

## GENERAL MEDICINE PROGRAM CURRICULUM OVERVIEW

### Competency Themes and Programs

The Doctor of Medicine (MD) degree is awarded upon successful completion of the General Education curriculum, Foundations of Medicine curriculum, the Clinical Science curriculum, and final state examination.

### General Education Curriculum

The General Education Curriculum is essential for university level of education. It contains basic knowledge of mathematics, law, economics, computer science, history, Russian etc. All of the disciplines provide medicine related knowledge.

### Foundations of Medicine Curriculum

The Foundations of Medicine curriculum is designed to offer in-depth, comprehensive knowledge of biomedical sciences that has traditionally been deemed appropriate for future medical practitioners. The course includes laboratory work, scientific experiments, studying projects, learning the basics of laboratory and instrumental diagnosis etc.

### The Clinical Science Curriculum

The Clinical Science curriculum is a comprehensive set of disciplines covering all areas of practical medicine starting from training in medical history taking and practical diagnostic skills, as well as critical thinking and problem-solving skill development encountered in the clinical setting. Students participate in patient care while rotating through various medical specialties in teaching hospitals and other approved healthcare facilities. Moreover, students learn the basics of first aid, nursing and dentistry.

### Academic calendar

#### Year 1

##### *Fall term*

Disciplines	Hours per term
Biology	61



<b>Chemistry</b>	61
<b>Latin</b>	36
<b>Russian</b>	126
<b>Practical skills</b>	36
<b>Nursing</b>	72
<b>Physics, calculus</b>	61
<b>Physics, basics of computer tech. and programming</b>	40

*Spring term*

<b>Discipline</b>	<b>Hours per term</b>
<b>Biology</b>	58
<b>Medical chemistry</b>	40
<b>Legal and ethical standards in medicine</b>	36
<b>Histology, cell biology, embriology</b>	68
<b>Latin</b>	36
<b>Russian</b>	126
<b>Human anatomy</b>	68
<b>Psychology and education science</b>	36
<b>History of medicine</b>	36
<b>Physiologic anatomy</b>	40



## Year 2

### *Fall term*

Disciplines	Hours in total
Human anatomy	68
Microbiology	71
Histology, embriology, cell biology	52
Human physiology	74
Nano- and cellular technologies in biology and medicine	40
Russian	144
Biochemistry	74
Clinical physiology, the basics of functional physiology	40
Health and safety, disaster medicine	40

### *Spring term*

Disciplines	Hours in total
Biochemistry	69
Philosophy	52
Microbiology	71
Human physiology	69
Human anatomy	68
Pathology (physiology)	75
Hygiene	71
Russian	144
Molecular physiology	40

## Year 3

### *Fall term*

Disciplines	Hours in total
Public health and health economics	48
General surgery, radiology	48
Hygiene	71
Pathology (anatomy). Clinical pathology.	80
Pathology (physiology). Clinical pathology.	80
Introduction into internal medicine, radiology	98



<b>Pharmacology</b>	78
<b>Russian</b>	72
<b>Emergency abdominal surgery</b>	40

*Spring term*

<b>Disciplines</b>	<b>Hours in total</b>
<b>Public health and health economics</b>	75
<b>General surgery, radiology</b>	52
<b>Topology and operative surgery</b>	48
<b>Pathology (anatomy). Clinical pathology.</b>	77
<b>Immunology</b>	63
<b>Introduction into internal medicine, radiology</b>	84
<b>Pharmacology</b>	63
<b>Russian</b>	72

**Year 4**

*Fall term*

<b>Disciplines</b>	<b>Hours in total</b>
<b>Obstetrics and gynecology</b>	95
<b>Ear, nose and throat</b>	63
<b>Diagnostic radiology</b>	63
<b>Neurology, medical genetics, neurosurgery</b>	66
<b>Topology and operative surgery</b>	51
<b>Intermediate level internal and occupational medicine</b>	90
<b>Intermediale level surgery, urology</b>	101
<b>Medical rehabilitation</b>	63
<b>Russian</b>	72

*Spring term*

<b>Disciplines</b>	<b>Hours in total</b>
<b>Obstetrics and gynecology</b>	63
<b>Intermediate level internal and occupational medicine</b>	85



<b>Neurology, medical genetics, neurosurgery</b>	54
<b>Ophthalmology</b>	63
<b>Pediatrics</b>	68
<b>Urology</b>	40
<b>Occupational diseases</b>	40
<b>Russian</b>	72

**Year 5**

*Fall term*

<b>Disciplines</b>	<b>Hours in total</b>
<b>Obstetrics and gynecology</b>	63
<b>Dermatology and venerology</b>	63
<b>Infectious diseases</b>	91
<b>Internal medicine, advanced</b>	63
<b>Outpatient medicine</b>	63
<b>Pediatric surgery</b>	63
<b>Anesthesiology, emergency medicine</b>	63
<b>Pediatrics</b>	68
<b>Psychiatry</b>	63
<b>Medical psychology</b>	45

