

**MINISTRY OF EDUCATION AND SCIENCE OF THE RUSSIAN
FEDERATION**

PENZA STATE UNIVERSITY

FACULTY OF GENERAL MEDICINE

APPROVED
by director of the institute
Mitroshin A.N.
(Signature) (Last name,
Initials)
« 9 » *mitroshin* 2016

STUDY PROGRAM

C1.2.4 Modern Technologies in Surgery

Specialty – 05.31.01 General Medicine

Graduate's qualification (degree) - general practitioner

Type of education - full-time

Penza, 2016

1. Discipline Learning Goals

The goal of mastering the discipline "Modern Technologies in Surgery" is to master students' professional competencies, in which students will learn modern surgery technologies that are applicable as a diagnosis and treatment of surgical diseases and their complications.

The tasks of studying the discipline "Modern technologies in surgery" are:

- teaching students the most important modern methods of clinical, laboratory and instrumental diagnostics, which allow substantiating the patient management tactics and choosing the most rational modern treatment method, depending on the nature of the development of the disease and its complications; (PC -5)
- teaching students to recognize leading clinical signs, symptoms and syndromes during examination of a patient, in determining the severity of the pathological process, (PC-5)
- teaching students the choice of modern optimal laboratory and instrumental examination methods for surgical diseases and the compilation of the differential diagnosis algorithm, based on the latest achievements of scientific and technological progress; (PC-5, PC-8)
- training to conduct a modern full range of medical, rehabilitation and preventive measures among patients with various nosological forms of diseases; teaching students the choice of modern optimal drug regimens for the most common surgical diseases; (PC-6)

2. Place of discipline in the structure of the OPOP

The discipline "Modern technologies in surgery" refers to the variable part of the part of block C1. Discipline. Modern technologies in surgery is one of the basic disciplines that is interconnected with the disciplines: Anatomy, Histology, Embryology, Cytology, Biology, Normal Physiology, Pathophysiology, Clinical Pathophysiology, Biochemistry, Topographic Anatomy and Surgery, Pathological Anatomy, Clinical Pathological Anatomy, General Surgery radiation diagnostics. The teaching of surgical diseases is based on a syndromic approach to the study of the main pathological conditions in surgery with the study of individual elements of surgical activity by students. The main provisions of the discipline are used later in the transition to the study of the basics, anesthesiology and intensive care, oncology, traumatology, orthopedics, ophthalmology, obstetrics and gynecology.

3. The student's competencies, formed as a result of mastering the discipline "Modern technologies in surgery"

Studying of the subject is intended to develop elements of the following competences according to FSES HE in the given field:

	Competency Content	Know	Be able to	Own
PC-5	Willingness to collect and analyze patient complaints, medical history, examination results, laboratory, instrumental, pathological and other studies in order to recognize the condition or establish the presence or absence of a disease	the rules for collecting and analyzing complaints of a patient with a surgical profile, his medical history, examination results, laboratory, instrumental and pathological, other studies in order to recognize the state or establish the presence or absence of a disease	collect and analyze complaints of a patient with a surgical profile, his medical history, examination results, laboratory, instrumental, pathological and other studies in order to recognize the state or establish the presence or absence of a disease	collect and analyze complaints of a patient with a surgical profile, his medical history, examination results, laboratory, instrumental, pathological and other studies in order to recognize the state or establish the presence or absence of a disease
PC-6	The ability to determine the patient's main pathological conditions, symptoms, syndromes of diseases, nosological forms in accordance with the International Statistical Classification of Diseases and Problems Related to Health	principles for identifying in surgical patients the main pathological conditions, symptoms, syndromes of diseases, nosological forms in accordance with the International Statistical Classification of Diseases and Problems Related to Health	to identify the main pathological conditions, symptoms, syndromes of diseases, nosological forms in surgical patients in accordance with the International Statistical Classification of Diseases and Health Problems	the skills to determine in surgical patients the main pathological conditions, symptoms, disease syndromes, nosological forms in accordance with the International Statistical Classification of Diseases and Problems,
PC-8	Ability to determine management tactics for patients with various nosological forms	The principles of differential diagnosis of surgical diseases occurring in various forms	Assign treatment to patients with a surgical disease proceeding in various forms, taking into account the differential diagnosis	Algorithm for the treatment of a patient with a surgical disease proceeding in various forms, taking into account the differential diagnosis

4. The structure and content of the discipline "Modern technology in surgery"

4.1. Discipline structure

The total complexity of the discipline is 2 credits, 72 hours.

№ п/п	Name of sections and topics of discipline	Semester	Cycle days	Types of academic work, including self-study student work and labor intensity (in hours)									Forms of current performance monitoring (weekly semester)							
				Classroom work				Independent work												
				Total	Lecture	Workshops	Laboratory classes	Total	Classroom preparation occupations	Abstract, essay, etc.	Course work	Exam preparation	Job interview	Colloquium	Test verification	Verification of tests	Review abstract	Checking Workbooks	Course work	Skills test
1	General issues of endoscopy. FBS. FGDS. FCC, Laparoscopy operations	7	1	6		6		6	5				1		1					1
2	Endoscopic diagnosis neoplasms. HLC	7	2	6		6		6	5				2		2					2
3	Endoscopy in biliary surgery	7	3	6		6		6	5				3		3					3
4	General and private anesthetics	7	4	6		6		6	5				4		4					4

№ п/п	Name of sections and topics of discipline	Semester	Cycle days	Types of academic work, including self-study student work and labor intensity (in hours)									Forms of current performance monitoring (weekly semester)							
				Classroom work				Independent work												
				Total	Lecture	Workshops	Laboratory classes	Total	Classroom preparation occupations	Abstract, essay, etc.	Course work	Exam preparation	Job interview	Colloquium	Test verification	Verification of tests	Review abstract	Checking Workbooks	Course work	Skills test
5	Fundamentals of resuscitation	7	5	6		6		6	5				5		5				5	
6	Critical disorders life activity. Private requests for emergency conditions.	7	6	6		6		6	5				6		6				6	
	Final lesson	7	7	2		2		4	4				7		7				7	
	The total complexity in hours			28		38		34	34				Interim attestation							
													Type				Semester			
													Pass				7			
													Exam							

4.2. Discipline content

1. General issues of endoscopy. Diagnostic fibrogastroduodenoscopy, diagnostic colonoscopy, diagnostic bronchoscopy

1. History of the development of endoscopy. First information. Rigid endoscopy. Flexible endoscopy. Video endoscopy. Ultrasound endoscopy

2. Indications and contraindications for endoscopic examination of the gastrointestinal tract and tracheobronchial tree. Risks and complications of the gastrointestinal tract, cardiovascular and respiratory systems.

