

Ministry of Science and Higher Education of the Russian Federation
Federal State Autonomous Institution of Higher Education
“National Research Nuclear University “MEPhI”

INSTITUTE OF ENGINEERING PHYSICS FOR BIOMEDICINE

DEPARTMENT OF FUNDAMENTAL MEDICINE

APPROVED ИТС ИФИБ

Protocol No. 3.1

dated 30.08.2024

ACADEMIC COURSE OUTLINE

ОБЩАЯ ХИРУРГИЯ / GENERAL SURGERY

Educational program track (speciality) [1] 31.05.01 General Medicine

Semester	Labour input, credits	Total course academic, hours	Lectures, hrs.	Practical sessions, hrs.	Laboratory sessions, hrs.	In the form of practical studies, hrs.	Independent studies, hrs.	Independent studies monitoring, hrs.	Course progress, Exam/Pass-fail exam/Term
5	3	108	15	38	0		55	0	PFE
6	4	144	15	30	0		45	0	Ex
Total	7	252	30	68	0	68	100	0	

ABSTRACT

In the system of higher medical education, General Surgery, alongside propaedeutics of internal diseases, is one of the first integrative subjects that requires basic knowledge of theoretical disciplines. At the same time, general surgery as an academic discipline holds strictly clinical significance, since issues of asepsis and antisepsis, bleeding, transfusiology, and surgical infections are encountered in the daily practice of a general practitioner. The material of the general surgery curriculum is distributed in such a way that students study this subject to the extent necessary for a physician of any medical specialty. The pedagogical goal of teaching general surgery is to develop the student's skills in the clinical application of knowledge.

1. ACADEMIC COURSE GOALS AND OBJECTIVES

GOAL – to master the fundamentals of the clinical examination of surgical patients, to become familiar with the principles of surgical treatment methods and the semiotics of major surgical diseases; to develop the skills for diagnosing a surgical disease (including emergency conditions) in its typical presentation, with justification for treatment and preventive measures.

OBJECTIVES:

- To develop systematic knowledge of the general principles of diagnosis, clinical manifestations, etiology, pathogenesis of symptoms and syndromes in surgical diseases, the principles of surgical treatment methods, and the rules and methods of asepsis and antisepsis.
- To build knowledge, skills, and abilities in the clinical symptomatology of the most common surgical diseases and injuries.
- To form an understanding of modern principles for providing emergency surgical care in urgent surgical diseases and conditions.
- To develop the skills and competencies necessary for establishing and justifying a clinical diagnosis and interpreting the results of additional tests.
- To develop the ability to determine the scope of surgical treatment and its justification.
- To develop the skills to present the results of a patient's examination in the form of entries in medical records.
- To foster interdisciplinary thinking in students, leading to the formation of the necessary range of practical skills for independent work in their professional activities.
- To form an understanding of the basic principles of medical ethics and deontology, as well as preventive measures in surgery.

2. PLACE OF THE ACADEMIC COURSE IN THE MAIN HIGHER EDUCATION CURRICULUM

It is a mandatory discipline. Successful mastery of the course requires the knowledge, skills, and abilities formed by preceding disciplines and practical trainings: psychology and pedagogy, philosophy, Latin language, anatomy, medical and biological physics, biochemistry, histology, embryology, cytology, topographic anatomy, normal physiology, medical microbiology and virology, introductory practice (care for therapeutic patients), and nursing practice.

To form a holistic understanding of disease symptomatology, the pathogenesis of symptoms, general diagnostic methodology, and the development of clinical thinking, it is advisable to study

General Surgery concurrently with Propaedeutics of Internal Diseases, as well as with disciplines such as pathological anatomy, pathophysiology, pharmacology, and radiological diagnostics.

The knowledge, skills, abilities, and practical experience acquired in mastering this discipline are essential for the successful study of all subsequent clinical disciplines included in the curriculum (Internal Diseases, Surgical Diseases, Faculty Therapy, Occupational Diseases; Hospital Therapy, Hospital Surgery, Obstetrics and Gynecology, Endocrinology; Outpatient Therapy, Infectious Diseases, Neurology, Gynecology, Urology, Pediatric Diseases, Oncology, etc.), and for the successful completion of the diagnostic-focused industrial practice after the 6th semester.

3. DEVELOPED COMPETENCIES AND INTENDED LEARNING OUTCOMES

Universal and/or general professional competencies:

Competency code and title	Code and title of competency-based rubrics
OPIK-4 [1] – Capable of using medical devices stipulated by the medical care procedures, as well as conducting patient examination for diagnosis establishment.	3-OPIK-4 [1] – Know: - modern diagnostic instrumental examination methods for patients, including functional, radiological, ultrasound, radionuclide diagnostics, and endoscopy; - diagnostic capabilities of instrumental examination methods; - medical devices stipulated by the procedure for providing medical care to the adult population in the "Therapy" specialty, and the equipment standard for a therapeutic room; - main medical devices stipulated by the procedures for providing medical care to the adult population in major surgical specialties, obstetrics, and gynecology; - indications for referring patients for instrumental examinations and functional diagnostics; - techniques for physical examination of patients using medical devices stipulated by procedures and considering medical care standards Y-OPIK-4 [1] – Be able to: - use medical devices stipulated by the medical care procedure; - determine the required volume and content of instrumental and functional diagnostics to establish a diagnosis; - interpret results of the most common functional and instrumental diagnostic methods B-OPIK-4 [1] – Possess skills in: - using basic medical devices (stethoscope, blood pressure monitor, sphygmomanometer, pulse oximeter, height-weight scale, measuring tape, neurological hammer, scalpel, forceps, and other devices); - operating electrocardiographs and devices for measuring external respiratory function; - interpreting results of the most common functional and instrumental diagnostic methods
OPIK-5 [1] – Capable of assessing morphofunctional and physiological states, as well as pathological processes in the human body to solve professional tasks.	3-OPIK-5 [1] – Know: - basic medical, pharmaceutical, and morphofunctional terminology, including Latin terms; - structure and functions of the human body, age-related, gender-specific, and individual characteristics of the structure and development of a healthy organism; - physical and chemical nature of processes occurring in a living organism; - patterns of vital activity of the organism, mechanisms of self-regulation and regulation; - features of regulation of the functioning of

	human body systems in pathological conditions; - patterns of occurrence, development, and outcome of typical pathological processes, the concept of sanogenesis; - etiology and pathogenesis of the most common diseases; - the concept of nosology, principles of disease classification; - principles of microorganism classification, their morphology, physiology, and impact on human health; - structure and functions of the human immune system. Y-OPIK-5 [1] – Be able to: - analyze mechanisms of disease development and manifestation; - recognize morphological and functional changes in cells, tissues, organs, and systems of the human body; - use basic physical-chemical and other natural science concepts and methods in solving professional tasks; - determine the cause of death and formulate a pathological diagnosis. B-OPIK-5 [1] – Possess skills in: - conducting microscopy and analyzing microscopic specimens; - correlating morphological and clinical manifestations of diseases; - assessing morphofunctional, physiological states, and pathological processes in humans; - clinical-anatomical analysis of autopsy results.
OPIK-6 [1] – Capable of organizing general nursing, providing primary medical care, ensuring the organization of work and making professional decisions in emergencies at the pre-hospital stage, in emergency situations, epidemics and in areas of mass destruction	3-OPIK-6 [1] – Know: - a set of measures for general nursing with diseases of various organs and systems; Signs of clinical and biological death; - indications for patient hospitalization for the most common diseases with typical progression. Y-OPIK-6 [1] – Be able to: - organize care for patient when providing medical care in an outpatient setting; - determine the need for patient hospitalization; - ensure the organization of work in emergency situations, epidemics, and in mass casualty zones. B-OPIK-6 [1] – Possess skills in: - general care of a patient (general nursing); - providing first aid; - making medical decisions in emergencies at the prehospital stage, including in emergency situations, epidemics, and in mass casualty zones.

