence.
- Forensic examination of blood stains
  - Identifying the species identification of blood.
  - Identifying the blood group.
  - Determining the gender identification of blood.
  - Identifying the regional origin of blood.
  - Establishment of blood stains on a pregnant woman and newborns.
- Forensic examination of semen stains.
- Forensic examination of stains of sputum, sweat, urine, vaginal discharge and other discharges of human origin.
- Forensic examination of hair.

Training in this section includes general goals rather than specific activities that could be carried out by medical school graduates. They, however, should have basic knowledge which would help to determine their behavior on the crime scene and assist the preliminary investigation bodies in the detection of evidence, which is an essential initial step in the performance of the required forensic medical investigations.
8. Forensic expertise in investigation and litigation procedures, containing information of medical nature.

9. Deontological and legal issues in medical practice.
   • The term deontology. Historical Review. Deontological sources.
   • Medical care and medical certification
     o the quality of the physician
     o Doctor – patient relationship
   • Legal basis for medical actions
   • Involuntary (forced) treatment.
   • The right to private medical practice
   • Relationships between medical staff
   • Medical professional secrecy
   • Experiments on humans
   • Transplantation of human tissues and organs.
   • Euthanasia
     • Artificial insemination. Sterilization.
   • Physician and Society. Doctor’s fees.
   • Professional offenses of medical workers and criminal liability for them.
     o Intentional crimes of medical workers
     o Unwary / sloppy / actions and ignorance in relation to profession issues
     o Accidents

Training in this section includes lectures and practical presentation of the problems, mainly professional offenses of medical workers. Students are presented with cases from the pre-trial and trial proceedings and discuss cases, regarding justification of committed offenses or rejection of the motives for such. The main objective in this area is theoretical and practical training regarding the accuracy, volume, medical practice, informed consent, reporting all tests, manipulations in medical records and other, directly impacting the assessment of deliberate and careless (negligent, self-conceit).
medical acts under the laws of the Penal Code. Special attention is paid to the medical term "medical error" in its various deontological and legal interpretations.

This section of forensic theory and practice has been an extremely important area in recent years and determines the objective of expanding the program to educate students for their future practice of medicine.

The team of DFMD has put specific goals and objectives in the training of students and specialists in forensic medicine in the sections:

- Forensic Toxicology – use, poisoning, diagnosis in cases of exposure to drugs, related global problems;

- Forensic trace analysis to address issues and solve problems on the dynamics of trace formation for traces of blood, found during the crime scene investigation, evidence of human dentition and others with comparison between the present disability and the perceived impacted contact surfaces in receiving traumatic injuries with a distinctive and specific morphology.

This goal requires practical training with demonstration of cases, subject to forensic examination, theoretical interpretation of the methodology of these studies, which is important in the training of Forensic Medicine in order to show to future physicians the capabilities and the mandatory forensic descriptions of injuries.

EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN PHYSICAL MEDICINE AND REHABILITATION FOR MEDICAL STUDENTS

1. Following safety rules for physiotherapy equipment
   
   • Zeroing
   • Grounding
   • Isolation
   • Screening
   • Proper switching on and off of physiotherapy equipment

2. Check the suitability of physiotherapy equipment
   
   • Check the polarity of the electrodes in monopolar currents
• Check the galvanic connection at low and medium frequency currents through prior application of technical intensity in a phase-locked loop

• Checking the high frequency field by gleam lamp

• Checking the magnetic field by a light metal object

• Checking ultrasonic energy through cavitation of water

3. Compliance with the rules for correct positioning of the patient in the course of physiotherapy

4. Proper placement of the various electrodes

• In low – frequency and medium -frequency currents - electrodes with hydrophilic pads

• in high-frequency currents – condensers, inductive and capacity- inductive

5. Implementation of various methods

• According to the position of the electrodes - transverse, longitudinal and diagonal

• According to the mobility of the electrodes - stable, unstable and rhythmic

• According to the mode - continuous and discontinuous

6. Correct dosage for different devices

• Subjective (according to the patient’s sensations)

• For low – frequency and medium -frequency currents – without burning and pain

• For UHF , DMUs , JIM - athermic, oligo thermic and thermal doses

• For solux , Infrarouge - oligo thermic and thermal doses

• Objective (by reading the meter)

• For the D’Arsonval current - in W

• For ultrasound - in W / cm²

• Empirical ( later reactions) – in cases of UV rays, using biodosimetry

7. Sample electrostimulation.

8. Sample inhalation therapy

9. Simulation of various clinical cases
10. Taking the medical history of a patient, referred for physiotherapy

11. Taking the status of a patient, referred for physiotherapy

12. Compiling and discussion of a sample physiotherapy and kinesitherapy program for a patient, referred for physiotherapy.

During the course students need to master the necessary theoretical knowledge for application of natural and preformed physical fractures, to recognize their characteristics as well as their mechanism of action. Students need to acquire adequate knowledge in clinical terms, especially on diseases, leading to permanent damage and disability.

