INTERNATIONAL HIGHER SCHOOL OF MEDICINE
Department of surgical diseases

SYLLABUS
Anesthesiology and intensive care

2026-2027 academic year
for students ofmedical faculty
5 course 10 semester groups - according to timetable
2 credits (72 h, including auditoria 32 h, independent work - 40 h) form of control:
oral and written survey, reports/presentations, control of practical skills,
situational tasks, testing

Information about the teacher:

Lecture	Ashirakmanova Aijan (+996777775778) whatsapp, Jaijavnya@gmail.com
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Venue:	Zoom
Practical:	Ashirakmanova Aijan (+996777775778) whatsapp, Jaijavnya@gmail.com
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Venue: National hospital

The Syllabus is considered
at the meeting ofthe department of Surgical diseases
Protocol №1 27.08.2026
Head of the department Ermekov T.A.

2.1 Purpose of the course and the expected result of studying the discipline.

The main goal of the course is to provide basic knowledge in the field of anesthesiology and intensive care. The discipline studies a critical condition as an extreme degree of any pathology, including iatrogenic pathology, in which artificial replacement or support of vital body functions is required, because their autoregulation is sharply disrupted. Anaesthesiology studies analgesia, anaesthesia and methods of artificial regulation of the body during surgical procedures, including infusion therapy, artificial ventilation, maintenance of adequate hemodynamics, coagulation homeostasis, water-electrolyte balance and acid-base balance.

As a result of studying the discipline, the student must:

Know:

- Medical devices: instruments, apparatuses, equipment, materials and other products used for medical purposes in surgery;
- goals and objectives, principles and methods used in the intensive care unit and anesthesiology
- a system of measures aimed at ensuring the vital activity of the body in critical, life-threatening conditions of the patient;
- the essence of normal biochemical processes at the level of organs, systems and the body as a whole, as well as standards for the results of biochemical and clinical studies. Reference values of laboratory tests for making a preliminary diagnosis;
- etiology, pathogenesis, clinical and laboratory criteria and basic principles of treatment in the intensive care unit and anesthesiology;
- etiology, pathogenesis, clinical and laboratory criteria, principles of treatment of urgent and life-threatening conditions.

Be able to:

- Determine the scope of application of medical devices provided for in the procedure for providing medical care;
- choose and apply various methods of asepsis and antiseptics according to the goals and objectives of professional activity;
- recognize and interpret the results of biochemical and clinical studies, identify logical relationships between changes in biochemical parameters and the clinical state of the body;
- examine the patient to diagnose life-threatening conditions.
- diagnose urgent and life-threatening conditions and determine the basic principles of first aid.

Possess:

- Skills in determining the purpose of medical devices, their scope of application, and the algorithm of their use in providing medical care;
- skills of demonstrating the choice and application of various methods of asepsis and antiseptics, according to the goals and objectives of professional activity;
- skills in providing emergency care;
- skills in determining the scope of first aid in urgent and life-threatening conditions.

2.2 Prerequisites:

- Macro-and microanatomy
- Latin language
- Normal physiology
- Biochemistry
- Microbiology, virology and immunology
- Pathology (pathological anatomy and pathological physiology)
- Fundamentals of radiology
- Surgery

- Clinical pharmacology

2.3 Post-requisites:

- State Exam
- Postgraduate training

3. Calendar and thematic plan.

Table №1.

Discipline study plan
Thematic plan of lectures

#	Unit name	Topic of the lecture	Study intensity (hour)	Date
1	Fundamentals of anaesthesiology	L 1: Anaesthesiology as a discipline, history, classification of a modern anaesthetic manual. Choice of analgesia method	4	According to the timetable
		L 2: Regional anesthesia, spinal anesthesia, epidural anesthesia, nerve plexus block	4	According to the timetable
	Total:		**8**	
2	Basics of intensive care	L3: Resuscitation as a science, brain death, diagnostics. The concept of euthanasia	4	
		L4: Cardiopulmonary resuscitation	4	
	Total:		**8**	
Total			**16**	