Professional competencies in compliance with the goals and professional knowledge areas:

Professional activity goal	Professional activity knowledge area	Professional competency code and title; Based on the professional standard, experience analysis	Code and title of competency-based rubrics
medical			
Providing medical care to patients in urgent and emergency forms.	Individuals (patients); the population; the set of means and technologies aimed at creating conditions for preserving and	IIK-3.1 [1] - Able to provide medical care to patients in urgent or emergency forms <i>The base:</i>	3-IIK-3.1[1] - Know: - clinical signs of sudden cessation of breathing, circulation, loss of consciousness, life-threatening mental

	strengthening the health of the adult population	Professional standard: 02.009	disorders for the patient or others; - indications for external defibrillation; - principles of external electro-impulse therapy (defibrillation) devices and rules for performing external defibrillation; - rules for performing basic cardiopulmonary resuscitation.; Y-IIK-3.1[1] - Be able to: - recognize conditions (sudden acute illnesses, exacerbations of chronic diseases) requiring medical care in urgent or emergency forms; - identify clinical signs of sudden cessation of breathing, circulation, loss of consciousness, life-threatening mental disorders for the patient or others; - organize and perform basic cardiopulmonary resuscitation and external defibrillation measures.; B-IIK-3.1[1] - Possess skills in: - assessing the patient's condition requiring medical care in urgent and emergency forms; - performing basic cardiopulmonary resuscitation; - using medications and medical devices for providing medical care in emergency or urgent forms.
Diagnostics of diseases and pathological conditions of the patients.	Individuals (patients); the population; the set of means and technologies aimed at creating conditions for preserving and strengthening the health of the adult population	IIK-3.2 [1] - Capable of conducting patient examinations to establish a diagnosis <i>The base:</i> Professional standard: 02.009	3-IIK-3.2[1] - Know: - clinical diagnosis establishment algorithm; - patient history-taking and physical examination methodology; - laboratory and instrumental research methods for health assessment to establish a diagnosis; - semiotics of diseases of different organs

			and systems; - structure, principles of the current International Statistical Classification of Diseases and Related Health Problems (hereinafter - ICD).; Y-IIK-3.2[1] - Be able to: - conduct patient history-taking and physical examination; - interpret history, physical examination data, laboratory and instrumental results to recognize a condition or establish the presence/absence of a disease, establish a diagnosis; - distinguish and recognize in each specific case tissue damage, the reaction to it, and the form of adaptability; - develop a patient examination plan, justify the necessity and scope of laboratory and instrumental examination; - identify main pathological conditions, symptoms and syndromes, nosological forms in the patient according to the current ICD.; B-IIK-3.2[1] - Possess skills in: - patient history-taking and physical examination; Formulating a preliminary diagnosis; - developing a patient examination plan; Interpreting laboratory and instrumental results; - establishing a diagnosis considering the current ICD
Providing primary medical care in outpatient settings and day hospital settings.	Individuals (patients); the population; the set of means and technologies aimed at creating conditions for preserving and strengthening the	IIK-3.3 [1] - Able to provide primary medical care in an outpatient setting <i>The base:</i> Professional standard:	3-IIK-3.3[1] - Know: - general issues of organizing medical care for the population and organizing medical care for the adult population in outpatient settings,

	health of the adult population	02.009	including at home; - features of medical care using telemedicine technologies; - Clinical picture, differential diagnosis, features of the course of the disease, complications and outcomes of internal diseases; - diagnostic criteria for the most common diseases of internal organs and systems; - indications for referring patients for specialist consultations according to clinical guidelines and considering relevant medical care standards; - indications for referring patients for specialized medical care in inpatient settings and day hospitals according to clinical guidelines and considering relevant medical care standards; - features of managing and treating elderly patients in outpatient settings. ; Y-IIK-3.3[1] - Be able to: - perform differential diagnosis of internal diseases; - monitor the course of physiological pregnancy; - justify the need for referring patients to specialist consultations; - recognize the main and concomitant diseases; - assess disease or condition severity - the degree of organ and/or system damage or functional impairment due to the disease/condition or its complications; - determine management, examination and treatment tactics for patients with specific diseases (nosological units) depending on disease
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			severity and condition, according to clinical guidelines and considering relevant medical care standards.; B-IIK-3.3[1] - Possess skills in: - conducting differential diagnosis with other diseases/conditions, including emergencies; - interpreting data obtained from patient consultations with specialists; - prescribing additional tests to clarify the diagnosis; - formulating a clinical diagnosis; - prescribing treatment according to clinical guidelines and considering relevant medical care standards.
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4. PEDAGOGIC POTENTIAL OF THE COURSE

Pedagogic tracks/objectives	Pedagogic goals (code)
Vocational and labor education	Establishing conditions for: formation of a deep understanding of the profession's social role, a positive and active commitment to the values of the chosen specialty, and a responsible attitude towards professional activity and work (B14)
Vocational and labor education	Establishing conditions for: formation of psychological readiness for professional activity in the chosen profession (B15)
Professional education	Establishing conditions for: formation of responsibility for professional choice, professional development and professional decisions (B18)
Professional education	Establishing conditions for: formation of the ability and commitment to adhere to professional norms that ensure the ethical character of both work activities and personal conduct outside of work (B21)
Professional education	Establishing conditions for: formation of motivation to improve the quality of medical care to the population and the desire to follow the rules and norms of interaction between the doctor, colleagues and the patient, contributing to the creation of the most favorable environment for the patient's recovery (B34)

5. ACADEMIC COURSE STRUCTURE AND CONTENT

Academic course sections, their scope, terms of study and assessment:

No.	Academic course section name	Weeks	Lectures/ Practical (seminars)/ Laboratory sessions, hrs.	Compulsory current assessment (form*, week)	Maximum grade per section**	Section assessment (form*, week)	Competency-based rubrics
	5 Semester						
1	Introduction to the Subject	1-1	1/3/0	T-2 (5)	5	T-2	3-ОПК-4, У-ОПК-4, В-ОПК-4, 3-ОПК-5, У-ОПК-5, В-ОПК-5, 3-ОПК-6, У-ОПК-6, В-ОПК-6, 3-ПК-3.1, У-ПК-3.1, В-ПК-3.1, 3-ПК-3.2, У-ПК-3.2, В-ПК-3.2, 3-ПК-3.3, У-ПК-3.3, В-ПК-3.3
2	Common questions in Surgery	2-6	4/14/0	T-7 (15)	15	T-7	3-ОПК-4, У-ОПК-4, В-ОПК-4, 3-ОПК-5, У-ОПК-5, В-ОПК-5, 3-ОПК-6, У-ОПК-6, В-ОПК-6, 3-ПК-3.1, У-ПК-3.1, В-ПК-3.1, 3-ПК-3.2, У-ПК-3.2, В-ПК-3.2, 3-ПК-3.3, У-ПК-3.3, В-ПК-3.3
3	Anesthesiology and Resuscitation	7-9	4/8/0	T-1 (15)	15	T-10	3-ОПК-4, У-ОПК-4, В-ОПК-4, 3-ОПК-5, У-ОПК-5, В-ОПК-5,

							3-ОПК-6, У-ОПК-6, В-ОПК-6, 3-ПК-3.1, У-ПК-3.1, В-ПК-3.1, 3-ПК-3.2, У-ПК-3.2, В-ПК-3.2, 3-ПК-3.3, У-ПК-3.3, В-ПК-3.3
4	Basics of Injury Surgery	10-15	6/13/0	T-15 (15)	15	T-15	3-ОПК-4, У-ОПК-4, В-ОПК-4, 3-ОПК-5, У-ОПК-5, В-ОПК-5, 3-ОПК-6, У-ОПК-6, В-ОПК-6, 3-ПК-3.1, У-ПК-3.1, В-ПК-3.1, 3-ПК-3.2, У-ПК-3.2, В-ПК-3.2, 3-ПК-3.3, У-ПК-3.3, В-ПК-3.3
	<i>Totals for 5 Semester</i>		15/38/0		50		
	Assessment events for 5 Semester				50	PFE	3-ОПК-4, У-ОПК-4, В-ОПК-4, 3-ОПК-5, У-ОПК-5, В-ОПК-5, 3-ОПК-6, У-ОПК-6, В-ОПК-6, 3-ПК-3.1, У-ПК-3.1, В-ПК-3.1, 3-ПК-3.2, У-ПК-3.2, В-ПК-3.2, 3-ПК-3.3, У-ПК-3.3, В-ПК-3.3
	<i>6 Semester</i>						
1	Basics of Hemotransfusiology	1-3	2/6/0	T-4 (15)	15	T-4	3-ОПК-4, У-ОПК-4,

							В-ОПК-4, З-ОПК-5, У-ОПК-5, В-ОПК-5, З-ОПК-6, У-ОПК-6, В-ОПК-6, З-ПК-3.1, У-ПК-3.1, В-ПК-3.1, З-ПК-3.2, У-ПК-3.2, В-ПК-3.2, З-ПК-3.3, У-ПК-3.3, В-ПК-3.3
2	Basics of Purulent- Septic Surgery	4-11	6/16/0	T-12 (15)	15	T-12	З-ОПК-4, У-ОПК-4, В-ОПК-4, З-ОПК-5, У-ОПК-5, В-ОПК-5, З-ОПК-6, У-ОПК-6, В-ОПК-6, З-ПК-3.1, У-ПК-3.1, В-ПК-3.1, З-ПК-3.2, У-ПК-3.2, В-ПК-3.2, З-ПК-3.3, У-ПК-3.3, В-ПК-3.3
3	Private Surgery	12- 15	7/0/0	T-14 (15)	15	T-14	З-ОПК-4, У-ОПК-4, В-ОПК-4, З-ОПК-5, У-ОПК-5, В-ОПК-5, З-ОПК-6, У-ОПК-6, В-ОПК-6, З-ПК-3.1, У-ПК-3.1, В-ПК-3.1, З-ПК-3.2, У-ПК-3.2, В-ПК-3.2, З-ПК-3.3, У-ПК-3.3, В-ПК-3.3