*Spring term*

<b>Disciplines</b>	<b>Hours in total</b>
<b>Obstetrics and gynecology</b>	63
<b>Internal medicine, advanced</b>	63
<b>Endocrinology</b>	55
<b>Pediatrics</b>	68
<b>Infectious diseases</b>	91
<b>Outpatient medicine</b>	48
<b>Advanced surgery</b>	70

**Year 6**

*Fall term*

<b>Disciplines</b>	<b>Hours in total</b>
<b>Epidemiology</b>	63
<b>Clinical pharmacology</b>	64
<b>Internal medicine, advanced</b>	68
<b>Outpatient medicine</b>	63
<b>Physiology</b>	101
<b>Advanced surgery</b>	75
<b>Dentistry</b>	40
<b>Traumatology and orthopedics</b>	53
<b>Tropical medicine</b>	40
<b>Forensic medicine</b>	63

*Spring term*

<b>Disciplines</b>	<b>Hours in total</b>
<b>Outpatient medicine</b>	58
<b>Disaster medicine</b>	101
<b>Oncology and radiology</b>	63
<b>Traumatology and orthopedics</b>	68
<b>Clinical immunology and allergology</b>	40
<b>Internal medicine, advanced</b>	63
<b>Extragenital diseases in pregnancy</b>	40
<b>Clinical hemostasiology and transfusiology</b>	63
<b>Interdisciplinary approach to diabetes mellitus</b>	40
<b>Clinical ECG</b>	63
<b>Comorbidities in primary care</b>	40

## **General Education Curriculum**

### **Biology (6 credit units)**

Biology provides students with the general theoretical knowledge and the ability to apply basic concepts in the field of biology required for building a natural-science worldview in physician practice.

Students acquire knowledge of a multilevel organization of biological systems, the laws of the evolution of the organic world and the functioning of biological systems. A person as a central object of study in medical biology as well as the biosocial nature of human, the unity of human with the environment is introduced to the learners. The students develop the ideas about the modern ecosystem, the action of anthropogenic factors, and the adaptation of human to the environment. The practical skills necessary for subsequent research and practical activities are being mastered.

### **Chemistry (3 credit units)**

The discipline provides systematic knowledge and skills to perform calculations of the chemical parameters of processes in the human body, evaluate these processes at the cellular and molecular levels, correctly interpret the effects of the chemicals and other environmental factors on the body.

The aim of the discipline is to introduce fundamental theoretical positions and the laws that govern behavior of chemical compounds in relation to their structure as well as building the ability to navigate in classification, structure and properties of a large number of compounds acting as medicaments.

### **Latin (3 credit units)**

The discipline lays the foundations of terminological training for future specialists to be able to apply medical terms in Latin, understand the ways of forming terms and know the specifics in various subsystems of medical terminology.

### **Physics, basics of computer tech. and programming (2 credit units)**

The aim of the discipline is to build systematic medical knowledge of the physical properties of matter and physical processes in biological objects, including human body. Students learn how to use computer technology to work with information in global networks, as well as they develop the capabilities of applying modern information technology in solving professional problems.

### **Physics, calculus (3 credit units)**

Mastering the discipline is essential to build systematic medical knowledge of the foundations of mathematics. Students learn to solve the problems of evidence-based medicine, develop the skill of logical thinking as well as the ability to accurately set tasks and determine priorities in solving professional problems.

### **Russian**

The course allows learning Russian language as a source of communication. Students start from the acquaintance with the basic grammar, Russian alphabet and the rules of pronunciation. After each term, the learners become more fluent being able to speak Russian in daily life. By the end of the course, the students are able to hold simple conversations, to read and to write in Russian.

### **Medical chemistry (2 credit units)**

The discipline is aimed to build systematic knowledge on the structure and chemical transformations of low- and high-molecular organic compounds that participate in the processes of vital activity of the human body at molecular level. Students learn the chemical properties of the main classes of biologically important organic compounds (nucleic acids, natural proteins, water-soluble and fat-soluble vitamins, hormones, etc.).



### **Legal and ethical standards in medicine (3 credit units)**

The aim of mastering the discipline is to learn the main definitions of legal science and lawful behavior in professional activities as well as to raise the level of legal awareness and legal culture. Students get acquainted with the basic concepts of the branches of law (family, civil, labor, criminal, and constitutional, etc.). The questions about the responsibility of general practitioners, including the criminal liability; the concepts of guilt, intent and negligence in criminal law are being covered. The topic "The basics of Labor Law" implies the knowledge of the Labor Code. The students learn about patient rights and fundamental legal mechanisms for their maintenance in the modern health care.