Table №2

Thematic plan of practical classes

Unit	Name	Topic of the lecture	Forms of control		Study intensity (hour)	Date
			Current	Midterm		
1	Fundamentals of Anesthesiology	PC 1: General anesthesia. Total intravenous anesthesia. Inhalation anesthesia	Oral and written survey, report / presentation		2	
		PC 2: Artificial ventilation, muscle relaxants, tracheal intubation, predicts of	Oral and written survey,report/presentation		2	

		difficult intubation				
		PC 3: Pain physiology, local anesthesia. Regional anesthesia, brachial plexus block, nerve block. Choice of analgesia method, premedication	Oral and written survey, control of practical skills		2	
		PC 4: **Control of unit # 1**		Oral survey Situational tasks Test questions	2	
	Total:				8	
2	Basics of intensive care	PC 5: Methods of monitoring the state of vital organs and body systems	Oral and written survey, control of practical skills		2	
		PC 6: Acute respiratory failure (ARF), indications for tracheal intubation, tracheostomy	Oral and written survey control of practical skills		2	
		PC 7: Acute cardiovascular failure, AMI. CPR	Oral and written survey Report/presentation		2	
		PC 8: **Control of unit No. 2**		Oral survey Situational tasks	2	

				Test questions		
	Total:				**8**	
Total					**16**	

4. Schedule of independent work of students

Table №3

Thematic plan for independent work of students

#	Unit name	IWS subject	Control forms		Study intensity (hour)	Deadlines
			Current	Midterm		
1	Fundamentals of anesthesiology	IWS 1: The concept of deontology and ethics in the specialty	Oral and written survey Summary check		2	
		IWS 2: Medical record of an inpatient.	Oral and written interview Summary checj		2	
		Primary examination of the anesthesiologist.	Oral and written survey Summary check		2	
		Anesthesia card. Protocol of anesthesia.	Oral and written survey Summary check		2	
		Translated epicrisis. Stage epicrisis	Oral and written survey Summary check		2	
		Modern general anesthesia.	Oral and written survey Summary check		2	

		Ways and methods of combining different anesthesia techniques.	Oral and written survey Summary check		2	
		Modern respiratory systems.	Oral and written survey Summary check		2	
		Classes of risks in anesthesiology.	Oral and written interview Summary check		2	
		Different levels of patient monitoring: from the Harvard standard to multi-functional and multi-parametric monitoring (invasive and non-invasive).	Oral and written survey Summary check		2	
		IWS 4: **Control of unit # 1**		Oral survey Situational tasks Test questions		
	Total:				20	
		Intensive care for acute surgical pathology of the abdominal cavity.	Oral and written survey Summary check		2	
2	Basics of intensive care	Cardiopulmonary and brain resuscitation	Oral and written survey Summary check		2	

		Acute respiratory failure. Etiology, pathogenesis, types of ARF,clinical picture, diagnosis	Oral and written survey Summary check		2	
		Adult respiratory distress syndrome, asthmatic status.	Oral and written survey Summary check		2	
		Interpretation of changes in the function of external respiration and gas composition of arterial blood.	Oral and written survey Summary check		2	
		Causes of acute cardiovascular insufficiency (cardiac and extracardial)	Oral and written survey Summary check		2	
		Parameters of central hemodynamics. Invasive and non-invasive monitoring of central hemodynamics.	Oral and written survey Summary check		2	
		Shock. Mechanisms of shock: hypovolemia, heart failure, vasoplegia. Clinical forms of shock: hypovolemic, cardiogenic, anaphylactic, septic and others.	Oral and written survey Summary check		2	
		Acute adrenal insufficiency. Multiple organ failure in shock. Methods of treatment.	Oral and written survey Summary check		2	
					2	

		IWS 8: **Unit control # 2**		Oral survey Situational tasks Test questions	2	
	Total:				**20**	
Total					**40**	

№	Unit	Name of task	Hours
1.	Basics of anesthesiology	- Search and review of literature and digital sources of information on an individually given problem of the course. - Writing abstracts (essay, presentations, scientific article) on a scientific problem. - **Patient management, resolution of situational tasks and test assignments** - **Preparation for the control work and colloquium** - **Preparation for the credit and assessments**	20
2.	Basics of intensive care.	- Search and review of literature and electronic information sources on an individually assigned course problem - Writing a paper (essay, report, scientific article) on the assigned problem - Patient management, resolution of situational tasks and test assignments - Preparation for the control work and colloquium - Preparation for the credit and assessments	20
	Total		**40**