4	Stages of Treatment for Surgical Patients	12-15	0/8/0	T-15 (5)	5	T-15	3-ОПК-4, У-ОПК-4, В-ОПК-4, 3-ОПК-5, У-ОПК-5, В-ОПК-5, 3-ОПК-6, У-ОПК-6, В-ОПК-6, 3-ПК-3.1, У-ПК-3.1, В-ПК-3.1, 3-ПК-3.2, У-ПК-3.2, В-ПК-3.2, 3-ПК-3.3, У-ПК-3.3, В-ПК-3.3
	<i>Totals for 6 Semester</i>		15/30/0		50		
	Assessment events for 6 Semester				50	Ex	3-ОПК-4, У-ОПК-4, В-ОПК-4, 3-ОПК-5, У-ОПК-5, В-ОПК-5, 3-ОПК-6, У-ОПК-6, В-ОПК-6, 3-ПК-3.1, У-ПК-3.1, В-ПК-3.1, 3-ПК-3.2, У-ПК-3.2, В-ПК-3.2, 3-ПК-3.3, У-ПК-3.3, В-ПК-3.3

* – abbreviated name of assessment

** – 100 maximum points per semester including a pass/fail exam and (or) an exam

Abbreviated current assessment forms and section assessment

Abbreviation	Full name
T	Testing
PFE	Pass/fail examination
Ex	Exam

SYLLABUS

Weeks	Topics / Content	Lect.,	Pr./sem.,	Lab.,
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		hrs.	hrs.	hrs.
	5 Semester	15	38	0
1-1	Introduction to the Subject	1	3	0
1	Topic 1.1. The Concept of Surgery, a Brief History of Surgery, the Current State of Surgery. Surgery as a Branch of Medicine Surgery is a branch of medicine in which the primary therapeutic approach is operative intervention. It deals with main types of surgical pathology: injuries, acquired and congenital diseases. The field is characterized by a great diversity and ongoing differentiation of surgical specialties. A Brief History of Surgery Surgery in the Ancient World and Middle Ages was primarily focused on treating injuries and "external" diseases. A fundamentally new stage in the development of surgery began with the discoveries of surgical anesthesia, antisepsis, and asepsis. The establishment of scientific surgery was based on fundamental discoveries in the natural sciences. The history of Russian surgery, its place, and its interconnections with leading surgical schools worldwide. An overview of the main surgical schools within the university. The Current State of Surgery Modern surgery is a dynamically developing, scientifically-grounded field of medicine. Overview of modern medical specialties of a surgical profile. The role and place of surgery in modern medicine. Surgical literature. The globalization of information exchange in modern surgery: national and international societies of surgeons, congresses, conferences, and symposia. The use of surgical methods in other medical specialties. Integrative trends in modern medicine. Surgery and therapy as fields of medicine based on common theoretical foundations of natural science. The system of surgical education.	All		
		1	1	0
		Online		
		0	0	0
1	Topic 1.2. Organizational and Legal Foundations of Surgical Practice. Ethics and Deontology in Surgery. Organizational and Legal Foundations of Surgical Practice Organization of elective and emergency surgical care Surgical departments in polyclinics (outpatient centers). General surgical inpatient hospitals. Specialized surgical inpatient hospitals. Surgical research institutions. Rehabilitation system for surgical patients. Legal foundations of surgical practice. Surgical documentation: outpatient medical records and inpatient hospital charts. Ethics and Deontology in Surgery The concept of deontology. Deontology as a necessary and obligatory component of surgical practice.	All		
		0	2	0
		Online		
		0	0	0

	The moral character and general culture of the physician. Medical ethics, clinical reasoning, and new medical technologies. Medical errors in surgery. Iatrogenic pathology in surgery			
2-6	Common questions in Surgery	4	14	0
2	Topic 2.1 Clinical Hygiene of Medical Personnel and the Surgical Patient Clinical Hygiene of Medical Personnel Hand Hygiene: Rules for hand treatment and general bodily hygiene. Attire: Requirements for medical attire and the rules for wearing it. Bacterial Carriage: Identification and sanitization of bacterial carriage among medical staff. Health Monitoring: Mandatory laboratory tests and vaccinations for personnel. Safety Protocols: Rules for working with biological materials. Clinical Hygiene of the Surgical Patient Patient Hygiene: Maintaining bodily hygiene for surgical patients on general and bed rest at various stages of inpatient treatment. Linen: Changing of personal and bed linens. Personal Belongings: Control and sanitary processing of patient's personal items. Visitation: Organization, procedures, and hygienic control of patient visits. Pre-operative Care: Preparation of the patient for surgery. Complication Prevention & Specific Care: Prevention of complications and care for the skin, eyes, ears, nasal and oral cavities. Post-operative Care: General specifics of caring for operated patients. Activity Regimens: Types of prescribed activity regimes (e.g., bed rest, ambulatory). Feeding the Surgical Patient Meal Organization: Organization, procedures, and sanitary provision of meals for surgical patients on general and bed rest. Food Control: Monitoring of food brought by visitors and personal patient foodstuffs. Feeding Critically Ill Patients: Specific methods and considerations for feeding severely ill patients.	All		
		0	3	0
		Online		
		0	0	0
3	Topic 2.2 Structure of a Surgical Hospital. The Concept of a Protective Treatment Regime Structure of a Surgical Hospital. The Concept of a Protective Treatment Regime. Layout, planning, and functioning of departments. The significance of these factors in the rational organization of work and the prevention of hospital-acquired infections. Admission and Diagnostic Department Structure, equipment, functions, and principles of work	All		
		2	3	0
		Online		
		0	0	0

	organization. Sanitary processing of premises, furniture, medical equipment, and instruments. Admission, examination, registration, and sanitary processing of the patient (including change of linen and clothing). Preparation for emergency surgery. Transportation from the admission department to the surgical ward and operating room. Surgical Ward Subdivisions, equipment, and work organization. Sanitary processing of surgical ward premises: types, sequence, and techniques for cleaning individual rooms using disinfectants. Sanitary processing of furniture and equipment. Ventilation, air purification, ultraviolet irradiation, and other air treatment methods. Hygienic control of the surgical ward's environment. Specifics of the sanitary-hygienic regime in a purulent surgery department. Organization and implementation of general care for patients after elective surgeries. Adherence to the protective treatment and mobility regimes. Organization of bodily care for the patient: hygiene of excretions, care of the surgical site, drains, tubes, catheters, infusion systems, etc. Care for Patients After Emergency Surgeries Organization and specifics of providing general care for patients after emergency surgeries. Dependency of specific care measures on the nature of the pathology, presence of complications, age, comorbidities, etc. Operating Suite Structure, equipment, and principles of work organization. The aseptic system in the operating suite and measures for its maintenance. Sanitary-hygienic regime in the operating suite. Cleaning of the operating room: its types, methods, and specific procedures. Maintenance of instruments and apparatus in the operating room. Transportation of the patient to the operating room from the surgical ward and back. Intensive Care and Resuscitation Unit Structure, equipment, and general principles of work organization. Sanitary processing of premises, medical equipment, and environmental objects. Specifics of clinical hygiene for personnel. Clinical hygiene and care for patients on artificial lung ventilation, in unconscious and agonal states			
4 - 6	Topic 2.3. Asepsis. Antisepsis. Surgical Infection: Types, Prevalence, and Transmission Types and prevalence of surgical infection.	All		
		2	8	0
		Online		

	Sources and routes of spread of surgical infection. Endogenous and exogenous routes of microbial contamination: contact (direct and indirect), airborne, and implantation. Hospital-acquired (nosocomial) infection in a surgical setting. The Concept of Asepsis Organizational forms of ensuring asepsis. Layout and operational principles of a surgical hospital. Combating microflora via airborne contamination routes. Prevention of contact and implantation microbial contamination. The Concept of Antisepsis. Types of Antisepsis. 3.1. Mechanical Antisepsis The concept of primary and secondary surgical wound treatment: principles and stages of performance. 3.2. Physical Antisepsis Drying, tamponade, drainage of wounds and cavities. Vacuum therapy (e.g., VAC), vacuum aspiration. Pulsed lavage (irrigation with a pulsating stream of fluid). Aspiration-irrigation method. Ultraviolet (UV) irradiation, laser therapy, ultrasonic cavitation. Hyperbaric oxygen therapy, ozone therapy. 3.3. Chemical Antisepsis Methods of using various chemical substances. Different types of local and systemic application of antiseptics. Main groups of antiseptic agents. Fundamentals of rational chemotherapy (antibiotic therapy). 3.4. Biological Antisepsis Types and agents of biological antisepsis. Indications for antibacterial therapy. Selection of an antibacterial drug, its dosage, and method of administration. Evaluation of the effectiveness of antibacterial therapy and changing the regimen during treatment. Duration of antibacterial therapy. Methods of influencing the body's immune forces: passive and active immunization in surgery. Immunocorrection and immunostimulation. 3.5. Mixed Antisepsis Principles of rational combination of different types of antisepsis	0	0	0
7-9	Anesthesiology and Resuscitation	4	8	0
7	Topic 3.1 Classification of Local Anesthetics. Types of Local Anesthesia (Infiltration, Conduction, Terminal, Epidural) Types of Local Anesthesia: Pharmaco-chemical (terminal, infiltration, conduction) and physical. Drugs for Local Anesthesia: Their mechanism of action and main characteristics. Techniques for Specific Types of Local Anesthesia: Indications, contraindications, procedures, potential complications, and their prevention. Novocaine Blockades: Indications for use, types, and	All		
		2	3	0
		Online		
		0	0	0