3. The workplace of the endoscopist. Technical requirements for an endoscopic cabinet. Disinfection and prevention of infection. Levels of disinfection of equipment and instruments. Assistant. Main and auxiliary equipment, endoscopy structure, video endoscopy, ultrasound endoscopy. Light source, coagulation, pumps, laser coagulation. Documentation.

4. Preparation for the examination. Informed patient consent, sedation and administration of drugs during the procedure.

5. Diagnosis and treatment of complications. Pain, perforation of the esophagus, stomach, duodenal and colon, throat damage, myocardial ischemia, shortness of breath, bleeding, loss of consciousness, apnea.

6. Technique for performing endoscopic examination. Endoscope handling, optical system, mechanics of movement, air and water supply, aspiration and insertion of instruments.

FBS, FGDS, FKS

7. Diagnostic fibrogastroduodenoscopy. Diagnostic bronchoscopy. Diagnostic colonoscopy. Video endoscopy. Ultrasound endoscopy. Capsule endoscopy. The possibilities of endoscopic studies, the importance in the diagnosis of diseases, their stages, the extent of the process.

8. Foreign bodies. Bezoars. Endoscopic findings.

9. Indications and contraindications for endoscopic examination of the gastrointestinal tract and tracheobronchial tree. Risks and complications of the gastrointestinal tract, cardiovascular and respiratory systems.

10. Preparation for the examination. Informed patient consent, sedation and administration of drugs during the procedure.

11. Diagnosis and treatment of complications. Pain, perforation of the esophagus, stomach, duodenal and colon, throat damage, myocardial ischemia, shortness of breath, bleeding, loss of consciousness, apnea. Technique for performing endoscopic examination. Endoscope handling, optical system, mechanics of movement, air and water supply, aspiration and insertion of instruments.

Laparoscopic surgery.

12. Equipment and tools. Optical system. Video camera. Light source. Insufflator. The system of aspiration-irrigation. Electrosurgical apparatus. Wi-Fi monitor. Video recorder. Access tools. Tools for manipulations. Treatment and sterilization. Disinfection. Pre-sterilization cleaning. Sterilization.

13. General clinical provisions and surgical technique: selection of patients, indications and contraindications. The structure of the operating room. The location of the patient on the operating table. Operating team. Pneumoperitoneum. Online access.

14. Anesthesia. Local infiltration anesthesia. General intravenous analgesia. General intubation anesthesia with mechanical ventilation.

15. Operations at minimum pressure. Operations under laparoscopic control.

2. Endoscopic diagnosis of HCC

16. Surgical anatomy of the gastrointestinal tract. Normal and pathological physiology. The structure of the esophagus and its departments: ligamentous apparatus; features of blood supply, venous and

lymphatic drainage. The structure of the stomach and its departments: ligamentous apparatus; features of blood supply, venous and lymphatic drainage. The structure of the duodenum and its departments: ligamentous apparatus; features of blood supply, venous and lymphatic drainage.

17. The structure of the small intestine and its departments: ligamentous apparatus; features of blood supply, venous and lymphatic drainage.

18. Methods of examination of patients with gastrointestinal bleeding. General examination, inspection of the anorectal region; digital examination of the rectum; ano-scopia; fibrogastroduodenoscopy; the importance of additional research methods (ultrasound, CT, radioisotope scanning, laparoscopy, radiological diagnostic methods).

19. Etiology, pathogenesis, clinical features, diagnosis, conservative and surgical treatment of gastrointestinal bleeding.

20. Bleeding from varicose veins of the esophagus. Drug therapy for bleeding from varicose veins of the esophagus. Balloon tamponade (Blackmore probe, Linton probe). Endoscopic methods of treatment: sclerosis with lidocanol (ethoxysclerol), ligation, sclerotherapy with histoacryl. Surgical treatment: creation of a transjugular intrahepatic portosystemic anastomosis.

21. Mellory-Weiss syndrome. Injections of adrenaline (1: 10000 in physiological saline solution), fibrin glue, clipping.

22. Ulcer Dielafoy. Adrenaline injection. Clipping.

23. Erosive gastritis. Stress ulcers. Conservative therapy. Thermal methods.

24. Bleeding from ulcers of the stomach and duodenum. Drug therapy and injections. Hemocliping and thermal methods.

25. The algorithm of actions after the initial stop of bleeding.

Endoscopic diagnosis of tumors of the gastrointestinal tract and tracheo-bronchial tree.

26. Cancer of the esophagus.

27. Anatomical and physiological features of the esophagus. The clinical picture of food-water cancer.

28. Diagnosis of cancer of the esophagus.

29. Differential diagnosis of benign tumors of the esophagus: leiomyoma, lipoma, fibroma, neuroma, hemangioma, papilloma, glycogen acanthosis. Endoscopic diagnostic criteria. Systematics of endoscopic research. The treatment algorithm. Additional examination (biopsy material sampling, X-ray examination with contrast, endoscopic ultrasound examination). Indications for surgery in patients with benign tumor of the esophagus, the volume of interventions.

30. Diagnosis of malignant tumors of the esophagus: squamous cell cancer of the esophagus, adenocarcinoma. Additional examination (biopsy, chromoendoscopy, endoscopic ultrasound. X-ray examination with contrast, additional studies to determine the stage of the tumor). Treatment: endoscopic palliative treatment (laser therapy, bougienage and artificial endoprotheses, self-healing stents) and combined radiochemotherapy. Control examinations.

31. Volumetric formations of the stomach.

32. Anatomical and physiological features of the stomach. Classification of tumors of the stomach. The clinical picture. Diagnostics. Treatment.

33. Benign tumors of the stomach: epithelial (adenoma), endocrine (carcinoid), mesenchymal (leiomyoma, neuroma, neurofibroma, lipoma, other rare variants). Clinic, diagnostics, treatment.

34. Tumor-like changes (polypous changes in the stomach wall): non-neoplastic polyps (cyst of the glands of the body of the stomach, hyperplastic polyp, Peitz-Jägers polyp, inflammatory fibromatous polyp, Brunner's heterotopy, pancreatic tissue heterotopy), special forms (chronic erosion, ocular hyperplasia, Menetrie disease). Differential diagnosis of polyps based on localization, size, their number. Clinic, treatment.