5. Literature

Basic:

1. Tom Peck and Benjamin Harris (2021). Pharmacology for Anaesthesia and Intensive Care
2. Mozaffar Khan (2024). Comprehensive Guide to Renal Replacement Therapies in the ICU (Anaesthesia and Intensive Care Book 3)

3. Danny Perez (2023). Intensive Care Units
4. Manish Soneja and Puneet Khanna (2020). Infectious Diseases in the Intensive Care Unit

5. M Mastenbjörk M D, Medical Creations, et al. (2022). EKG/ECG Interpretation: Everything you Need to Know about the 12 - Lead ECG/EKG Interpretation and How to Diagnose and Tre...
6. EKG/ECG Interpretation: Everything you Need to Know about the 12 - Lead ECG/EKG Interpretation and How to Diagnose and Treat Arrhythmias: Workbook Part of: EKG/ECG Interpretation (2 books)

7. ROSALIA OLSEN (2024). The ICU Survival Made Easy: Intensive Care Unit Mastery: A Practical Guide for Overcoming ICU Challenges with Proven Strategies, Q&A and Practice Tests

Secondary:

8. Singer P, Blaser AR, Berger MM, Calder PC, Casaer M, Hiesmayr M, Mayer K, Montejo-Gonzalez JC, Pichard C, Preiser JC, Szczeklik W, van Zanten ARH, Bischoff SC. ESPEN practical and partially revised guideline: Clinical nutrition in the intensive care unit. Clin Nutr. 2023 Sep;42(9):1671-1689. doi: 10.1016/j.clnu.2023.07.011. Epub 2023 Jul 15. PMID: 37517372.

9. Tanaka Gutiez M, Efstathiou N, Innes R, Metaxa V. End-of-life care in the intensive care unit. Anaesthesia. 2023 May;78(5):636-643. doi: 10.1111/anae.15908. Epub 2023 Jan 12. PMID: 36633479.

10. Robba C, Wong A, Poole D, Al Tayar A, Arntfield RT, Chew MS, Corradi F, Douflé G, Goffi A, Lamperti M, Mayo P, Messina A, Mongodi S, Narasimhan M, Puppo C, Sarwal A, Slama M, Taccone FS, Vignon P, Vieillard-Baron A; European Society of Intensive Care Medicine task force for critical care ultrasonography*. Basic ultrasound head-to-toe skills for intensivists in the general and neuro intensive care unit population: consensus and expert recommendations of the European Society of Intensive Care Medicine. Intensive Care Med. 2021 Dec;47(12):1347-1367. doi: 10.1007/s00134-021-06486-z. Epub 2021 Oct 5. PMID: 34787687; PMCID: PMC8596353.

11. Stollings JL, Balas MC, Chanques G. Evolution of sedation management in the intensive care unit (ICU). Intensive Care Med. 2022 Nov;48(11):1625-1628. doi: 10.1007/s00134-022-06806-x. Epub 2022 Jul 29. PMID: 35904562; PMCID: PMC9334735.

12. Chanques G, Gélinas C. Monitoring pain in the intensive care unit (ICU). Intensive Care Med. 2022 Oct;48(10):1508-1511. doi: 10.1007/s00134-022-06807-w. Epub 2022 Jul 29. PMID: 35904563.

13. Katori N, Yamakawa K, Yagi K, Kimura Y, Doi M, Uezono S. Characteristics and outcomes of unplanned intensive care unit admission after general anesthesia. BMC Anesthesiol. 2022 Jun 20;22(1):191. doi: 10.1186/s12871-022-01729-y. PMID: 35725372; PMCID: PMC9208222.

14. Erikson EJ, Edelman DA, Brewster FM, Marshall SD, Turner MC, Sarode VV, Brewster DJ. The use of checklists in the intensive care unit: a scoping review. Crit Care. 2023 Nov 30;27(1):468. doi: 10.1186/s13054-023-04758-2. PMID: 38037056; PMCID: PMC10691022.

15. Shelton KT, Crowley J, Wiener-Kronish J. Prevention of Complications in the Cardiac Intensive Care Unit. J Cardiothorac Vasc Anesth. 2021 Jul;35(7):1930-1932. doi: 10.1053/j.jvca.2021.01.049. Epub 2021 Jan 30. PMID: 33653576.