	techniques.			
8	Topic 3.2 General Anesthesia (Inhalational, Non-Inhalational) Mechanisms and causes of pain. Characteristics of pain. Narcotic analgesia. Indications, contraindications, documentation. Means and principles of pharmacological treatment of pain syndrome. General anesthesia. Assessment of anesthetic risk. Preparation of patients for anesthesia, premedication and its administration. Components of general anesthesia. Technique and clinical picture of modern general anesthesia, stages of anesthesia. Standardized monitoring with assessment of oxygenation, ventilation, circulation, and temperature. Complications of anesthesia and the immediate post-anesthetic period, their prevention and treatment. Types of anesthesia. Equipment and methods of inhalational anesthesia. Modern inhalational anesthetic agents, muscle relaxants. Their combined use to achieve an optimal synergistic effect. Technique of inhalational anesthesia	All		
		0	3	0
		Online		
		0	0	0
9	Topic 3.3 Complications of Local and General Anesthesia Types of complications of local and general anesthesia. Causes. Pathogenesis. Classification. Symptoms. Diagnosis. Treatment of complications of local anesthesia. Prognosis and prevention.	All		
		0	1	0
		Online		
		0	0	0
9	Topic 3.4 Resuscitation Clinical assessment of the general condition of patients. Objective methods for assessing the severity of the condition of patients and casualties. Types of life-threatening disorders in surgical patients: acute respiratory failure, acute heart failure, acute renal and hepatic failure. Multiple organ dysfunction syndrome. Types, symptomatology, and diagnosis of terminal states: pre-agonia, agonia, clinical death. Signs of biological death. First aid for respiratory and circulatory arrest. Criteria for the effectiveness of resuscitation. System control monitoring. Indications for discontinuing cardiopulmonary resuscitation. Shock – types, pathogenesis, clinical picture, diagnosis, phases and stages of shock. First medical aid. Comprehensive therapy. Criteria for successful treatment	All		
		2	1	0
		Online		
		0	0	0
10-15	Basics of Injury Surgery	6	13	0
10	Topic 4.1. General Issues of Injury Surgery Types of traumatism and classification of injuries. The concept of isolated, multiple, combined and complex injuries. Medical and social prevention of traumatism. Complications and dangers of injuries. General principles of diagnosing traumatic injuries. Assessment of the function of the central nervous system, respiration and circulation in severe injuries. Scale determining the severity of injury. General principles of organizing pre-hospital and inpatient trauma care	All		
		0	2	0
		Online		
		0	0	0
11	Topic 4.2. Wounds Classification of wounds. Pathogenesis and phases of the wound process. Clinical features of various types of wounds. Types of wound healing. First medical aid for wounds. Primary	All		
		2	2	0
		Online		
		0	0	0

	surgical treatment of wounds, its types. Secondary surgical treatment. Wound closure. Infectious complications of wounds. General and local signs of wound suppuration. Treatment of a purulent wound depending on the phase of the wound process. Modern principles of surgical treatment of purulent wounds. Radical surgical treatment of a purulent wound. Additional physical methods of wound treatment. Flow-irrigation system. Enzyme therapy, antibacterial therapy. Features of treatment in the reparative regeneration phase. Physiotherapeutic treatment. Ultrasonic, laboratory and other methods for monitoring the course of the wound process. Prevention of postoperative wound suppuration			
12	Topic 4.3. Head Injuries Classification. Assessment of the severity of the victim's condition. Main dangers of head injuries. First medical aid and specific features of transportation.	All		
		0	1	0
		Online		
		0	0	0
12	Topic 4.4. Abdominal Injuries Classification. Clinical, laboratory, and instrumental diagnosis of injuries to the organs of the abdominal cavity and retroperitoneal space. Foreign bodies of the gastrointestinal tract. First aid objectives. Principles of treatment.	All		
		0	1	0
		Online		
		0	0	0
12	Topic 4.5 Chest Injuries Classification. The concept of pneumothorax, its types. Clinical picture and diagnosis of pneumothorax, features of first medical aid, principles of treatment. Hemothorax: clinical manifestations, first aid. Features of transporting patients with chest injuries.	All		
		0	1	0
		Online		
		0	0	0
13	Topic 4.6. Injuries to Soft Tissues, Tendons, and Joints Closed injuries of soft tissues. Contusions, sprains and ruptures, concussions and compressions, prolonged crush syndrome. First medical aid and treatment of closed injuries.	All		
		0	1	0
		Online		
		0	0	0
13	Topic 4.7. Fractures and Dislocations Classification. Clinical picture. Fundamentals of radiological diagnosis. First medical aid. Basic principles of treatment. Complications of fractures and their prevention.	All		
		2	1	0
		Online		
		0	0	0
14	Topic 4.8. Thermal Injuries Classification. Determination of the depth and area of burns. First aid for burns. Burn disease. Phases of the course. Principles of general and local treatment. Radiation and chemical burns. Local manifestations. Features of providing first medical aid for chemical burns of the skin, oral cavity, esophagus, and stomach. Cold Injuries. Types of general and local cold injury. Classification. Clinical picture, first aid, and further treatment for frostbite in the pre-reactive period. General and local treatment of frostbite in the reactive period. General and complex therapy for victims of cold injury. Electrical Trauma. Local and general effects of electric current. First aid for electrical trauma. Features of further examination and treatment.	All		
		0	2	0
		Online		
		0	0	0

15	Topic 4.9. Desmurgy. Transport Immobilization. The concept of a bandage and bandaging. Types of bandages: by purpose, by methods of fixing the dressing material, by localization. Soft bandages, general rules for applying bandages. Types of bandaging. Elastic compression of the lower extremities. Requirements for a finished bandage. Special dressing materials used in modern medicine. Transport Immobilization Goals, tasks, principles of implementation. Types and means of transport immobilization. Plaster and plaster bandages. Plaster rolls, splints. Main types and rules for applying plaster bandages.	All		
		2	1	0
		Online		
		0	0	0
15	Topic 4.10 Punctures, Injections, and Infusions. Drainage and Tamponade of Wounds and Body Cavities Equipment for punctures, injections, and infusions. General puncture technique. Indications and contraindications. Prevention of complications during punctures. Pleural puncture. Puncture technique for pneumo- and hemothorax. Pericardial cavity puncture. Intracardiac drug administration. Abdominal cavity puncture and laparocentesis. Joint puncture. Sternal puncture and puncture of other bones. Lumbar (lumbal) puncture. Puncture of soft tissue hematomas and superficially located abscesses. Principles and features. Bladder puncture. General injection technique. Preparation of instruments and the patient. Anatomical basis for choosing injection sites. Indications, technique, possible complications. Catheterization of peripheral and central veins. Blood sampling from a vein. Technique of intravenous infusion and prolonged infusions. Central venous pressure measurement. Technique of intraosseous and intra-arterial infusion. Possible complications and their prevention. Drainage and Tamponade of Wounds and Body Cavities Indications for use. Types of drains and tampons. Types of tubular drains. Passive and active drainage. Equipment and instruments for active aspiration. Principles and technique of wound drainage. Methods of flow-aspiration drainage of wounds. Vacuum wound drainage. Principles and technique of draining the thoracic cavity, abdominal cavity, joints. Drain-microirrigators for drug administration. Drainage of Hollow Organs Indications. Gastrointestinal and rectal probes. Probing of the esophagus, stomach, duodenum, small and large intestine. Bladder catheterization: indications, contraindications, equipment, technique. Long-term bladder catheterization, catheter care, prevention of complications. Drainage of hollow organs using endoscopic equipment. Drainage through surgically created external fistulas (gastrostomy, jejunostomy, colostomy, epicystostomy, etc.), their care. Errors, complications and their prevention. Enemas: indications, contraindications, equipment. Patient preparation and technique of enema administration. Types of enemas,	All		
		0	1	0
		Online		
		0	0	0