35. Malignant neoplasms of the stomach: adenocarcinoma (papillary, tubular, mucinous, ring-shaped cell carcinoma), glandular squamous cell carcinoma, squamous cell carcinoma, nonclassified carcinoma, lymphoma. Metastasis of stomach cancer. Clinic, diagnosis, treatment. Precancerous conditions: chronic atrophic gastritis (type A gastritis), gastritis associated with *Helicobacter pylori* (type B gastritis), adenomatous polyp of the stomach, hyperplasiogenic polyps, operated stomach, hereditary predisposition, Menetrie disease.

36. The concept of early cancer. Types of early cancer.
37. Colon cancer.
38. Anatomical and physiological features of the large intestine.
39. Polyps of the large intestine. Classification, clinic, diagnosis, treatment. Thieff-blue and tubular adenomas. Polyposis of the large intestine.
40. Colorectal carcinoma
41. Neoplasms of the upper respiratory tract.
42. Nasopharyngeal neoplasms. Clinic, diagnosis, clinical and morphological classification of nasopharyngeal neoplasms, international classification of the prevalence of primary cancer of the nasopharynx, endoscopic classification of the prevalence of the primary tumor of the nasopharynx. Epipharyngoscopy in assessing the effectiveness of treatment of patients with nasopharyngeal cancer. Treatment of nasopharyngeal neoplasms.
43. Oropharynx neoplasms. Clinic, diagnosis, clinical and morphological classification of oropharyngeal neoplasms, international classification of the prevalence of primary cancer of the oropharynx, endoscopic classification of the prevalence of the primary tumor of the oropharynx. Lymphadenoid pharyngeal ring of Pirogov-Valdeyer. Treatment of oropharyngeal neoplasms.
44. Neoplasms of the larynx. Clinic, diagnosis, classification, treatment of patients with laryngeal cancer.
45. Neoplasms of the trachea. Clinic, diagnosis, classification, treatment of patients with tracheal cancer.
46. Neoplasms of the bronchi. Clinic, diagnosis, classification, treatment of patients with bronchial cancer.

3. Endoscopy in biliary surgery.

47. Physiological metabolism of bilirubin. Surgical anatomy of the hepatic and extrahepatic biliary tract.
48. Examination methods for jaundice. Interpretation of biochemical analysis of blood, ultrasound of the hepatobiliary zone, x-ray methods.
49. Etiology, pathogenesis, clinic and diagnosis of hemolytic, parenchymal and obstructive jaundice. Differential diagnosis of jaundice.
50. Treatment methods for patients with jaundice. Surgical tactics in the treatment of obstructive jaundice. Indications, contraindications and techniques for performing RCP. Os-

links with RCHP. Indications, contraindications and techniques for performing EPST. Complications of EPST. Indications for stenting of the bile ducts. Stenting technique. Types of stents.

4. General and private anesthesiology

Fundamentals of General Anesthesiology

51. Theories of general and local anesthesia. Types of modern anesthesia. The equipment used during anesthetic management. Respiratory contours. Auxiliary tools and fixtures. The main links in the device of anesthesia apparatus. Features of the preparation of anesthesia apparatus for work.

Anesthesia

52. Inhalation anesthesia. General properties of inhaled anesthetics. Mask anesthesia. Indications, contraindications, disadvantages. Endotracheal general anesthesia. Indications, contraindications. Dangers, complications, their prevention and treatment. Advantages and disadvantages. Pharmacokinetics of inhaled anesthetics. Their advantages and disadvantages in relation to each other.
53. Non-inhalation general anesthesia. Types and methods. Indications, contraindications. Dangers, complications, their prevention and treatment. Methods for conducting non-inhalation anesthesia with various anesthetics and their combinations. Clinical and pharmacological characteristics of barbiturates (thiopental sodium, hexenal). Clinical and pharmacological characteristics of benzodiazepines (diazepam, midazolam). Clinical and pharmacological characteristics of narcotic analgesics (morphine, promedol, fentanyl). Clinical and pharmacological characteristics of muscle relaxants.

54. Combined General Anesthesia Indications, contraindications, advantages and disadvantages. The action of depolarizing and the action of non-depolarizing neuromyorelaxants. Neurovegetative blockade in a modern design. Metabolism control during combined anesthesia, principles and approaches to control. Prevention of complications.

55. Regional types of pain relief. Indications and contraindications. Local anesthetics (novocaine, lidocaine, bupivacaine). Brief pharmacological characteristics of the groups. Epidural, spinal anesthesia. Indications for the use of epidural anesthesia. Contraindications to epidural anesthesia. Complications of epidural anesthesia, their prevention and treatment.

5. Fundamentals of resuscitation

56. Terminal states. Definition, pathophysiology, diagnosis. Circulatory arrest - the main etiological causes, clinical precursors. Clinical death - definition, duration, difference from biological death. The concept of "brain death", the prerequisites for the diagnosis of "death of the brain." Types of circulatory arrest, their brief description. Diagnosis of circulatory arrest.

57. Indications and contraindications for cardiopulmonary resuscitation. Rules for issuing medical documentation for CPR, protocol CPR. Principles of visual and instrumental monitoring during CPR. Medications and medications used in CPR, routes of administration. Indications for organ transplantation to a potential donor. Regulations. Rules for medical documentation. Ethical issues, their observance in CPR.

6. Critical disabilities. Particular issues of emergency situations.

58. Acute respiratory failure. Definition of ONE. Classification of acute respiratory failure. The clinical picture and course of ONE. Acute respiratory failure - definition, classification. Artificial ventilation of the lungs - indications (absolute and relative), methodology. Complications of mechanical ventilation, their prevention and treatment. Indications for tracheostomy and conicotomy. Complications Care for tracheostomy patients. Indications and methods of oxygen therapy.

59. Acute cardiovascular failure. Causes of acute cardiovascular failure (cardiac and extracardiac). Right - and left-yellow-daughter insufficiency. Other clinical manifestations of ASCH in the clinic of surgical diseases. Acute vascular insufficiency. Medicines for ASCH. Their action depends on the dose and rate of administration.

60. Acute renal and acute liver failure. Causes, diagnosis, principles of intensive care in acute renal failure. Acute liver failure. Etiology, principles of intensive care OPEN. Indications for the use of replacement therapy and extracorporeal detoxification methods

61. Violations of the water - electrolyte balance and acid-base state, methods for their correction. The main forms of CBS disorders and their clinical manifestations. The principles of correction. Clinical physiology of water balance. The amount and distribution of water in the human body.