### **Psychology and education science (3 credit units)**

The aim of mastering the discipline is development of professional knowledge in the analysis of psychological processes, properties, states, characteristics of mental processes, the various activities of individuals and groups. This knowledge facilitates identification of difficulties in communication, the risks of antisocial behavior, and the diagnosis of mental conditions in the process of educational and extracurricular activities. The skills of psychological research based on professional knowledge and application of psychological technologies are being developed.

The objectives of the discipline are:

- Introduction of the student to scientific field of disciplines of psychological and pedagogical nature;
- sharing the knowledge of the inner world and human behavior; training student to use this knowledge in professional practice for the benefit of the patient;
- Business and interpersonal skills development in order to build effective partnership with patients and colleagues;
- teaching student the methods of improving his personal and cognitive sphere, developing motivation for personal and professional growth.

### **History of medicine (2 credit units)**

The discipline reflects the study of history, laws and logic of development of medicine and medical activities of the peoples of the world throughout the history of humankind.

The objectives of the discipline are:

- Development of historical thinking in understanding the processes medicine development.
- Development of the sense of humanism, honor, dignity of the doctor on the basis of studying the experience of world medicine, its positive traditions, acquaintance with the life and merits of its best representatives.
- Education of moral and ethical qualities that contribute to the doctor.

**Philosophy (5 credit units)**

Mastering the knowledge of fundamental worldview problems, the processes of cognitive creative activity, philosophical aspects in formation and development of the personality and the principles of behavior of the doctor are considered. Students acquire knowledge of historical and philosophical process, alternative philosophical concepts and ideas. The methods of clinical thinking allow one to have its own philosophical position on the most important problems of science in general and modern medicine in particular.

## **Foundations of Medicine Curriculum**

### **Histology, cell biology and embryology (6 credit units)**

Scientific ideas about the microscopic functional morphology and development of human cellular, tissue and organ systems provides a basis for studying clinical disciplines and contributes to formation of medical thinking. Students study general and specific structural and functional properties of cells and tissues of the body and the patterns of their embryonic and postembryonic development as well as the functional characteristics of the basic systems as well as functional, age and adaptive changes in organs and their structural elements. The skill of microscopy of histological preparations using a light microscope is being developed. Students learn to identify organs, tissues, cells and non-cellular structures at the microscopic level as well as to determine the leukocyte formula. The students apply skills of independent analytical and scientific research and work with scientific literature.

### **Human anatomy (10 credit units)**

Knowledge of human anatomy and topographic anatomy, both of the body as a whole, and of individual organs and systems of adults and children in different age periods, based on modern achievements is being gained. The tasks of anatomy include the study of the main stages of human development in the process of evolution, formation of the human body in external environment, the features of the structure of the body and individual organs in different age periods. A special feature of the discipline is the study of the subject with the use of ready-made natural anatomical preparations and the preparation of the vascular-nervous and muscular corpses.

### **Physiologic anatomy (2 credit units)**

The discipline aims to build the concept of the unity of the structure and function of individual organs and the human body as a whole as well as the ability to apply this knowledge in the subsequent study of clinical disciplines and in the future professional activity of the doctor. Students acquire the knowledge of the structure, topography and development of cells, tissues and body systems in interaction with their function normally and being involved into pathologic process as well as the anatomical and physiological, age, gender and individual characteristics of the structure and development of a healthy and affected organism. Functional systems of the human body, their regulation and self-regulation when interacting with external environment and the basic laws of development and vital activity of the organism on the basis of the structural organization of cells, tissues and organs are being considered.

### **Microbiology (7 credit units)**

Mastering the theoretical bases of interaction of micro- and macro-organisms, the practical skills of preventative care, microbiological diagnostics, and basic directions of treatment of infectious and opportunistic human diseases are being considered. General ideas about the structure and functioning of microbes as living systems, their role in ecology and ways of decontamination are being taught. The principles of interpretation of results of microbiological tests are being mastered.

### **Human physiology (7 credit units)**

System knowledge of the vital activity of the whole organism and its individual parts, the basic patterns of functioning and the mechanisms of their regulation when interacting with each other and with environmental factors, the physiological bases of clinical and physiological methods used in functional diagnostics is being acquired. The rules of working in physical, chemical and biological laboratories with reagents, instruments and animals are being mastered.

### **Nano- and cellular technologies in biology and medicine (3 credit units)**

The objectives of the discipline are:

- Studying theoretical bases of medical informatics to be applied in medicine and public health;
- studying methods, software and technical means of medical statistics used at various stages of obtaining and analyzing biomedical information;
- mastering modern tools, including special computer programs for solving problems of medicine and healthcare, taking into account the latest information and telecommunication technologies;
- studying the means of medical decision making information support;
- mastering practical skills in diagnostics through medical information systems.