	features of their implementation. Gas outlet from the large intestine			
	6 Semester	15	30	0
1-3	Basics of Hemotransfusiology	2	6	0
1	Topic 5.1. Blood and Component Transfusion Topic 5.1. Blood and Component Transfusion Immunological foundations of transfusiology. Erythrocyte group systems. The ABO group system and the Rh group system. Methods for determining blood groups according to the ABO and Rh systems. Modern rules for blood transfusion according to the ABO and Rh systems. Responsibilities of the physician performing the blood transfusion. Compatibility tests of donor and recipient blood prior to transfusion. Documentation of blood transfusion. Principles of modern component therapy. Hemotransfusion reactions. Hemotransfusion complications. Massive transfusions, the concept of individual blood selection, autologous blood transfusion. Organization of the blood service and donation in Russia. Rules for the examination of donors of blood and its components. Organization of diagnostic tests for HIV, syphilis, hepatitis, and other infections transmitted via transfusion. Modern methods of collection, preservation of blood and its components.	All		
		1	1	0
		Online		
		0	0	0
1	Topic 5.2. Water-Electrolyte Imbalances in Surgical Patients and Principles of Infusion Therapy Causes of water-electrolyte and acid-base imbalances in surgical patients. Clinical and laboratory diagnosis. Indications, contraindications and methods of infusion therapy, monitoring of its implementation. Solutions for infusion therapy of water-electrolyte imbalances. Infusion program. Basic and corrective infusion therapy. Dangers and complications during the transfusion of plasma-substituting solutions. First aid and treatment of these complications. Documentation of infusion therapy.	All		
		0	1	0
		Online		
		0	0	0
2	Topic 5.3. Coagulation Disorders in Surgical Patients and Methods for Their Correction. The hemostatic system. Research methods. Diseases causing changes in the blood coagulation system. The influence of surgical operations on hemostasis. Medications affecting the hemostatic system. Prevention and treatment of thromboembolic complications, hemorrhagic syndrome, DIC syndrome.	All		
		0	2	0
		Online		
		0	0	0
3	Topic 5.4. Hemorrhage Classification of hemorrhages. The body's protective-adaptive reaction to acute blood loss. Clinical and instrumental diagnosis of hemorrhage. Assessment of the severity of blood loss and determination of its volume. Methods for temporary and definitive hemostasis. Modern principles of treating blood loss. Safe limits of hemodilution. Blood-conserving technologies in surgery. Autologous blood transfusion. Blood reinfusion. Oxygen-carrying blood substitutes. Transportation of patients with hemorrhage	All		
		1	2	0
		Online		
		0	0	0

4-11	Basics of Purulent-Septic Surgery	6	16	0
4	Topic 6.1 General Issues of Acute Surgical Infection Clinical manifestations, laboratory diagnosis. Pathogens and conditions for the development of purulent infection in the body. Acute anaerobic surgical infection. The concept of clostridial and non-clostridial anaerobic infection. The concept of mixed infection. Features of asepsis in purulent-septic surgery.	All		
		0	1	0
		Online		
		0	0	0
4	Topic 6.2 Purulent Diseases of the Skin and Subcutaneous Tissue Types of purulent skin diseases. Clinical presentation, features of course and treatment. Types of purulent-inflammatory diseases. Possible complications	All		
		0	1	0
		Online		
		0	0	0
5	Topic 6.3 Purulent Diseases of Cellular Spaces Phlegmons of the neck. Axillary and subpectoral phlegmons. Subfascial and intermuscular phlegmons of the extremities. Purulent mediastinitis. Purulent paranephritis. Acute paraproctitis, fistulas of the rectum. Causes, symptomatology, diagnosis, principles of local and general treatment.	All		
		2	2	0
		Online		
		0	0	0
6	Topic 6.4 Purulent Diseases of Serous Cavities Peritonitis. Classification. Etiology and pathogenesis. Symptomatology and diagnosis. Principles of treatment. First medical aid for acute surgical diseases of the abdominal organs. Acute purulent pleurisy and pleural empyema. Pericarditis. General concepts of causes, symptomatology, diagnosis, and treatment	All		
		0	2	0
		Online		
		0	0	0
7	Topic 6.5 Purulent Diseases of Glandular Organs Acute purulent mastitis. Symptomatology, prevention, treatment of acute lactational postpartum mastitis. Purulent parotitis. Predisposing factors, clinical signs, methods of prevention and treatment. Purulent diseases of other glandular organs	All		
		2	2	0
		Online		
		0	0	0
8	Topic 6.6 Purulent Diseases of the Hand and Foot Topic 6.6 Purulent Diseases of the Hand and Foot Classification. Types of panaritium. Purulent tenosynovitis. Features of purulent inflammation of the hand. Principles of diagnosis and treatment. Diabetic foot. Clinical forms. Clinical and instrumental diagnosis. Principles of complex treatment.	All		
		0	2	0
		Online		
		0	0	0
9	Topic 6.7 Purulent Diseases of Bones and Joints Osteomyelitis. Classification. Etiology and pathogenesis. Clinical picture. Features of instrumental and laboratory diagnostics. Symptoms of acute osteomyelitis. Chronic recurrent osteomyelitis. Diagnosis of various forms of osteomyelitis, principles of general and local treatment. Purulent bursitis. Purulent arthritis. Causes, clinical picture, principles of treatment.	All		
		2	2	0
		Online		
		0	0	0
10	Topic 6.8 Surgical Sepsis The concept of sepsis. Types. Classification. Etiology and pathogenesis. The concept of the portal of entry, the role of macro- and microorganisms in the development of sepsis.	All		
		0	2	0
		Online		
		0	0	0

	Clinical manifestations and laboratory diagnosis of sepsis. Stages of sepsis. Assessment of the severity of the condition of patients with sepsis using scoring systems. Principles of complex treatment.			
11	Topic 6.9 Specific Surgical Infection The concept of specific surgical infection. Classification. Main diseases. Clinical picture. Laboratory and instrumental diagnostics. Principles of prevention and treatment. Diagnosis and complex treatment of various forms of tuberculosis. Local treatment of cold abscesses and fistulas. Surgical forms of pulmonary tuberculosis. Tuberculous lymphadenitis. Clinical picture, diagnosis, complex therapy	All		
		0	2	0
		Online		
		0	0	0
12-15	Private Surgery	7	0	0
12	Topic 7.1 Disorders of Arterial and Venous Blood Flow Acute and chronic disorders of arterial blood flow. Main causes of impaired arterial blood flow. General principles of clinical and instrumental diagnostics. Degrees of acute ischemia and stages of chronic arterial insufficiency. Surgical and conservative treatment. First aid for acute disorders of arterial circulation. Principles of complex treatment. Disorders of venous circulation Acute venous thromboses and chronic venous insufficiency. General principles of clinical and instrumental diagnostics. Prevention of complications. Principles of complex treatment.	All		
		1	0	0
		Online		
		0	0	0
12	Lymphostasis. Main causes. Principles of diagnosis and treatment. Lymphostasis. Main causes. Principles of diagnosis and treatment. Necroses Clinical forms. Causes of occurrence. Gangrene, bedsores, trophic ulcers. Dynamics of bed sore development. Prevention and principles of treatment.	All		
		1	0	0
		Online		
		0	0	0
13	Topic 8.1 General Characteristics of Tumors. Benign and Malignant Neoplasms. Metastasis Pathways. Clinical Classification and Diagnosis of Tumors. Tumor Immune Markers. Special General characteristics of tumors. Benign and malignant neoplasms. Metastasis pathways. Clinical classification and diagnosis of tumors. Tumor immune markers. Special diagnostic methods	All		
		1	0	0
		Online		
		0	0	0
13	Topic 8.2 Morphological Verification of Diagnosis. Cancer Staging. Principles of Surgical Treatment of Tumors. Fundamentals of Combined Therapy for Malignant Tumors. Principles of Organizing Oncologic Cancer Staging. Principles of Surgical Treatment of Tumors. Fundamentals of Combined Therapy for Malignant Tumors. Principles of Organizing Oncological Morphological verification of diagnosis. Cancer staging. Principles of surgical treatment of tumors. Fundamentals of combined therapy for malignant tumors. Principles of	All		
		1	0	0
		Online		
		0	0	0

	organizing oncological service.			
14	Topic 9.1 The Concept of Plastic Surgery. Autoplasty, Alloplasty and Xenoplasty. Plastic Surgery of Tissues and Organs by Various Methods. The Place of Plastic Methods in Surgery. Alloplasty and Xenoplasty. Plastic Surgery of Tissues and Organs by Various Methods. The Place of Plastic Methods in Surgery. The Use of Synthetic Mat The concept of plastic surgery. Autoplasty, alloplasty and xenoplasty. Plastic surgery of tissues and organs by various methods. The place of plastic methods in surgery. The use of synthetic materials. Limb replantation and the concept of microsurgical technique.	All		
		1	0	0
		Online		
		0	0	0
14	Topic 9.2 The Concept of Organ and Tissue Transplantation. Principles of Clinical Transplantology. Prostheses and Artificial Organs. Principles of Clinical Transplantology. Prostheses and Artificial Organs. The concept of organ and tissue transplantation. Principles of clinical transplantology. Prostheses and artificial organs.	All		
		1	0	0
		Online		
		0	0	0
14	Topic 10.1 Concepts of Surgical Parasitic Diseases. Echinococcosis. Alveococcosis. Ascariasis. Opisthorchiasis. Echinococcosis. Alveococcosis. Ascariasis. Opisthorchiasis. Concepts of surgical parasitic diseases. Echinococcosis. Alveococcosis. Ascariasis. Opisthorchiasis. Causes, diagnosis, surgical treatment. Introduction to tropical surgical parasitic diseases.	All		
		0	0	0
		Online		
		0	0	0
15	Topic 10.2 Introduction to Tropical Surgical Parasitic Diseases Concepts of surgical parasitic diseases. Echinococcosis. Alveococcosis. Ascariasis. Opisthorchiasis. Causes, diagnosis, surgical treatment. Introduction to tropical surgical parasitic diseases.	All		
		1	0	0
		Online		
		0	0	0
15	Topic 11.1 The Concept of Congenital Pathology. Congenital Malformations of Organs and Tissues. Diagnosis. Principles of Surgical Treatment Congenital Malformations of Organs and Tissues. Diagnosis. Principles of Surgical Treatment The concept of congenital pathology. Congenital malformations of organs and tissues. Diagnosis. Principles of surgical treatment	All		
		0	0	0
		Online		
		0	0	0
12-15	Stages of Treatment for Surgical Patients	0	8	0
12	Topic 12.1 First Medical Aid The concept of first aid. Basic principles of organizing first aid and primary medical care at the pre-hospital stage. Tasks of first medical aid, principles of provision. Significance and functions of specialized emergency medical teams	All		
		0	2	0
		Online		
		0	0	0
13	Topic 12.2 Outpatient Surgery	All		