62. The concept of water sectors. Regulation of the constancy of the content of water and electrolytes in the body. The concept of osmosis, osmolality and oncotic. Osmotically active metabolites of the body. Hypertensivedishyria.

63. Etiology, pathogenesis, compensation mechanisms, clinical picture, laboratory signs and correction strategy. Isotonic dyshyria. Etiology, pathogenesis, compensation mechanisms, clinical picture, laboratory signs and correction strategy.

64. Hypotonic dishyria. Etiology, pathogenesis, compensation mechanisms, clinical picture, laboratory signs and correction strategy. The main types of disturbance of the water-electrolyte balance: dehydration, hyperhydration (classification, principles of therapy).

5. Educational technology

1. Traditional lessons with visual aids.
2. Computer testing.

3. Multimedia lectures.
4. The solution of situational tasks.
5. Independent work with literature.
6. Watching educational films on the topics of classes.
7. Work with instrumentation, endoscopic and anesthetic equipment.
8. Participation in clinical rounds of patients in intensive care units and IT.
9. Testing skills on dummies in a simulation center.

5.1. Active learning methods

As part of the discipline, students practice practical skills on dummies in a simulation center, watch training films on the topics of the lesson, familiarize themselves with instruments, endoscopic and anesthesiology equipment

5.2 Educational technology for students with disabilities and the disabled

In order to implement an individual approach to teaching students carrying out the educational process on their own trajectory within the framework of an individual curriculum, the study of this discipline is based on the following features: providing extracurricular work with students, including in the electronic educational environment, using appropriate software, distance learning , possibilities of Internet resources, individual consultations, etc.

6. Educational and methodological support of students' independent work. Evaluation tools for the current monitoring of progress, intermediate certification based on the results of mastering the discipline.

6.1. Students Independent Work Plan

Cycle day	Theme	Type of independent work	The task	Recommended Reading	Количество часов
1	General issues of endoscopy. FBS. FGDS. FCC, Laparoscopy operations	Preparation for the classroom lesson	To study the theoretical material on the topic of the lesson. Answer questions for self-control in methodological recommendations. Prepare for testing	Endoscopy Basic lecture course [Electronic resource]: textbook / Khryachkov VV, FedosovYu.N., Davydov A.I. et al. - M.: GEOTAR-Media, 2012	5
2	Endoscopic diagnosis neoplasms. HLC	Preparation for the classroom lesson	To study the theoretical material on the topic of the lesson. Answer questions for self-control in methodological recommendations. Prepare for testing	Endoscopy Basic lecture course [Electronic resource]: textbook / Khryachkov VV, FedosovYu.N., Davydov A.I. et al. - M.: GEOTAR-Media, 2012	5
3	Endoscopy in biliary surgery	Preparation for the classroom lesson	To study the theoretical material on the topic of the lesson. Answer questions for self-control in methodological recommendations. Prepare for testing	Endoscopy Basic lecture course [Electronic resource]: textbook / Khryachkov VV, FedosovYu.N., Davydov A.I. et al. - M.: GEOTAR-Media, 2012 Surgical diseases [Electronic resource]: textbook / ed. M.I. Cousin. - 4th ed., Revised. and add. - M.: GEOTAR-Media, 2014	5
4	General and private anesthesiology	Preparation for the classroom lesson	To study the theoretical material on the topic of the lesson. Answer questions for self-control in methodological recommendations. Prepare for testing	Endoscopy Basic lecture course [Electronic resource]: textbook / Khryachkov VV, FedosovYu.N., Davydov A.I. et al. - M.: GEOTAR-Media, 2012	5

Cycle day	Theme	Type of independent work	The task	Recommended Reading	Количество часов
				Surgical diseases [Electronic resource]: textbook / ed. M.I. Cousin. - 4th ed., Revised. and add. - M.: GEOTAR-Media, 2014	
5	Fundamentals of resuscitation	Preparation for the classroom lesson	To study the theoretical material on the topic of the lesson. Answer questions for self-control in methodological recommendations. Prepare for testing	Endoscopy Basic lecture course [Electronic resource]: textbook / Khryachkov VV, FedosovYu.N., Davydov A.I. et al. - M.: GEOTAR-Media, 2012	5
6	Critical disorders life activity. Particular issues of emergency conditions.	Preparation for the control lesson	To study the theoretical material on the topic of the lesson. Answer questions for self-control in methodological recommendations. Prepare for testing	Endoscopy Basic lecture course [Electronic resource]: textbook / Khryachkov VV, FedosovYu.N., Davydov A.I. et al. - M.: GEOTAR-Media, 2012 Surgical diseases [Electronic resource]: textbook / ed. M.I. Cousin. - 4th ed., Revised. and add. - M.: GEOTAR-Media, 2014	5
7	Final lesson	Preparation for the control lesson	To study the theoretical material on the topic of the lesson. Answer questions for self-control in methodological recommendations. Prepare for testing	Anesthesiology and Intensive Care / Textbook, ed. O.A. Valley 3rd ed., Rev. and additional / Publisher: GEOTAR-MEDIA, 2009 576p. Endoscopy Basic lecture course [Electronic resource]: textbook / Khryachkov VV, FedosovYu.N., Davydov A.I. et al. - M.: GEOTAR-Media, 2012 Surgical diseases [Electronic resource]: textbook / ed. M.I. Cousin. - 4th ed., Revised. and add.	4

Cycle day .	Theme	Type of independent work	The task	Recommended Reading	Количество часов
				- М.: GEOTAR-Media, 2014	

6.2. Guidelines for the organization of independent work of students

Independent work of students is carried out in accordance with the methodological recommendations of the department

1. Nikolsky V.I., Temnikov V.A., Baulin A.V. Cardiovascular Surgery: A Training Manual. - Penza. PSU Publishing House, 2010.
2. Nikolsky V.I., Shaldybin I.G., Cheremisin I.V., Shaldybin D.I. Coloproctology: Textbook. - Penza. PSUPublishingHouse, 2010.
3. Solomakha A.A., Mitroshin A.N. How to work effectively on the academic history of the disease in general surgery for students of the 3rd year of a medical institute: Textbook. - Penza. Publishing House of the PGTA, 2010.
4. Mitroshina S.Yu., Bazhenov MS, Nikolsky V.I. Regulations on perioperative prophylaxis: Methodical recommendations. - Penza. MIAC MHSD PO, 2010.
5. Nikolsky V.I. Cholecystitis. - Penza: Inform. publishedPenz center. GU, 2009 .-- 177 p.