### **Biochemistry (7 credit units)**

The objectives of the discipline are training students on the most important methods of biochemical diagnostics; teaching students the ability to reveal leading signs, symptoms and syndromes using biochemical data; introducing the principles of organization of laboratory diagnostic institutions of various types.

### **Clinical physiology, the basics of functional physiology (3 credit units)**

The process of mastering the discipline includes getting the knowledge on the role of various departments and structures of the central nervous system in regulation of somatic and visceral functions of the body. Students learn about:

- reflex arcs with visceral and somatic components,
- the blood system and its role in maintaining and regulating homeostatic constants of the body;
- The main stages and indicators of the function of external respiration;

- The main mechanisms of heart activity regulation;
- The basic functional features of the organization of the sensory systems;
- The forms of higher nervous activity in humans;
- Conditioned reflex development and its inhibition, components of the functional system of the behavioral act;
- Concept and classification of pain.

### **Pathology: physiology (8 credit units)**

Scientific knowledge about the general laws and specific mechanisms of development and outcomes of pathological processes, particular diseases and pathologic conditions as well as the principles of detection, therapy and prevention are being learnt. Training in the ability to conduct analysis of data on pathological syndromes, processes and certain diseases is being performed. Methodological bases of clinical thinking and rational action of a doctor are being studied. The contents of the course are "General Nosology", "Typical Pathological Processes" and "Pathological physiology of the organs and systems".

### **Hygiene (7 credit units)**

A conscious understanding of the relationship between health and the environment, living conditions and labor activity as prerequisites for effective medical measures, preventing diseases, and promoting healthy lifestyles is being formed with the knowledge of hygiene. Study of the basics of the legislation on public health, health indicators of the population, factors related to human health is being performed. Diseases associated with the adverse effects of climatic and social factors; hygienic aspects of nutrition, hygiene of medical organizations are being considered. The fundamentals of preventive medicine, organization of preventive measures aimed at improving health of the population as well as the methods of health education are being taught. The skills of analyzing the health status of the population and influencing environmental and production factors are being developed. Students participate in organization of sanitary assistance to the population, taking into account its professional and age-and-gender structure. By the end of the course, the students are being able to establish causal relationships between the changes in health status and the impact of environmental factors.

### **Molecular physiology (3 credit units)**

Students acquire the knowledge of the course of physiological processes at molecular level, their connection with the change in the functioning of the whole organism. They master the knowledge of molecular mechanisms of regulation and interaction between cells, organs, tissues and systems, as well as the general principles of action of biologically active compounds, beginning with binding to molecular target and changing intracellular reactions, ending with changes in the work of physiological systems. The students learn the basic patterns of the function of biological membranes, ion channels, receptors and other signal molecules; on intracellular signaling systems; on the molecular basis of cellular reactions associated with

changes in the membrane potential, release of hormones and neurotransmitters, cell contraction, transport of substances and on the role of different protein forms in the functioning of cells, tissues and the body as a whole.

### **Public health and health economics (6 credit units)**

The discipline provides the knowledge and skills in the field of public health. The topics discussed are:

- Public health and the factors that determine it;
- Systems that ensure maintenance, strengthening and restoration of public health,
- Organizational and medical technologies,
- Management processes, including economic, legal, administrative, organizational and other relations,
- Trends of the health care development in foreign countries.

Students learn to apply and analyze the information on public health and on the activities of the institutions in order to propose measures to improve the quality and effectiveness of medical and preventive care. The basics of economics, marketing, planning and management, innovative processes in health care, legal and ethical aspects of medical activity are also being considered.

### **Pathology (anatomy). Clinical pathology. (8 credit units)**

Students learn the structural bases of diseases and pathological processes occurring in the human body as well as the principles of clinical and anatomical diagnosis, comparing morphological and clinical manifestations of human diseases at all stages of their development. The students acquire knowledge of morphological terminology, the basic methods of anatomical research, the principles of classification of diseases, the essence of typical pathological processes, morphological changes in internal organs in the most important human diseases, the fundamentals of the current legislation on the procedure of autopsy and the principles of post-mortem diagnosis. The ability to express opinion on the nature of pathological process and its possible clinical manifestations as well as on the cause of death based on the preparations, to determine the cause of the discrepancy is being developed.

### **Pharmacology (7 credit units)**

The aim of mastering the discipline is building fundamental scientific knowledge in the field of pharmacology. Students learn general principles of pharmacokinetics and dynamics, adverse and toxic reactions. The students get the knowledge of classification and characteristics of the main groups of drugs, indications and contraindications; types of dosage forms; pharmaceutical and pharmacological incompatibility. The students learn to write prescriptions. They get acquainted

with the rules of the storage and use of medicines; the principles of finding new medicines and scientific approaches to their development.