	Structure of the surgical service in polyclinics and trauma centers. Scope of conservative and operative surgical treatment. Main patient population in outpatient surgery. Organization and equipment of a surgical room. Outpatient operating room - features of asepsis. Procedure for outpatient reception of surgical patients. One-day hospital. Surgical documentation in a polyclinic. Clinical examination (dispensarization) of surgical patients. Procedure for hospitalization of elective and emergency patients. Surgical aspects of population clinical examination.	0	2	0
		Online		
		0	0	0
14 - 15	Topic 12.3 Inpatient Surgery Absolute and relative indications for surgery in elective and emergency surgery. The concept of contraindications to surgery. Criteria for surgical risk, ways to reduce it. Patient preparation for surgery. The role of physical preparation in preventing postoperative infectious complications. Preparation of the oral cavity, gastrointestinal tract, and skin. Choice of anesthesia and preparation for it. Preparation for emergency surgeries. Legal and regulatory foundations for conducting examinations and surgical interventions. Intraoperative Period The concept of a surgical operation. Types and categories of surgical operations. Patient positioning on the operating table. Principles of choosing surgical access. Minimally invasive surgery. Stages of a surgical operation. Distribution of responsibilities among all participants during anesthesia and surgery. Monitoring the patient's condition during surgery. Postoperative Period The body's response to surgical aggression. Prevention, diagnosis, and treatment of complications. Clinical monitoring of the patient. Laboratory and functional diagnostic control of the state of the body's main systems. Patient regimen and nutrition. Pain management. The concept of rehabilitation after surgical treatment. Dressings, suture removal, physiotherapy, and therapeutic exercise.	All		
		0	4	0
		Online		
		0	0	0

Abbreviated names of online options:

Abbreviation	Full name
EC	E-course
FtM	Full-text material
FtL	Full-text lectures
VM	Video materials
AM	Audio materials
Prs	Presentations
T	Tests
ERM	E-reference materials
IS	Interactive site

PRACTICAL SESSIONS TOPICS

Weeks	Topics / Content
	<i>5 Semester</i>
1	Introduction to Surgery The concept of surgery, a brief history of surgery, the current state of surgery. Organizational and legal foundations of surgical activity. Ethics and deontology in surgery. Introduction to the history of world surgery and surgery in Russia. Definition of the concepts: surgery, surgical activity, ethics and deontology in surgery.
2	Introduction to Asepsis and Antisepsis Clinical hygiene of medical personnel and patients. Rules for working with biological materials. Organization, procedure, and sanitary provision of nutrition for surgical patients on general and bed rest.
3	Structure of a Surgical Hospital Structure of a surgical hospital. The concept of a protective treatment regime.
4	Asepsis The concept of asepsis. Organizational forms of ensuring asepsis. Layout and principles of operation of a surgical hospital. Combating microflora via airborne contamination routes
5	Antisepsis The concept of antisepsis. Types of antisepsis. Classification of antiseptics.
6	The Concept of Surgical Infection Types and prevalence of surgical infection. Sources and routes of spread of surgical infection. Endogenous routes of microbial contamination: contact (direct and indirect), airborne, implantation. Hospital-acquired (nosocomial) infection in a surgical hospital
7	Definitions and History of Anesthesiology. Local Anesthesia. Types of local anesthesia: pharmaco-chemical (terminal, infiltration, conduction) and physical. Drugs for local anesthesia, their mechanism of action, main characteristics.
8	General Anesthesia General anesthesia. Assessment of anesthetic risk. Preparation of patients for anesthesia, premedication and its administration. Components of general anesthesia. Technique and clinical picture of modern general anesthesia, stages of anesthesia.
9	Complications of Local and General Anesthesia. Resuscitation Complications of Local and General Anesthesia. Resuscitation Types of complications of local and general anesthesia. Causes. Pathogenesis. Classification. Symptoms. Diagnosis. Treatment of complications of local anesthesia. Prognosis and prevention. Definition of resuscitation and resuscitative measures. Clinical assessment of the general condition of patients. Objective methods for assessing the severity of the condition of patients and casualties
10	General Issues of Injury Surgery Types of traumatism and classification of injuries. The concept of isolated, multiple, combined, and complex injuries.
11	Wounds Classification of wounds. Pathogenesis and phases of the wound process. Clinical features of various types of wounds. Types of wound healing. First medical aid for wounds. Primary surgical treatment of wounds, its types.
12	Injuries to Various Body Regions Injuries to the head, abdomen, chest. Classification, diagnosis, clinical picture, principles of treatment.
13	Injuries to the Limbs Injuries to soft tissues, tendons, and joints. Fractures and dislocations. Classification, diagnosis, clinical picture, principles of treatment.

14	Thermal Injuries Burns, frostbite, electrical trauma. Classification, diagnosis, clinical picture, principles of treatment.
15	Various Surgical Manipulations in Trauma Treatment Desmurgy. Transport immobilization. Punctures, injections, and infusions. Drainage and tamponade of wounds and body cavities.
	<i>6 Semester</i>
1	Basics of Hemotransfusiology Transfusion of blood and its components. Water-electrolyte imbalances in surgical patients and principles of infusion therapy.
2	Coagulation Disorders in Surgical Patients and Methods for Their Correction The hemostatic system. Research methods. Diseases causing changes in the blood coagulation system. The influence of surgical operations on hemostasis.
3	Hemorrhage Classification of hemorrhages. The body's protective-adaptive reaction to acute blood loss. Clinical and instrumental diagnosis of hemorrhage
4	General Issues of Acute Surgical Infection. Purulent Diseases of the Skin and Subcutaneous Tissue. Clinical manifestations, laboratory diagnosis. Pathogens and conditions for the development of purulent infection in the body. Types of purulent skin diseases. Clinical presentation, features of course and treatment
5	Purulent Diseases of Cellular Spaces Phlegmons of the neck. Axillary and subpectoral phlegmons. Subfascial and intermuscular phlegmons of the extremities. Purulent mediastinitis. Purulent paranephritis. Acute paraproctitis, fistulas of the rectum
6	Purulent Diseases of Serous Cavities Peritonitis. Acute purulent pleurisy and pleural empyema. Pericarditis. Classification. Etiology and pathogenesis. Principles of treatment
7	Purulent Diseases of Glandular Organs Acute purulent mastitis. Purulent parotitis. Purulent diseases of other glandular organs.
8	Purulent Diseases of the Hand and Foot Classification. Types of panaritium. Purulent tenosynovitis. Features of purulent inflammation of the hand. Principles of diagnosis and treatment. Diabetic foot. Clinical forms. Clinical and instrumental diagnosis. Principles of complex treatment
9	Purulent Diseases of Bones and Joints Osteomyelitis. Purulent bursitis. Purulent arthritis. Classification. Etiology and pathogenesis. Principles of treatment
10	Surgical Sepsis The concept of sepsis. Classification. Etiology and pathogenesis. Principles of treatment
11	Specific Surgical Infection The concept of specific surgical infection. Classification. Etiology and pathogenesis. Principles of treatment
12	First Medical Aid The concept of first aid. Basic principles of organizing first aid and primary medical care at the pre-hospital stage.
13	Outpatient Surgery Outpatient Surgery Structure of the surgical service in polyclinics and trauma centers

14	Inpatient Surgery. Stages of Preoperative Preparation. Inpatient Surgery. Stages of Preoperative Preparation. Preparation of the patient for surgery. The role of physical preparation in preventing postoperative infectious complications. Preparation of the oral cavity, preparation of the gastrointestinal tract, and skin.
15	Inpatient Surgery. Operation and Postoperative Period. Inpatient Surgery. Operation and Postoperative Period. Absolute and relative indications for surgery in elective and emergency surgery. The concept of contraindications to surgery. Criteria for surgical risk, ways to reduce it.