6.3. Materials for conducting current and intermediate control of students' knowledge

Competency development control

№ п/п	Type of control	Controlled topics (sections)	Competencies whose components controlled by
1.	Test verification	Section 1, 2, 3, 4, 5	PC -5, PC-6, PC-8
2.	Skills test	Section 1, 2, 3, 4, 5	PC -5, PC-6, PC-8
3.	Job interview	Section 1, 2, 3, 4, 5	PC -5, PC-6, PC-8

Demo version of the competency test PC-5

1. The most informative in differential diagnosis between a stomach ulcer and an ulcerated carcinoma is

- analysis of gastric juice
- fecal occult blood test
- conducting a histamine test
- positive effect on antiulcer treatment
- + esophagogastrosocopy with biops

2. To clarify the diagnosis of a bleeding stomach ulcer in the first

turn to be done

- fecal occult blood test
- contrast fluoroscopy of the stomach
- analysis of gastric juice for occult blood

- + fibrogastroscopy
- determination of hemoglobin and hematocrit

3. In the first hours with the onset of gastric bleeding may take place

- melena
- symptom of muscle protection
- vomiting of the gastric contents of the color "coffee gut"
- bradycardia
- + collapse

4. Most characteristic for acute duodenal ulcer

are

- elderly patient
- + history of taking aspirin or corticosteroids
- strong, paroxysmal seasonal epigastric pain
- vomiting food that brings relief
- splashing noise in the stomach

5. A patient suffering from a bleeding stomach ulcer, after the therapy, it was taken out of shock.

However, ongoing conservative measures do not allow to achieve reliable hemostasis.

In this case, it is necessary

- + laparotomy and gastrectomy
- imposition of a gastrostomy
- the use of gastrostomy
- continue conservative therapy, including the application of the Meilengracht diet
- laparotomy, the imposition of gastroenteroanastomosis, chipping of a bleeding vessel

6. With peptic ulcer complicated by bleeding,

vomiting of coffee-colored stomach contents may observed at all subsequent localization of the ulcer, except

- lesser curvature of the stomach
- cardiac stomach
- antrum
- lower esophagus
- + postbulbar part of the duodenum

Demo version of the competency test PC-6

1. The most informative in differential diagnosis

between a stomach ulcer and an ulcerated carcinoma is

- analysis of gastric juice
- fecal occult blood test
- conducting a histamine test
- positive effect on antiulcer treatment
- + esophagogastroscope with biopsy

2. To clarify the diagnosis of a bleeding stomach ulcer the following should be done at first

- fecal occult blood test
- contrast fluoroscopy of the stomach
- analysis of gastric juice for occult blood
- + fibrogastroscopy
- determination of hemoglobin and hematocrit

3. In the early hours, with the onset of gastric bleeding,

The following take place

- melena
- symptom of muscle protection
- vomiting of the gastric contents of the color "coffee gut"
- bradycardia
- + collapse

4. The most characteristic for acute duodenal ulcers are

- elderly patient
- + history of taking aspirin or corticosteroids
- strong, paroxysmal seasonal epigastric pain
- vomiting food that brings relief
- splashing noise in the stomach

5. A patient suffering from a bleeding stomach ulcer,

after the therapy, it was taken out of shock.

However, ongoing conservative measures do not allow to achieve reliable hemostasis.

In this case, it is necessary

- + laparotomy and gastrectomy
- imposition of a gastrostomy
- the use of gastrostomy
- continue conservative therapy, including the application of the Meilengracht diet
- laparotomy, the imposition of gastroenteroanastomosis, chipping of a bleeding vessel

6. With peptic ulcer complicated by bleeding,

vomiting of coffee-colored stomach contents may observed at all subsequent localization of the ulcer, except

- lesser curvature of the stomach
- cardiac stomach
- antrum
- lower esophagus
- + postbulbar part of the duodenum

7. Clinic of acute blood loss occurs already with blood loss equal to

- 250 ml
- 500 ml
- + 1000 ml
- 1500 ml
- 2000 ml

8. For hypovolemia, the following values of CVP are characteristic

- + less than 60 mm of water. Art.
- from 60 to 120 mm of water. Art.
- from 130 to 180 mm of water. Art.
- from 190 to 240 mm of water. Art.
- over 240 mm of water. Art.

9. Infusion of 1 liter of physiological solution of sodium chloride
increase circulating blood volume

- per 1000 ml
- 750 ml
- per 500 ml
- + 250 ml
- less than 250 ml

10. The volume of circulating blood in adult men is

- 50 ml / kg
- + 60 ml / kg
- 70 ml / kg
- 80 ml / kg
- 90 ml / kg

Demo version of the competency test PK-8

11. Only during surgery, differential diagnosis of acute appendicitis is possible.

- A) with a perforated duodenal ulcer;
- B) with acute pancreatitis;
- + B) with inflammation of Meckel's diverticulum;
- D) with right-sided renal colic;
- D) with acute cholecystitis.

12. When making a differential diagnosis between acute cholecystitis and acute appendicitis with a high location of the appendix, the following instrumental examination methods will be most informative:

- 1) survey radiography of the abdominal cavity;
- 2) ultrasound examination of the abdominal cavity;
- 3) oral cholecystography;
- 4) laparocentesis;
- 5) laparoscopy.

Choose the right combination of answers:

- A) 1, 2; B) 1, 2, 3; **B) 2, 5;** D) 2, 3, 4, 5; D) 4, 5.

13. When conducting a differential diagnosis in a 26-year-old patient between acute appendicitis (pelvic location) and an interrupted ectopic pregnancy, the following points should be taken into account:

- 1) complaints and medical history data;

- 2) hemoglobin indicators;
- 3) the results of a puncture of the posterior vaginal fornix;
- 4) the presence of a symptom of Cullen's sign;
- 5) the results of vaginal and rectal examinations.

Choose a combination of answers:

A) 1, 2; B) 1, 2, 3; C) 1, 2, 3, 4; D) 1, 2, 3, 5; E) **all answers are correct.**

14. When conducting a differential diagnosis between acute appendicitis and covered perforation of the duodenum, the following examination methods must be applied:

- 1) gastroduodenoscopy;
- 2) panoramic fluoroscopy of the abdominal cavity;
- 3) ultrasound of the abdominal cavity;
- 4) laparoscopy;
- 5) irrigoscopy.