EDUCATIONAL GOALS AND LEARNING OUTCOMES OF THE COURSE IN PSYCHIATRY

Psychiatry is a clinical discipline about the aetiology, pathogenesis, phenomenology, treatment and prevention of mental illness. The subject of psychiatry is the diagnosis and treatment of mental illness. Some of these diseases are very serious, such as schizophrenia, mood disorders, Alzheimer's disease. Others may be less serious, but still they are very important for the quality of function, for example, adaptation disorders, personality disorders. Psychiatry differs from psychology in its medical specifics. Its main focus is disease or abnormality which differs from normal psychological functioning, the latter is the focus of psychology. As a medical discipline, the main task of psychiatry is to define and detect disease, identify methods for its treatment, to disclose the reasons for its onset and development of a system of prevention. Starting from the last decade of the 20th century, psychiatry has become one of the most interesting and dynamic medical disciplines. This is due to several reasons. First, psychiatrists are professionals who work with the most interesting organ in the body - the brain. The brain has a unique education that controls almost every aspect of the operation of the rest of the body as well as the way in which people interact with and relate to one another. Second, thanks to the rapid development of neuroscience psychiatry got powerful tools for the study of brain anatomy, chemistry and physiology of the nervous system. Along with that psychiatry remains a clearly defined clinical and humanitarian part of medicine, which allows for immediate and live human contact with patients.
Psychiatry is related to all other medical specialties as well as other basic sciences such as law, ethic, philosophy, sociology, psychology. The holistic (bio-psycho-social) approach is the basic principle of the diagnostic and therapeutic approach.

The development of genetics, molecular biology and the neuro-imaging techniques over the last decade shed new light on the etiopathogenesis of mental disorders and created new requirements to the teaching of psychiatry to medical students.

Psychiatry is a medical specialty, which is most open to all other medical specialties, integrates the knowledge not only of medicine, but also of a number of medical specialties, reflecting the modern changes, related to globalization (Information and communication) and to transcultural features.

All this is the basis for the preparation of a modern curriculum, related to the teaching and training of doctors in order to meet current needs.

I. Basic theoretical knowledge related to:

• Psychology, Behavioral and Social Sciences
• Psychopathology and relationship with other medical specialties within consultation psychiatry in the general medical practice
• Neuropsychiatry (Neuroscience - neurobiology, neurophysiology)
• Psychopharmacology

II. Basic clinical knowledge and skills, related to the identification, assessment and formulation of a clinical case

• Psychiatric examination, skills to interview, establishing therapeutic contact, communication skills
• Formulation of a psychiatric case: definition, structure and purpose.
• Exercising coercion in psychiatry - legal and ethical aspects
• Psychological testing in psychiatry: basic principles and procedural tasks.
• Assessment of depression
• Assessment of anxiety.
• Assessment of the manic state.
• Evaluation of acute psychosis.
• Assessment of chronic psychosis.
• Evaluation of a psychotic relapse.
• Assessment of risk behaviors - self-aggressive (suicide) and aggressive behavior.
• Assessment of the side effects of medication.
• Assessment and behavior in acute disorders of cognitive function - delirium
• Assessment and behavior in chronic disorders of cognitive function - dementia.
• Assessment of dependency on psychoactive substances.

III. Basic knowledge related to the distribution, classification, clinical features, course, treatment and prognosis of mental disorders

1. Classification of mental disorders ICD-10, DSM-IVR and DSM-V.
2. Theories of mental life: biological, psychodynamic, behavioral.
4. Depression: prevalence, social significance, etiological theories.
5. Depression: clinical features, principles of case management.
7. Schizophrenia: prevalence, course and outcome; etiologic theories.
9. Schizophrenia: manifestations of a chronic case ("personality change") and principles of management; social significance.
10. Other psychotic disorders: schizoaffective disorder, delusional disorder, acute psychotic disorders.
12. Personality disorders: paranoid, schizoid, and emotionally unstable (borderline); principles of case management.

3. Personality disorders: anancast, dependent and histrionic, principles of case management.


15. Maladaptive behaviors: addictions, clinical manifestations and prevalence.


22. Neuroleptics: jamming and antipsychotic effect, mechanism of action, side effects, depot neuroleptics; indications and monitoring.

23. Antidepressants: mechanism of action, side effects, tricyclic antidepressants, serotonin reuptake inhibitors, MAO inhibitors; indications and monitoring.

24. Mood stabilizers: clinical effect, mechanism of action, side effects, lithium salts, carbamazepine, valproate, indications and monitoring.


27. Psychotherapy – cognitive and behavioral, family and group

28. Psychosocial rehabilitation.

IV. Additional clinical skills related to:

- Working with children
• Working with people in crisis
• Working with the elderly
• Emergency psychiatry
• Working with people with addictions to psychoactive substances and alcohol
• Prevention and mental health promotion – psychotraining, combating stigma

V. Additional opportunities to upgrade knowledge during medical training
• Circle of Psychiatry
• Elective modules

Courses:

Mental health - norm and pathology

The course aims to acquaint students with common mental disorders included in the so-called "small psychiatry", such as depression, anxiety, personality disorders. An opportunity is provided to acquire basic knowledge of psychological factors, leading to bodily disorders, and conversely, the psychological complications of somatic diseases.

The course is conducted as a problem-oriented training, with practical aspects, with a short theoretical part and presentation of cases, patients and active discussion of practical cases.

*Neurochemical bases of drug addiction. Prevention, diagnostics and treatment*

The course has been established, based on the biopsychosocial model and aims to introduce students to the basic methods of diagnosis and treatment and the strategies for the prevention of drug addiction. Through role play, presentation of cases, we present the scheme for first and further contact with the dependent patient and the conclusion of a therapeutic contract with the client and his family. Special attention is paid to the neurobiological mechanisms of dependency occurrence, of co-morbidities of dependence with other psychiatric disorders. The course has a problem-oriented approach to teaching, with role play, interactive approach.

Medical Psychology

The course aims to acquaint students with the contribution that the science of psychology has to the medical practice. Students acquire basic skills to establish a therapeutic conduct, therapeutic communication, needed for therapeutic collaboration.