16. Sharshar T, Grimaldi-Bensouda L, Siami S, Cariou A, Salah AB, Kalfon P, Sonneville R, Meunier-Beillard N, Quenot JP, Megarbane B, Gaudry S, Oueslati H, Robin-Lagandre S, Schwebel C, Mazeraud A, Annane D, Nkam L, Friedman D; Suivi-Rea Investigators. A randomized clinical trial to evaluate the effect of post-intensive care multidisciplinary consultations on mortality and the quality of life at 1 year. Intensive Care Med. 2024 May;50(5):665-677. doi: 10.1007/s00134-024-07359-x. Epub 2024 Apr 8. PMID: 38587553.

17. Mayo PH, Chew M, Douflé G, Mekontso-Dessap A, Narasimhan M, Vieillard-Baron A. Machines that save lives in the intensive care unit: the ultrasonography machine. Intensive Care Med. 2022 Oct;48(10):1429-1438. doi: 10.1007/s00134-022-06804-z. Epub 2022 Aug 9. PMID: 35941260; PMCID: PMC9360728.
18. Tardini F, Pinciroli R, Berra L. The intensive care unit: How to make this unfriendly environment geriatric-friendly. Eur J Surg Oncol. 2020 Mar;46(3):379-382. doi: 10.1016/j.ejso.2019.12.022. Epub 2020 Jan 8. PMID: 31973926.

6. Evaluation policy and procedure for all types of work

Fund of assessment tools for intermediate certification in the EMC (Anesthesiology, Intensive Care, Emergency Conditions, 10 semester).

Evaluation procedures and criteria:

Assessment of student's academic achievements in all types of control (current control of academic performance and intermediate certification) is carried out according to the point-rating system.

During the period of studying the discipline, the student gains points according to the corresponding parameters (per unit):

a. Current control – 40
b. IWS-20
c. Midterm control (module) - 40

Total of 100 points (40+20+40)

For violations of the conduct policy, the total score in the discipline is reduced to a maximum of 10 points.

The final grade for mastering the discipline is entered in the statement and credit book.

Table №4

Student achievement assessment system

Criteria for grading a discipline

Maximum score	Intervals			
	"failure"	"success"	"good"	"excellent"
Current monitoring– 40	0-23	24-30	31-35	36-40
Criteria for intervals	Given for poor assimilation of the material. An unsatisfactory answer shows that the student is familiar with the educational material, but does not highlight the main points, makes significant mistakes that distort the meaning of what he has learned. He transmits information that he has memorized from the words of the teacher or from the textbook, but which is not logicallye processed in his mind, is not included in the system of scientific propositions and arguments.	Given if the student correctly applies specific terminology, knows the main, essential provisions of the educational material, but does not know how to explain them, and makes some mistakes and inaccuracies in the content of knowledge and the form of constructing the answer.	Given for the correct assimilation of the program material,but the answer may contain inaccuracies and minor errors, both in the content and in the form of constructing the answer.	Given for a deep understanding of the educational material, for the ability to independently explain the studied provisions, for a logical correctly constructed answer, when the student does not make mistakes and is able to integrate the acquired knowledge with knowledge in related academic disciplines.
IWS– 20	0-11	12-15	16-17	18-20
Criteria for intervals	Given if the student did not complete the task, makes gross mistakes when answering the teacher's questions, or there are no ready-made diagrams, tables, or essays.	Given if the student finds it difficult to answer, makes mistakes and inaccuracies in ready-made diagrams, tables, and essays.	Given for the correct assimilation of the program material,but the answer may contain inaccuracies and minor errors, such as both in the content and in the form of building ready-made diagrams, tables, and abstracts.	Given for a deep understanding of the educational material, for the ability to independently explain the studied provisions, for a logically correctly constructed answer, when the student does not make mistakes and is able to integrate the acquired knowledge with knowledge in related academic disciplines.
Midterm control	0-23	24-30	31-35	36-40

(module)– 40				
Interval criteria	Significant gaps in knowledge of the main educational material were identified, fundamental errors were made in answering the questions	Knowledge of the educational material to the extent necessary for further development of the discipline, familiarity with the main literature recommended for the lesson. The student makes mistakes, but has the necessary knowledge to eliminate them under the guidance of the teacher	Full knowledge of the educational material, the main literature recommended for the lesson. The student shows the systematic nature of knowledge in the discipline and is able to independently replenish and update in the course of further academic work and professional activity	A comprehensive, systematic and in-depth knowledge of educational material, basic and additional literature, the relationship of the main concepts of the discipline in their meaning for the acquired profession.