### **Medical psychology (2 credit units)**

The discipline assumes mastering theoretical, practical and organizational bases as well as the acquaintance with the modern medical psychology, its methodology and organization of medical and psychological assistance. Students master practical skills for mental function and condition assessment. The program introduces theoretical and practical aspects of borderline mental disorders.

The objectives of the discipline:

- building the knowledge on the inner world and human behavior;
- training how to apply this knowledge in professional practice;
- developing skills of business and interpersonal communication as well as the methods of effective partnership with patients and colleagues.

## **Clinical Science Curriculum**

### **Immunology (3 credit units)**

Students learn basic techniques of clinical and immunological examination and evaluate the functional condition of the organs of immune system. The students acquire knowledge on the structure and function of the immune system, its age-related features; basic stages and types of immune response; diagnostics and principles of immune therapy.

### **Health and safety, disaster medicine (2 credit units)**

The aim of mastering the discipline is formation of a safety culture as well as the readiness and ability to work in emergencies of peaceful and wartime.

Students acquire the knowledge of the fundamentals of legislation on public health protection; on the sanitary and epidemiological welfare of the population. Students get acquainted with the main official documents regulating anti-epidemic services in infectious diseases; normative documents on prevention of hospital infections, the legal basis of public policy in the field of immunization. Diseases associated with adverse effects of climatic and social factors are being considered. Epidemiological process, implementation of anti-epidemic measures, protection of the population in the outbreaks of dangerous infections, deterioration of the radiation situation

and natural disasters are being considered. Organization of medical care in mass and sports events and in emergencies is being learned. The features of first aid and resuscitation for victims of road injuries, drowning, electric trauma, and asphyxia are being considered within the course.

### **General surgery, radiology (5 credit units)**

The aim of mastering the discipline is teaching students the methods of examination and the principles of diagnosis of surgical diseases as well as to determine the main surgical syndromes and diagnose the main types of purulent-septic diseases. Students solve practical problems of diagnosis, treatment, rehabilitation of surgical patients and disease prevention and are acquainted with the rules of asepsis in surgical hospital, outpatient clinic and in intensive care units.

### **Introduction into internal medicine and radiology (9 credit units)**

Training students on the methods and principles of diagnosis, developing essential professional skills of patient examination, the basics of clinical thinking, applying the knowledge of medical ethics and deontology are being performed. Students get the knowledge of the causes of the main pathological processes in the body, the main clinical symptoms and syndromes of diseases of internal organs. The students are being trained on the most important methods of the patient interview, physical examination and identification of objective signs of the disease. The skills of general clinical examination and interpretation of the results of laboratory, instrumental diagnostic methods are being developed.

### **Emergency abdominal surgery (2 credit units)**

The aim of mastering the discipline is assimilation of theoretical knowledge and practical skills in critical care provision to the patients with surgical disease of abdominal cavity. Students learn to identify the main symptoms and syndromes in patients with surgical diseases of the abdominal cavity, to solve practical problems of diagnosis, treatment, rehabilitation and prevention of surgical diseases, to apply modern methods of laboratory and instrumental diagnostics. The basic emergency measures, types of conservative and surgical treatment, skills of professional medical behavior are being taught.

### **Topology and operative surgery (5 credit units)**

Operative surgery is the science of the laws and techniques for surgical operation performance. Topographic anatomy is the science that combines the theory and practice of medicine, describing relationship of organs and tissues in the regions of the human body. Students acquire the knowledge of topographic anatomy of the regions, organs and systems. The trainees learn basic surgical techniques.

### **Obstetrics & gynecology (14 credit units)**

The discipline provides the knowledge in the field of obstetrics and gynecology. Students learn about clinical and physiological features of the female reproductive system, the physiology of pregnancy, childbirth and the postpartum period. By the end of the course, students are able to



examine pregnant women, apply the methods of diagnostics and treatment in case of emergency care; manage pregnancy and childbirth.

### **Ear, nose and throat (3 credit units)**

The aim of the discipline is mastering special methods of diagnosis and treatment of the diseases of the upper respiratory tract and ear. Students learn about the prevalence and significance of diseases of the ear, nose and throat; about the importance of timely identification of these diseases and their rehabilitation; about the ENT organ examination with the use of endoscopic, audiometric, vestibulometric, radiological and other modern methods. Students are acquainted with the origin, clinical signs, and the methods of prevention and treatment of ear, nose, throat and larynx diseases. Students acquire practical skills and methods of providing emergency assistance for injuries, foreign bodies, bleeding and acute diseases of the ENT organs.

### **Diagnostic radiology (4 credit units)**

Students learn the basic methods of radiological diagnosis in surgical and therapeutic clinic; the students become able to recognize the main diseases of internal organs and systems of the body using modern radiological diagnostic methods and to perform interpretation of the results.