Choose the right combination of answers:

A) 1, 2, 3; B) 2, 3, 5; **C) 1, 2, 4;** D) 2, 5; E) all answers are correct.

Test Evaluation Criteria

"Excellent" ("5") - 91% or more correct answers to test tasks.

"Good" ("4") - 81-90% of correct answers to test tasks.

"Satisfactory" ("3") - 71-80% of correct answers to test tasks.

"Unsatisfactory" ("2") - 70% or less correct answers to test tasks.

Sample Interview Questions

1. The history of endoscopy.
2. Indications and contraindications for endoscopic examination of the gastrointestinal tract and tracheobronchial tree.
3. Possible risks and complications from the gastrointestinal tract, cardiovascular and respiratory systems.
4. The workplace of the endoscopist. Technical requirements for an endoscopic cabinet. Disinfection and prevention of infection.
5. Endoscopic equipment primary and secondary. The structure of the endoscope. Video endoscopy. Capsule endoscopy. Ultrasound endoscopy. Light source, coagulation, pumps, laser coagulation.
6. Documentation for endoscopic examination.
7. Preparation for endoscopic examination. Informed consent, drugs.
8. Diagnosis and treatment of complications in endoscopic examinations. Pain, perforation of the esophagus, stomach, duodenum and colon, damage to the pharynx, myocardial ischemia, shortness of breath, bleeding, loss of consciousness, apnea.
9. Learn the technique of endoscopy. Endoscope handling, optical system, mechanics of movement, air and water supply, aspiration and insertion of instruments.
10. Foreign bodies. Endoscopic findings.
11. Gastrointestinal bleeding. Etiology, pathogenesis, clinic, diagnosis.

12. Assessment of the severity of blood loss and the classification of gastrointestinal bleeding.
13. The main methods of endoscopic arrest of gastrointestinal bleeding.
14. Surgical tactics for bleeding gastric ulcer, duodenal ulcer.
15. Surgical tactics for bleeding from varicose veins of the esophagus.
16. The tactics of the surgeon with ulcer Dielafoy.
17. Endoscopic methods for stopping bleeding with Mellory-Weiss syndrome.
18. Tactics of management of patients with erosive gastritis, stress ulcers.
19. The algorithm of actions after the initial stop of bleeding.
20. Surgical tactics for hemorrhoidal bleeding.
21. Tactics for bleeding from the stump of the polyp after polypectomy, from the stump of the appendix after resection.
22. Surgical tactics for bleeding from a colon diverticulum.
23. Surgical tactics for angio dysplasia of the sigmoid colon.
24. Surgical tactics for bleeding from a colon tumor.
25. Surgical tactics for Osler's disease.
26. Endoscopic methods for stopping bleeding from the lower gastrointestinal tract.
27. Etiology, pathogenesis, classification, clinic and diagnosis of jaundice. Physiological exchange of bilirubin.
28. Differential diagnosis of jaundice.
29. Methods of conservative and surgical treatment of jaundice.
30. Surgical tactics in the treatment of obstructive jaundice.
31. Indications for conducting RCP.
32. Indications for the implementation of EPST.
33. Indications for stenting of the bile ducts.
34. Contraindications for performing RCP.
35. Complications in the performance of RCHP.
36. Esophageal carcinoma. Clinic, diagnosis and possible treatment options. Endoscopic methods for the treatment of cancer of the esophagus.
37. Cancer of the stomach. Clinic, diagnosis and possible treatment options. Endoscopic treatments for stomach cancer.
38. Colon cancer. Clinic, diagnosis and possible treatment options. Endoscopic treatments for colon cancer.
39. Endoscopic surgery. Indications and contraindications for endoscopic surgery.
40. Instrumentation used in endoscopic surgery.
41. The main stages of laparoscopic cholecystectomy.
42. The main stages in laparoscopic appendectomy.
43. The main stages in laparoscopic adrenalectomy.
44. The main stages of laparoscopic cystectomy of the liver and kidneys.
45. The main stages in laparoscopic right hemicolectomy.
46. The main stages of laparoscopic resection of the sigmoid colon.
47. The main stages of laparoscopic abdominal-perineal extirpation.
48. The main stages in laparoscopic rectopexy.
49. The main stages of laparoscopic closure of the colostomy.
50. Postoperative management tactics in patients undergoing endoscopic surgery.
51. Possible complications arising from laparoscopic interventions, and their prevention.
52. Anesthesiology and intensive care: subject, terminology, tasks.
53. Highlights of the history of the development of anesthesiology and resuscitation.
54. The principles of organization of anesthesiology and intensive care services.
55. Regulations governing the work of the anesthesiology and resuscitation service.

56. Organization of intensive care and resuscitation units (ICU). Principles of OITR
57. Physiology of pain. Peripheral and central pathways of pain sensitivity. The effect of pain on body functions. Possible ways of pain impulse.
58. Theories of general and local anesthesia.
59. Types of modern anesthesia.
60. Methods of objective monitoring of the condition of patients used in anesthesiology and resuscitation.
61. Indications for hospitalization and transfer of patients to the ICU.
62. Clinical evaluation of the patient's preoperative condition and choice of anesthesia method.
63. General principles for preparing patients for general anesthesia.
64. Premedication - tasks used by medications.
65. The equipment used during anesthetic management.
66. Respiratory contours. Auxiliary tools and fixtures.
67. Inhalation anesthesia. General properties of inhaled anesthetics.
68. Mask anesthesia. Indications, contraindications, disadvantages.
69. Endotracheal general anesthesia. Indications, contraindications. Dangers, complications, their prevention and treatment. Advantages and disadvantages.
70. Non-inhalation general anesthesia. Types and methods. Indications, contraindications. Dangers, complications, their prevention and treatment.
71. Methods of conducting non-inhalation anesthesia with various anesthetics and their combinations.
72. Clinical and pharmacological characteristics of barbiturates (thiopental sodium, hexenal).
73. Clinical and pharmacological characteristics of benzodiazepines (diazepam, midazolam).
74. Clinical and pharmacological characteristics of narcotic analgesics (morphine, promedol, fentanyl).
75. Clinical and pharmacological characteristics of muscle relaxants.
76. Combined general anesthesia. Indications, contraindications, advantages and disadvantages.
77. Regional types of pain relief. Indications and contraindications
78. Local anesthetics (novocaine, lidocaine, bupivacaine). Brief pharmacological characteristics of the groups.
79. Epidural, spinal anesthesia. Indications for use. Contraindications. Complications, their prevention and treatment.
80. Terminal states. Definition, pathophysiology, diagnosis.
81. Circulatory arrest - the main etiological causes, clinical precursors.
82. Clinical death - definition, duration, difference from biological death.
83. The concept of "brain death", the prerequisites for the diagnosis of "brain death".
84. Types of circulatory arrest, their brief description.
85. Diagnosis of circulatory arrest.
86. Contraindications for cardiopulmonary resuscitation. Indications for the termination of resuscitation.
87. Cardiopulmonary resuscitation - stages and their brief description.
88. Ways to restore and maintain airway.
89. Primary cardiopulmonary resuscitation: stages, sequence of actions.
90. Methods of artificial lung ventilation during resuscitation.
91. Heart massage. Types, methodology, effectiveness.
92. Routes of administering medications during CPR - characteristics, advantages and disadvantages.