6.1. Student Conduct Policy: (lateness, skipping classes, behavior in the classroom, delayed submission of assignments).

- Be punctual and complete tasks.
- Be sure to attend classes.
- Avoid skipping classes for disrespectful reasons.
- Come to classes in a clean medical gown.
- Exclude cell phone conversations in class.
- Actively participate in the learning process.
- Complete your homework on time.
- Work out missed classes at the time set by the teacher.

For violations of the Conduct Policy, total discipline points can be reduced to 5 points.

6.2. Academic Ethics Policy.

- Be tolerant, respect the opinions of others.
- Formulate your objections in the correct form.
- Constructively maintain feedback in all classes.
- Plagiarism and other forms of dishonest work are unacceptable. Plagiarism includes the following: no references when using printed and electronic materials, quotes, thoughts, and works of other authors or students.
- It is not allowed to prompt or cheat during tests, exams, or classes, passing an exam for another student, unauthorized copying of materials.

For violations of the Academic Ethics Policy, the total points for the discipline can be reduced to 5 points.

7. Guidelines for unit classes

7.1. Unit 1. Fundamentals of anesthesiology.

PC 1: General anesthesia. Total intravenous anesthesia. Inhalation anesthesia

1. What does not apply to the components of general anesthesia?
2. Which drugs belong to liquid inhalation anesthetics?
3. Which inhalation anesthetics are gaseous?

PC 2: Artificial ventilation, muscle relaxants, tracheal intubation, predicates of difficult intubation

4. What does not apply to artificial lung ventilation methods?
5. When performing artificial respiration, the frequency of inhalations should be equal to what?
6. Which of the ventilation methods is the most effective?

PC 3: Physiology of pain, local anesthesia. Regional anesthesia, brachial plexus blockade, nerve blockade. Choice of analgesia method, premedication

7. In the process of feeling pain, how many stages are distinguished?
8. Which of the anesthesia methods are related to local anesthesia?
9. Local anesthesia is contraindicated in?
10. What applies to regional methods of anesthesia?
11. Specify the main goals of premedication?
12. Which of the drugs are used for premedication?

7.2. Unit 2. The basics of intensive care.

PC 5: Methods of monitoring the condition of vital organs and body systems

13. Observations usually include measuring vital signs (temperature, blood pressure, pulse and respiratory rate), the amount of fluid injected and excreted, as well as often measuring intracranial pressure and/or (continue)?
14. Pulmonary artery catheterization (LA catheter, or Swann-Ganz catheter) is performed on a small number of patients in the intensive care unit (what is the essence of the procedure)?
15. Indicate a non-invasive method for assessing minute cardiac output?

PC 6: Acute respiratory failure (ARF), indications for tracheal intubation, tracheostomy

16. What is the most common intubation?
17. Quite often, after intubation of the trachea, there is such a serious complication as?
18. What is acute respiratory distress syndrome?

PC 7: Acute cardiovascular insufficiency, AMI. CPR

19. What refers to the stages of basic cardiopulmonary-cerebral resuscitation?
20. Treatment of acute cardiovascular insufficiency includes the administration of neuroleptics, analgesics and (continue)?
21. What is the classification of cardiovascular insufficiency according to the New York Association of Cardiology (NYHA)?

8. Guidelines for performing independent work of student in the discipline with an indication of the deadlines of submission

1. Study the theoretical material well; master the method of applying knowledge in practice.
2. Be able to use the necessary equipment, materials, equipment for measurements.
3. To study the recommendations for specific laboratory or practical work, which are set out in textbooks and methodological developments.
4. Plan for laboratory or practical work.
5. Prepare the necessary material.
6. Perform tasks of laboratory or practical work.
7. Interpret the results and describe the identified phenomena.
8. Draw conclusions.
9. Draw up everything accordingly.