### **Neurology, medical genetics, neurosurgery (6 credit units)**

The study of the mechanisms of nervous systems organization in normal and pathological conditions is aiming to develop professional competence.

The objectives of the discipline are:

- To develop the skills of neurological examination with identifying symptoms of nervous system disorders.
- To acquire knowledge on the etiology and pathogenesis, clinical manifestations, diagnosis, treatment and prevention of the most common neurological diseases (epilepsy, neurologic infections, hereditary diseases, cerebral circulation disorders, peripheral nervous system diseases, autoimmune diseases).
- To acquire the knowledge on the basic diagnostic methods in neurology.
- To integrate the knowledge of genetics into clinical thinking.

### **Intermediate level internal and occupational medicine (8 credit units)**

Mastering the knowledge on the etiology, pathogenesis and clinical manifestations of the main diseases of internal organs and the ability to recognize occupational diseases are being considered. Students develop clinical thinking as well as the skills of diagnosis, treatment, prevention of the internal organ diseases. Students practice interpretation of the most common instrumental and laboratory diagnostic methods. The students are trained to assign adequate treatment for the patients with diseases of the therapeutic profile.

### Intermediate level surgery, urology (5 credit units)

The aim of the discipline is to teach the students to diagnose surgical diseases with the rationale for treatment and prevention activities, as well as to apply the knowledge of the modern principles of emergency medical surgical care.

The objectives of the discipline are:

- To learn modern classification of surgical diseases;
- To develop understanding of the clinical features and possible complications of the most common typical surgical diseases in different age groups;
- To learn modern methods of clinical, laboratory and instrumental diagnostics in surgery (including endoscopic and radiation diagnostic methods);
- To develop the ability to diagnose various diseases; to introduce the methods of treatment and deontological aspects in surgery.

### Medical rehabilitation (3 credit units)

The aim of mastering the discipline is learning the basics of medical rehabilitation and rehabilitation technologies.

The objectives of the discipline are to learn the mechanism of therapeutic action of physical therapy, indications and contraindications and to develop knowledge about the basic principles of treatment of infectious diseases and rehabilitation of patients;

### Ophthalmology (3 credit units)

The students acquire theoretical knowledge and practical skills that allow detecting abnormalities of the organ of vision.

The objectives of the discipline are:

- to introduce the most common diseases and the organization of ophthalmic care at different stages;
- study the causes, pathogenesis, methods of diagnosis and treatment of the diseases and trauma of the organ of vision;
- to learn the principles of the first ophthalmological medical aid;
- to introduce students to preventive measures in order to avoid the epidemic outbreaks of infectious ophthalmologic diseases or blindness.

### **Pediatrics (10 credit units)**

The students acquire the knowledge on anatomical and physiological characteristics of the organs and systems of a healthy child, its physical development, and the characteristics of immunity, metabolism of the child organism as well as the principles of rational feeding of healthy and sick children during the first year of life. The students are being introduced to childhood diseases. The students develop the ability to determine the status of the child through taking the history, physical examination, assessing medical condition.

### **Urology (3 credit units)**

The aim of the discipline is to introduce the most common diseases of the genitourinary system, the issues of etiology and pathogenesis, methods of diagnosis, prevention and treatment of urological diseases. The students master the issues of medical and labor expertise, preventative, therapeutic and rehabilitation activities in urological patients.

### **Occupational diseases (2 credit units)**

The discipline helps to develop the ability to recognize occupational diseases and to introduce the concepts of the patient work qualification.

### **Dermatology and venerology (3 credit units)**

The students master the knowledge of dermatology and venerology: the principles of diagnosis, treatment and prevention of skin and sexually transmitted diseases. The students develop the skills required for the recognition of clinical manifestations of the most common and severe skin and venereal diseases based on the knowledge of the patient status. The students learn the methods of clinical examination of the patients with skin and venereal diseases; how to identify predisposing factors, how to prepare a treatment plan, taking into account individual characteristics, indications and contraindications for each method of treatment. The principles of primary and secondary prevention with the basics of sanitary education and organizational measures to reduce the incidence of contagious skin and venereal diseases are being applied. The students are trained to provide emergency medical care in urgent conditions in dermatological practice as well as the follow-up and rehabilitation of the patients with chronic skin diseases.

### **Infectious diseases (9 credit units)**

The discipline provides the knowledge of the common infectious diseases and the methods of their identification; clinical manifestations; diagnosis and prevention; rational treatment; emergency medical assistance in critical conditions of infectious origin as well as the follow-up.

### **Internal medicine, advanced (12 credit units)**

The aim of mastering the discipline is training of a qualified physician capable to provide medical care for the patients with inner organ diseases in clinic and outpatient setting.