93. Medications used in CPR, a brief description, doses, administration.
94. Electropulse therapy. Indications, methodology, performance indicators and complications.
95. Defibrillation. Indications, methodology, performance indicators and complications.
96. The main forms of CBS violation and their clinical manifestations. The principles of correction.
97. Clinical physiology of water balance. The amount and distribution of water in the human body. The concept of water sectors. Regulation of the constancy of the content of water and electrolytes in the body.
98. The concept of osmosis, osmolarity and oncotic. Osmotically active metabolites of the body.
99. Hypertensive dyshydrria. Etiology, pathogenesis, compensation mechanisms, clinical picture, laboratory signs and correction strategy.
100. Isotonic dyshydrria. Etiology, pathogenesis, compensation mechanisms, clinical picture, laboratory signs and correction strategy.
101. Hypotonic dyshydrria. Etiology, pathogenesis, compensation mechanisms, clinical picture, laboratory signs and correction strategy.
102. The main types of disturbance of the water-electrolyte balance: dehydration, hyperhydration (classification, principles of therapy).
103. Infusion therapy - indications, applied solutions, methods for calculating the required volumes.
104. Infusion therapy - an assessment of clinical efficacy.
105. The definition of ONE. Acute respiratory classification
106. failure.
107. The clinical picture and course of ONE
108. Acute respiratory failure - definition, classification.
109. Artificial ventilation of the lungs - indications (absolute and relative), methodology.
110. Complications of mechanical ventilation, their prevention and treatment.
111. Indications for tracheostomy and conicotomy. Complications
112. Care for tracheostomy patients.
113. Indications and methodology for oxygen therapy.
114. Causes of acute cardiovascular failure (cardiac and extracardiac). Right - and left ventricular failure.
115. Private anesthesiology (the choice of anesthesia method for various surgical interventions and various pain syndromes).
116. The choice of anesthesia method and features of anesthesia during operations on the head and neck.
117. General anesthesia in obstetrics and gynecology. Features of anesthesia on the abdominal organs.
118. The choice of anesthesia method for endoscopic surgery.
119. The choice of anesthesia method and features of anesthesia in traumatology and orthopedics.
120. Acute renal failure. Reasons, diagnosis, principles of intensive care.
121. Acute liver failure. Etiology, principles of intensive care.
122. Endotoxemia

Evaluation Criteria for Interviewing in Control Exercises

“Excellent” - the story is complete, competent, logical; surgical tactics are determined quickly and confidently ;; answers to additional questions are clear and concise.

“Good” - the story is not logical enough with single errors in particulars; lack of confidence and speed in surgical tactics; answers to additional questions are correct, not clear enough.

“Satisfactory” - the story is not sufficiently competent, incomplete, with errors in the details; uncertainty in the answer; answers to additional questions are not clear enough, with errors in particulars.

“Unsatisfactory” - the story is illiterate, incomplete, with gross errors; errors in response; answers to

additional questions are incorrect.

Sample Practical Skills Questions

Performing a digital examination of the rectum.

Postural drainage of the bronchi.

Evaluation of pathological changes identified during examination of the patient and the formulation of a preliminary diagnosis.

The rationale for the etiological, pathogenetic and syndromic therapy in various pathological conditions in patients.

Treatment of the oral cavity, ears, nose. Eye wash.

Foreign body removal:

- from the oral cavity.

Anterior tamponade for nosebleeds.

Stop external bleeding by:

- finger pressing the vessel;
- imposition of a pressure bandage;
- application of a tourniquet.

Gastric lavage.

The setting of cleansing, siphon and medicinal enemas.

Suction of contents from the upper respiratory tract (using electric and mechanical suction).

The overlay receiver. Pressure sores treatment.

Injection of drugs (intramuscularly, subcutaneously, intradermally, intravenously), dose calculation and dilution of drugs.

Maintaining standard medical documentation.

Rectal examination technique

Bladder Catheterization Technique

The technique of sigmoidoscopy

Blackmore Probe Installation Technique

Technique for pleural puncture

Technique for performing palpation of the prostate gland

Practice Assessment Criteria

“Excellent” (“5”) - 91% or more correct answers to tasks.

“Good” (“4”) - 81-90% of correct answers to tasks.

“Satisfactory” (“3”) - 71-80% of correct answers to tasks.

“Poor” (“2”) - 70% or less correct answers to tasks.

Sample situational tasks

1. A patient of 25 years was delivered to the admission department. She became acutely ill about an hour ago, when intense “dagger” pains appeared in the upper abdomen, nausea. There was no vomiting. Gradually, pain began to spread throughout the right side of the abdomen.

Anamnesis of life: drinks alcohol, smokes up to two packs of cigarettes a day. About a year marks heartburn, takes soda. Previously not examined.

Objectively. The general condition of the patient is moderate. Proper physique, increased nutrition. Skin and sclera of normal color. Vesicular respiration is heard in the lungs, no wheezing. Pulse 60 per minute. The tongue is wet, clean. The abdomen is symmetrical, retracted, painful on palpation in all departments. Spilled muscle tension is determined. Symptom Shchetkina-Blumberg positive. "Hepatic dullness" is not defined. Dullness in flat areas of the abdomen is not determined.

The patient received a radiography of the abdominal cavity upon admission (see Appendix).

The task

1. Make a diagnosis.
2. Perform differential diagnostics.
3. Describe the radiograph.
4. What additional methods need to be carried out to verify the diagnosis?
5. What diagnostic procedures will you take?
6. Describe the findings

2. In a patient who received sharp pains in the right hypochondrium, nausea, vomiting, yellowness of the skin, an emergency duodenoscopy revealed an impaired stone of a large duodenal papilla.