6. EDUCATIONAL TECHNOLOGIES

Types of Student Learning Activities:

Patient care in surgical and/or admission departments. Solving situational tasks from methodological guides and test collections. Work in dressing rooms and operating rooms: assisting the instructor during procedures and dressings, familiarization with the work of surgical departments and auxiliary diagnostic and treatment services.

Extracurricular Independent Work of the Student:

Writing essays based on additional information sources. Solving situational tasks and tests in preparation for practical classes.

7. ASSESSMENT TOOLKIT

The assessment toolkit ensures verification of the intended learning outcomes achievement (competency-based rubrics) using current, midterm and interim assessment of the course.

The link between developed competencies and their assessment is presented in the following table:

Competency	Achievement rubrics	Assessment activity (Syl 1)	Assessment activity (Syl 2)
ОПК-4	3-ОПК-4	PFE, T-2, T-7, T-10, T-15, T-2, T-7, T-1, T-15	Ex, T-4, T-12, T-14, T-15, T-4, T-12, T-14, T-15
	У-ОПК-4	PFE, T-2, T-7, T-10, T-15, T-2, T-7, T-1, T-15	Ex, T-4, T-12, T-14, T-15, T-4, T-12, T-14, T-15
	В-ОПК-4	PFE, T-2, T-7, T-10, T-15, T-2, T-7, T-1, T-15	Ex, T-4, T-12, T-14, T-15, T-4, T-12, T-14, T-15
ОПК-5	3-ОПК-5	PFE, T-2, T-7, T-10, T-15, T-2, T-7, T-1, T-15	Ex, T-4, T-12, T-14, T-15, T-4, T-12, T-14, T-15
	У-ОПК-5	PFE, T-2, T-7, T-10, T-15, T-2, T-7, T-1, T-15	Ex, T-4, T-12, T-14, T-15, T-4, T-12, T-14, T-15
	В-ОПК-5	PFE, T-2, T-7, T-10, T-15, T-2, T-7, T-1, T-15	Ex, T-4, T-12, T-14, T-15, T-4, T-12, T-14, T-15

ОПК-6	3-ОПК-6	PFE, T-2, T-7, T-10, T-15, T-2, T-7, T-1, T-15	Ex, T-4, T-12, T-14, T-15, T-4, T-12, T-14, T-15
	У-ОПК-6	PFE, T-2, T-7, T-10, T-15, T-2, T-7, T-1, T-15	Ex, T-4, T-12, T-14, T-15, T-4, T-12, T-14, T-15
	В-ОПК-6	PFE, T-2, T-7, T-10, T-15, T-2, T-7, T-1, T-15	Ex, T-4, T-12, T-14, T-15, T-4, T-12, T-14, T-15
ПК-3.1	3-ПК-3.1	PFE, T-2, T-7, T-10, T-15	Ex, T-4, T-12, T-14, T-15
	У-ПК-3.1	PFE, T-2, T-7, T-10, T-15	Ex, T-4, T-12, T-14, T-15
	В-ПК-3.1	PFE, T-2, T-7, T-10, T-15	Ex, T-4, T-12, T-14, T-15
ПК-3.2	3-ПК-3.2	PFE, T-2, T-7, T-10, T-15	Ex, T-4, T-12, T-14, T-15
	У-ПК-3.2	PFE, T-2, T-7, T-10, T-15	Ex, T-4, T-12, T-14, T-15
	В-ПК-3.2	PFE, T-2, T-7, T-10, T-15	Ex, T-4, T-12, T-14, T-15
ПК-3.3	3-ПК-3.3	PFE, T-2, T-7, T-10, T-15	Ex, T-4, T-12, T-14, T-15
	У-ПК-3.3	PFE, T-2, T-7, T-10, T-15	Ex, T-4, T-12, T-14, T-15
	В-ПК-3.3	PFE, T-2, T-7, T-10, T-15	Ex, T-4, T-12, T-14, T-15

Educational achievement rubrics scales

The scale of each assessment activity varies from 0 to the maximum established point, inclusive. The final assessment of the course is performed on a 100-point scale and represents the sum of the points earned by the student in the section assessments, framework of current and interim assessment.

Sections and interim assessments are considered passed when the student achieves a minimum score equal to 60% of the maximum. The final grade is assigned only upon passing all sections and the interim assessment.

The final grade is assigned in accordance with the following scale:

Total score	Rating on a 4-point scale	Pass/fail examination	ECTS assessment
90-100	5 – « <i>excellent</i> »	« <i>pass</i> »	A
85-89	4 – « <i>good</i> »		B
75-84			C
70-74			D
65-69	E		
60-64			
below 60	2 – « <i>fail</i> »	« <i>fail</i> »	F

An “excellent” grade indicates a deep and solid mastery of the program material by a student who presents their answers consistently, clearly, and logically, is able to closely link theory with practice, and uses materials from monographic literature in their answers.

A “good” grade corresponds to a student’s solid knowledge of the material, who presents their answers competently and to the point, without any significant inaccuracies.

A “satisfactory” grade corresponds to the basic level of mastery of the material by the student, in which the main material has been mastered, but its details have not been assimilated, the answers contain inaccuracies, insufficiently correct wording and logical inconsistencies.

A grade “pass” corresponds to at least a basic level of mastery of the program material, in which the student possesses the necessary knowledge, skills, and abilities, and is able to apply theoretical principles to solve typical practical problems.

A grade “fail” is given to a student who lacks a significant understanding of the curriculum material, makes significant errors in their answers, or fails all required assignments. These students are generally unable to continue their studies without additional classes.

8. ACADEMIC COURSE EDUCATIONAL, METHODOLOGICAL AND INFORMATIONAL SUPPORT

CORE READING:

1. ЭИ Г 72 General surgery : Рекомендовано УМО по медицинскому и фармацевтическому образованию вузов России в качестве учебного пособия для иностранных студентов медицинских вузов, Гостищев В.К., Москва: ГЭОТАР-Медиа, 2020
2. ЭИ О-63 Operative surgery and topographic anatomy. Practical surgical skills for students of years II-IV of medical universities and faculties program. Part II. Main elements of operational technique : учебное пособие, , Москва: ГЭОТАР-Медиа, 2023
3. ЭИ И90 The Medical History of a Surgical Patient : учебник, , Москва: ГЭОТАР-Медиа, 2018

FURTHER READING:

1. ЭИ А90 Atlas of Endoscopic Plastic Surgery : , , Cham: Springer International Publishing, 2016
2. ЭИ А90 Atlas of Upper Gastrointestinal and Hepato-Pancreato-Biliary Surgery : , , Berlin, Heidelberg: Springer Berlin Heidelberg, 2016
3. ЭИ Н99 Illustrative Handbook of General Surgery : , , Cham: Springer International Publishing, 2016
4. ЭИ Ш 57 Анатомия по Пирогову (Атлас анатомии человека). В трех томах. - Т. 1. : учебное наглядное пособие, Шилкин В.В., Филимонов В.И., Москва: ГЭОТАР-Медиа, 2011

5. ЭИ Г 72 Общая хирургия : учебник, Гостищев В.К., Москва: ГЭОТАР-Медиа, 2015

SOFTWARE:

1. Microsoft Office 2016+ ()
2. Microsoft Word (K64-303)

LMS AND ONLINE RESOURCES

1. Terminologia Anatomica (<http://terminologia-anatomica.org/en>)
2. Anatomical Dictionary. (<https://www.memorixanatomy.com/dictionary>)
3. База данных elibrary.ru - научной электронной библиотеки. (<http://elibrary.ru/defaultx.asp/>)
4. Электронная библиотека медицинского вуза. (<http://www.studmedlib.ru/>)

<https://online.mephi.ru/>

<http://library.mephi.ru/>

9. LOGISTICAL SUPPORT

1. «Интерактивный анатомический стол «Пирогов I» с программным обеспечением «3D атлас нормальной и топо (64-403)
2. Демонстрационные модели сердечно-сосудистой системы (64-403)
3. Демонстрационные модели пищеварительной системы (64-403)
4. Демонстрационные модели мочеполювой системы (64-403)
5. Демонстрационные модели опорно-двигательного аппарата (64-402)
6. Демонстрационные модели дыхательной системы (64-402)
7. Демонстрационные модели органов чувств (64-402)
8. Демонстрационные модели нервной системы (64-402)
9. Фантом головы с пищеводом и желудком (64-301)
10. Комплект зондов желудочных одноразовых и дуоденальных (64-301)
11. Контейнер для сбор медицинских отходов "Б" (64-301)
12. Контейнер для сбора медицинских отходов "А" (64-301)
13. Фантом руки для внутривенных инъекций (64-301)
14. Фантом мужской промежности для катетеризации мочевого пузыря (64-301)
15. Фантом женской промежности для катетеризации мочевого пузыря (64-301)

16. Фантом таза для постановки клизмы, внутримышечных инъекций, обработки стом (64-301)
17. Катетеры Фолея и Нелатона (64-301)
18. Персональный компьютер: Процессор CPU Intel Core i7-8700 (3.2GHz/12MB/6 cores)
Материнская плата Gig (Клиническая база)
19. Мышь, клавиатура (Клиническая база)
20. Проектор SMART P109 (Клиническая база)
21. Ведеокамера Microsoft LifeCam Cinema HD (Клиническая база)
22. Кушетка медицинская (Клиническая база)
23. Монитор (Клиническая база)
24. Набор для отработки навыков местной анестезии (64-403)
25. Двухслойная модель кишки для отработки навыков наложения швов (64-403)
26. Тренажеры базовых хирургических навыков наложения швов и завязывания узлов
(включают хирургические и (64-403)
27. Иное оснащение, предусмотренное порядками оказания медицинской помощи по
соответствующему профилю (Клиническая база)
28. Набор операционный большой в 4 кипятильниках (64-403)
29. Ножницы для разрезания повязок по Листеру (64-403)
30. Шина лестничная Крамера для нижних конечностей (64-403)
31. Шина лестничная Крамера для верхних конечностей (64-403)

10. EDUCATIONAL AND METHODOLOGICAL RECOMMENDATIONS FOR STUDENTS

Independent Work:

Each student must individually prepare for the topics of the discipline by reading lecture notes and recommended literature. Independent work allows the student to think in a calm environment, understand the information on the topic, and, if necessary, refer to reference literature. Careful reading and repetition of the material helps to fully assimilate the content of the topic and structure knowledge.