The objectives of the discipline:

- provide the knowledge of the etiology and pathogenesis, clinical manifestations and methods of diagnosis of major diseases of internal organs;
- consolidate and improve the ability to examine a therapeutic patient;
- master clinical thinking;
- teach how to apply differential diagnosis method;
- teach basic principles of prevention and treatment of the diseases of internal organs.

### **Outpatient medicine (11 credit units)**

The aim of the discipline is to train a specialist capable to ensure prevention, diagnosis and treatment of diseases in the outpatient clinic.

The objectives of the discipline:

- to introduce the concepts of health and healthy lifestyle promotion as well as the physical activity, taking into account individual health status;
- to introduce hygienic education and disease prevention among adult population and teenagers
- to learn the principles of follow-up in adult population and adolescents taking into account age, gender and the initial state of health
- to learn the methods of medical statistical analysis of information on the health indicators of the population;
- to master the skills of diagnosis of diseases, pathological and emergency conditions
- to develop the ability to provide the first aid in emergency situations;
- to teach students the principles of work with the medications as well as the rules of their storage;
- to introduce rehabilitation activities in patients with physical illness, trauma or surgical intervention;
- to learn how to determine temporary and permanent disability.

### **Anesthesiology, emergency medicine (3 credit units)**

The discipline is aimed to develop the competencies in technologies, means and methods of providing first aid and medical assistance to adults and adolescents in urgent and life-threatening conditions. Modern technologies in anesthesia and resuscitation service are being introduced.

### **Psychiatry (3 credit units)**

Students learn the methods of recognition, treatment and prevention of mental illnesses and disorders, as well as the principles of socialization and rehabilitation of mentally ill patients and persons with alcohol and drug addiction. The students acquire the knowledge on classification of

mental disorders, legal procedure of psychiatric examination, involuntary hospitalization and organization of psychiatric services; basic psychotropic medications, the principles of their administration, contraindications and possible side effects; diagnostic methods used in psychiatry; the main symptoms and syndromes of mental disorders; etiology and pathogenesis, prevalence, major manifestations, course, therapy, prognosis of major mental illnesses, the possibility of social adaptation and rehabilitation in these diseases; medical manipulations, environmental and social factors that may cause a person to develop mental disorders and the principles of prevention of mental illness. The students develop the skills of interviewing a mentally ill person; identification of acute mental disorders; providing emergency psychiatric care and to hold conversations with patients and their relatives, taking into account their personal characteristics.

### **Endocrinology (3 credit units)**

Students learn how to diagnose the most common endocrine disorders. Students acquire the knowledge on the main clinical symptoms and syndromes of endocrine diseases and the modern methods of treatment.

### **Advanced surgery (7 credit units)**

The aim of mastering the discipline is assimilation of theoretical knowledge and practical skills in provision of urgent care to the patients of surgical profile. It assumes introduction to clinical manifestations and syndromes, diagnostic methods and capabilities in surgical patients and learning the types of conservative and surgical treatment.

### **Epidemiology (3 credit units)**

The students master theoretical and practical skills on prevention of infectious, parasitic and non-infectious diseases in therapeutic institutions, among different populations at individual, group and population levels, as well as in emergencies. The objectives of the discipline are to develop the ability to apply descriptive, analytical and experimental epidemiological studies to identify risk factors of infectious and non-infectious diseases and to assess the effectiveness of preventive measures and treatment in the framework of randomized clinical trials; to introduce the principles of infectious, hospital, occupational disease prevention among different contingents of the population; to introduce normative and legal acts regulating preventive and anti-epidemic measures and sanitary regime in institutions of therapeutic profile.

### **Clinical pharmacology (3 credit units)**

The aim of the discipline is to teach students how to select effective, safe, affordable medicines and their dosage to conduct modern individualized pharmacotherapy applying the knowledge of pharmacokinetics, dynamics, genetics, economics, epidemiology, drug interaction and adverse reactions. The students learn clinical and pharmacological characteristics of the main groups of

drugs, modern methods of medical treatment and rational choice of specific medication from perspective of evidence-based medicine.

### **Phthisiology (5 credit units)**

The students acquire the knowledge on phthisiology, the principles of diagnostics, treatment and prevention of tuberculosis.

### **Dentistry (2 credit units)**

Students master the knowledge on etiology, pathogenesis and clinical features of dental diseases and the principles of their treatment and prevention. The students are trained to apply common diagnostic methods, to identify association of dental diseases with environmental factors, occupational hazards and harmful habits. The students master the basic practical skills required for dental patient examination. Therapeutic and preventive measures applied for the patients with diseases of the maxillofacial region including acute dental conditions are being introduced.