1. Formulate surgical tactics.
2. What surgical options are used?
3. Justify the rational amount of surgical intervention in this situation.
4. What groups of drugs will you prescribe in the postoperative period?
5. What recommendations will you give the patient upon discharge from the hospital?

Criteria for assessing the solution of situational tasks

“Excellent” - the answer is complete, competent, logical; fluency in surgical tactics

“Good” - the answer is not logical enough with single errors in particulars; single errors in surgical tactics.

“Satisfactory” - the answer is not sufficiently competent, incomplete, with errors in the details; mistakes in surgical tactics.

“Unsatisfactory” - the answer is illiterate, incomplete, with gross errors; ignorance of surgical tactics.

7. Educational and methodological support of the discipline

a) main literature:

1. Surgical diseases [Electronic resource]: textbook / ed. M.I. Cousin. - 4th ed., Revised. and add. - M.: GEOTAR-Media, 2014.
<http://www.studmedlib.ru/ru/book/ISBN9785970433713.html>
2. Anesthesiology and intensive care / Textbook, ed. O.A. Valley 3rd ed., Rev. and additional / Publisher: GETAR-MEDIA, 2009
576p.
<http://www.studmedlib.ru/ru/book/ISBN9785970410332.html>
3. Bobrinskaya I.G. Levite E.M. Introduction to anesthesiology-resuscitation textbook for students of medical universities. Edited by Bobrinskaya, I.G. M.: Geotar-Media, 2007.256 p.

<http://www.studmedlib.ru/ru/book/ISBN9785970404188.html>
4. Endoscopy. Basic lecture course [Electronic resource]: textbook / Khryachkov VV, Fedosov Yu.N., Davydov A.I. et al. - M.: GEOTAR-Media, 2012
<http://www.studmedlib.ru/ru/book/ISBN9785970423301.html>

b) additional literature:

1. **Appendicitis:** a training manual / V. I. Nikolsky, A. V. Baulin. - Penza: Inform.-ed.

PSU Center, 2008 .-- 144 p. : ill. - ISBN 978-5-94170-223-7

2. **Bowel obstruction** [Text]: study guide / V. I. Nikolsky [and others]. - Penza: Publishing House Penz. state University, 2015 .-- 206 p. : ill. - ISBN 978-5-906796-79-0

3. **Pancreatitis** [Text]: monograph / V. I. Nikolsky [et al.]. - Penza: Publishing House Penz. state University, 2011 .-- 296 p. : ill. - ISBN 978-5-94170-383-8

4. Jaundice syndrome [Text]: textbook / V. I. Nikolsky [et al.]. - Penza: Publishing House Penz. state University, 2015 .-- 200 p. : ill. - ISBN 978-5-906796-80-6

5. Injury of the heart and major vessels [Text]: study guide / V. A. Temnikov, E. E. Biryukov; under the editorship of A.N. Mitroshina. - Penza: Publishing House Penz. state University, 2013 .-- 48 p. - ISBN 978-5-94170-638-9

6. Cholecystitis: a training manual / V. I. Nikolsky, A. V. Baulin. - Penza: Inform.-ed. PSU Center, 2009 .-- 244 p. : ill. - ISBN 978-5-94170-249-7

7. Injury of the abdomen [Text]: textbook / V. I. Nikolsky [et al.]; Penz. state un-t Medical Institute. - Penza: Publishing House Penz. state University, 2017 .-- 172 p. : ill. - ISBN 978-5-906913-46-3

8. Surgical diseases [Electronic resource]: textbook / ed. V.S. Saveliev, A.I. Kiriyeenko. - 2nd ed., Revised. and add. - M.: GEOTAR-Media,

2014. - <http://www.studmedlib.ru/book/ISBN9785970431306.html>

9. Oncology [Electronic resource] / under the general ed. S. B. Peterson - M.: GEOTAR-Media, 2014.

- <http://www.studmedlib.ru/book/ISBN9785970425329.html>

10. Pediatric Surgery [Electronic resource] / ed. Yu.F. Isakova, A.Yu. Razumovsky - M.: GEOTAR-Media, 2014.

<http://www.studmedlib.ru/ru/book/ISBN9785970429068.html>

c) software and Internet resources

1. A single window of access to educational resources - <http://window.edu.ru/>

2. Scientific electronic library eLibrary.ru - <http://elibrary.ru/>

3. ELS "Student Consultant - <http://www.studmedlib.ru>

- "Microsoft Windows" (subscription DreamSpark / Microsoft Imagine Standart); registration number 00037FFEBACF8FD7, contract No. SD-130712001 of 07/12/2013;

- Kaspersky Anti-Virus 2015-2016, registration number KL4863RAUFQ;

free software: Open Office; Mozilla Firefox Google Chrome Adobe Acrobat Reader 7zip.

8. Logistics discipline

№ п/п	Name of special rooms and premises for independent work	Equipped with special rooms and rooms for independent work
1	Conference hall, building 14 GBUZ "OKB im. N.N. Burdenko "floor, 68.1 m2	Multimedia projector "BenQ" Teacher's desk - 1 pc. Interactive board - 1 pc. Notebook - 1 pc. Chairs - 40 pcs.
2	Training room number 4; 14 building GBUZ "OKB them. N.N. Burdenko ", 4th floor, 18.48 m2	Teacher's desk - 1 pc. Training table - 1 pc. Training board - 1 pc. Chairs - 20 pcs. Daybed - 1 pc.

The study program of the discipline "Modern technologies in surgery" is compiled in accordance with the requirements of the Federal State Educational Standard of Higher Education and the curriculum in the specialty 05/31/01

The program was compiled by:

Associate Professor of the Department of "Surgery" Feoktistova E.G. Feoktistova

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The program was approved at a meeting of the Department of Surgery at PSU.

Protocol No. 6 of " 4 " 03 20 16

Head Department A.N. Mitroshin (A.N. Mitroshin)

The program is agreed with the Dean of the Faculty of Medicine of PSU

Dean of the LF I. Ya. Moiseeva (I. Ya. Moiseeva)

The program was approved by the Methodological Commission of the PSU Medical Institute.

Protocol No. 7 of " 05 " 03 20 16

Chairman of the Methodological Commission O.V. Kalmin (O.V. Kalmin)

Translation and verification
Translator of PSU International Projects Department
Maria Pchelintseva Pchelintseva

Reapproval of the program for the next academic year and registration of changes

[illegible]