For the substantive information of the discipline to be remembered for a long time, it is advisable to study it step by step - by topics and in strict sequence, since subsequent topics, as a rule, build upon previous ones. This is why most of the independent work involves preparation for seminars, completing recommended tasks, preparing for colloquiums, completing and defending individual homework assignments, as well as preparing for laboratory work. To successfully complete these tasks, each student has the opportunity to use the methodological support developed by the department.

It is best for students to plan the time for independent work required to study this discipline for the entire semester, while providing for regular repetition of the material covered. The material noted in lectures must be regularly supplemented with information from the literary sources listed in the working syllabus of the discipline. For each topic for independent study given in the working syllabus, one should first read the recommended literature and, if necessary, compile a brief summary of the main points, terms, and information that need to be memorized and are fundamental to that topic and for mastering subsequent sections of the course. To expand knowledge in the discipline, it is recommended to use Internet resources.

When working independently, it is recommended to take notes on the material being studied (worked through). The notes can be a framework, containing only the main key points, but sufficient for a complete answer on the question. The notes can also be detailed. The volume of the notes is determined by the student themselves.

While working with educational/scientific literature, the student is recommended to make notes while reading in the form of a simple or detailed plan, compile theses, and prepare annotations of what has been read. Having such notes can give extra points for activity.

Before you begin studying the topic, you need to familiarize yourself with the main questions of the practical lesson plan and the list of recommended literature.

When preparing for a practical lesson, you should first review lecture notes, textbook sections, and teaching aids to gain a general understanding of the topic's place and significance in the course being studied. Then, consult additional literature and take notes on the recommended sources.

In the process of studying the recommended material, it is necessary to understand the structure of the topic being studied, identify the main points, follow their logic and thereby delve into the essence of the problem being studied.

It is necessary to keep records of the material being studied in the form of notes, which, along with visual memory, also includes motor memory and allows for the accumulation of an individual fund of auxiliary materials for the rapid repetition of what has been read, for the mobilization of accumulated knowledge.

Clinical practical classes

The most important stage of the practical lesson is the students' independent work on mastering practical skills: in-simulated conditions, at the patient's bedside, in the functional diagnostics room, etc.

Depending on the specific topic of the lesson, the student independently (or under the supervision of the teacher) questions the patient, conducts a clinical examination, is present during instrumental diagnostics and studies the results of additional studies, summarizes the data, presents it in the form of fragments of the medical history and reports the results to the teacher.

Achievements are assessed individually for each student, based on the degree of development of practical skills and their theoretical foundations.

Clinical case studies of specific patients are conducted for the entire group or through students' participation in clinical case studies and periodic scientific and practical conferences at the medical institutions where their practical training takes place. During these case studies, the instructor evaluates each student's active participation and clinical reasoning skills.

Solving situational problems proposed by the teacher, which develop clinical thinking and force the student to use knowledge gained in various subjects of the specialty.

Active and interactive forms of conducting classes are widely used in the educational process (work in small groups, activation of creative activities, use of computer training programs, conference classes).

The teacher supervises the students' independent work, preparation of abstracts, research and development work, work with the patient together with the teacher, interpretation of data from additional research methods, and completion of medical documentation.

In the educational process, active and interactive forms of classes are widely used (work in small groups, stimulation of creative activity, use of computer training programs, conference-style lessons).

Test / Control Work:

Familiarization with core and supplementary literature, including reference publications and foreign sources; summarizing key points, terms, and information requiring memorization that are fundamental to the topic. Writing annotations for the reviewed literature, etc.

Essay / Report:

Literature search and bibliography compilation; using 3 to 5 scientific works; presenting the authors' viewpoints and one's own judgment on the chosen issue; outlining the main aspects of the problem.

Preparation for the Exam / Test:

When preparing for the exam (test), it is necessary to focus on lecture notes, recommended literature, etc.

11. EDUCATIONAL AND METHODOLOGICAL RECOMMENDATIONS FOR TEACHERS

The process of studying the discipline includes: contact work (attending lectures and practical classes) and independent work (self-preparation for practical classes, preparing presentations, preparing to solve situational tasks and tests, writing medical case reports).

The main academic time is allocated to the analysis of theoretical issues in the general surgery curriculum and the mastery of practical skills.

The primary forms of organizing the educational process for the discipline are classical lectures and clinical practical classes (using interactive learning technologies), as well as students' independent work. While studying the discipline (module), students must master practical skills in:

- ✓ Purposefully eliciting patient complaints and medical history;
- ✓ Performing an objective examination of a surgical patient (inspection, palpation, percussion, auscultation);
- ✓ Developing a diagnostic plan for a surgical patient using additional research methods;
- ✓ Organizing surgical activities while adhering to aseptic rules in surgical hospital and polyclinic settings, and in intensive care units;
- ✓ Carrying out all necessary care measures for surgical patients;
- ✓ Providing emergency care on-site and determining the appropriate mode of patient transportation;
- ✓ Performing standard medical diagnostic and therapeutic procedures;
- ✓ Identifying main surgical syndromes and diagnosing primary types of purulent-septic diseases and injuries.

During classes, the department ensures the development of students' skills in teamwork, interpersonal communication, decision-making, and leadership qualities (through interactive lectures, group discussions, role-playing games, trainings, case analysis, and simulation models, teaching the discipline (module) in the form of a course based on the University's research results, including considering regional specifics of graduates' professional activities and employers' needs).

Lectures:

Classical lecture. Recommended for studying all topics within the "General Surgery" module. Lectures cover the discipline's topics as per the syllabus, focusing on the most fundamental and complex issues, and outlining questions for independent study. Lecture notes serve as the foundation for preparing for practical classes, exams, and independent work.

Lectures are recommended to be delivered in multimedia format. The focus shifts from presenting theoretical material to motivating self-study by posing learning problems and demonstrating solutions to professional issues within each topic. The primary lecturing method is problem-based presentation.

Practical Classes:

Practical classes in the discipline are conducted to acquire practical skills in general surgery.

These classes take the form of interviews, discussions, micro-group debates, demonstrations of thematic patients and visual aids, practicing practical skills including through simulation technologies and on trainers, solving situational tasks, completing test assignments, and analyzing clinical cases.

Students perform practical work orally, in writing, through presentations, and reports.

Practical classes promote a deeper understanding of the theoretical material, as well as the development, formation, and enhancement of various levels of students' professional competence components.

The following forms of practical classes are used in the discipline:

- Traditional seminars on all topics of the "General Surgery" module.
- Educational role-playing games on the topics: "Hemorrhage. Blood Loss. Hemostasis," "Wounds and Wound Care," "Asepsis," "Antisepsis."

Independent Work:

Independent work implies student preparation across all sections of the "General Surgery" module and includes preparation for classes, writing essays, medical case reports, and preparing for ongoing assessments.

Working with educational literature is considered a type of academic work for the "General Surgery" module and is performed within the hours allocated for its study (in the Independent Work section). Each student is provided access to the university and department library collections. During the course, students (under instructor supervision) independently work with patients, complete medical records, and present them in class. Writing a training medical case report helps develop skills in using educational and scientific literature, global information resources, and fosters clinical thinking. Working in groups cultivates a sense of collectivism and communication skills.

The training fosters students' skills in communicating with patients, considering ethics and deontology, and accounting for the specifics of the pathology. Independent work with patients helps develop ethically sound behavior, accuracy, and discipline.

Control:

The initial knowledge level of students is determined through testing and interviews.

Ongoing monitoring of discipline mastery is conducted through oral questioning during classes, clinical case analyses, solving standard situational tasks, test control, and essays.

At the end of the discipline (module), an intermediate assessment is conducted using test control and verification of practical skills.

Questions on the discipline are included in the final state certification of graduates.

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