### **Traumatology and orthopedics (6 credit units)**

The aim of the discipline is to introduce scientific and practical approach to the treatment of patients with musculoskeletal disorders based on the modern knowledge of etiology and pathogenesis of orthopedic diseases and injuries as well as the principles of tissue regeneration. Surgical techniques, the basics of organization and diagnosis of emergency conditions both in civilian and military time are being learnt. The trainees are provided with the opportunity to learn the trauma in peaceful and wartime, its pathogenesis and clinical manifestations.

### **Tropical medicine**

Health problems that occur uniquely, are more widespread, or prove more difficult to control in tropical and subtropical regions are being introduced to the students. Students learn to apply theoretical knowledge of etiology, pathogenesis, diagnostics and treatment for the patients with endemic diseases.

### **Forensic medicine (3 credit units)**

Students are acquainted with theoretical and practical issues of forensic medicine in the amount required for a specialist taking initial investigative actions. The objectives of the discipline are: the introduction of morphological features of the course of pathological process in different types of external disturbance and in extreme conditions; introduction to the legal regulation and organization of forensic medical examination; learning the responsibility of a doctor in case of causing harm to patient health in the process of rendering medical assistance as well as for committing professional offenses.

### **Oncology and radiology (3 credit units)**

The aim of mastering the discipline is to provide students with a holistic view of oncology. The students undergo practical training on prevention and early diagnosis of malignant diseases;

learn indications and contraindications to modern cancer therapy and the principles of organization of oncologic service. Students expand their knowledge by studying special literature and lecture materials at seminars. Practical skills are acquired by examining patients, participating in dressings, operations, and diagnostic procedures: endoscopy, fluoroscopy, etc., doing rounds, preparing abstracts and working under the guidance of the doctors.

#### **Clinical immunology and allergology (2 credit units)**

The aim of mastering the discipline is to form an ability and readiness to analyze the patterns of functioning of the immune system, to conduct basic methods of clinical and immunological examination, to formulate preliminary immunological diagnosis with subsequent referral to the allergist or immunologist; to provide medical treatment in emergency and life-threatening conditions in immune disorders.

The objectives of the discipline are:

- providing the knowledge on the structure and functional significance of the immune system;
- developing skills required to perform and read immunological studies;
- educating the students on pathogenesis and the principles of diagnosis of immune system disorders;
- learning the indications for immune therapy.

#### **Extragenital diseases in pregnancy (2 credit units)**

Perfection of professional knowledge essential for professional management of pregnant patients with extragenital pathology is being considered.

The objectives of the discipline are:

- Perfection the knowledge on interpretation of the modern methods of examination in extragenital pathology during pregnancy.
- Development of professional competencies in organization and provision of medical care for pregnant women with therapeutic problems.
- Mastering professional competence in management of pregnant women from perspective of a therapist.

#### **Clinical hemostasiology and transfusiology (3 credit units)**

In-depth study of the organization of blood, donation and transfusion service in hospitals is being considered. Blood transfusion station functions and the current problems of modern clinical transfusiology are being introduced. Students are acquainted with the modern methods of clinical, laboratory and instrumental diagnostics in hematological patients.

### Interdisciplinary approach to diabetes mellitus (2 credit units)

The aim of the discipline is teaching students the methods of diagnosis of diabetes mellitus. Students acquire the knowledge of the main clinical symptoms and syndromes in diabetes mellitus.

### Clinical ECG (3 credit units)

The students are being introduced to the subject of functional diagnostics in cardiology, the basic diagnostic techniques and their interpretation.

Students learn:

- Physiological basis of electrocardiography
- The main directions and principles of functional diagnostics in cardiology
- electrocardiographic symptoms and syndromes in various diseases;
- The mechanisms of rhythm and conduction disturbances;
- technique of recording electrocardiography;
- the procedure of reading electrocardiograms

The students acquire the skills:

- designate research method required in a particular case
- interpret the results of the study
- apply electrodes to the patient and record an electrocardiogram;
- read an electrocardiogram;
- distinguish between electrophysiological syndromes and symptoms in various diseases;
- assess the severity of electrocardiographic symptoms and syndromes in patients with various diseases.

### Comorbidities in primary care (2 credit unit)

Enhancing the knowledge on public health and organization of health care and learning the most common diseases in practice of the primary care physician are being considered.

The objectives of the discipline are:

- To develop the skills of obstetric, gynecological and neurological examination revealing pathological symptoms, association of symptoms and formulating the diagnosis;
- To build the knowledge on pathogenesis, clinical manifestations, diagnosis, treatment and prevention of the most significant neurologic, obstetric and gynecological disorders in the practice of primary care physician;





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- To build the knowledge on the basic diagnostic methods in neurology, obstetrics and gynecology, and the interpretation of the results.
- Teaching students to provide aid in pathological conditions.
- To build the knowledge on organization of preventive care.