Ministry of Health of Ukraine
Poltava State Medical University

Department of Anaesthesiology and Intensive Care

«AGREED**»**
Guarantor of the educational program in specialty of "Medicine"

_____ I. SKRYPNYK

"_____"_____20___ year

«APPROVED»
Head of academic council of the Education and Science Medical Institute

_____ Yu. KAZAKOV

Protocol from _____2024 №___

SYLABUS
Anesthesiology and intensive care

Selective discipline

(normative/selective discipline)

educational and professional level	second (master) level of higher education
field of knowledge	22 "Health"
specialty	222 "Medicine"
educational qualification	Master of Medicine
professional qualifications	doctor
educational and professional program	"Medicine"
form of training	daytime
Course and semester of study	5 course, X semester

«APPROVED»
at a meeting of the Department of Anaesthesiology and Intensive Care

Head of the Dept _____ K. Tarasenko

Protocol from _____2024 p № 1

Poltava – 2024

DATA ON TEACHERS WHO TEACH THE EDUCATIONAL DISCIPLINE

Surname, name, patronymic of the teacher (s), academic degree, academic rank	Ass. Telegan Vladislav Ass. Adamchuk Nataliia
Teacher (s) profile	https://www.umsa.edu.ua/fakultets/med/kafedry/anestz/workers
Contact number	Head of the Department, MD Kostiantyn Tarasenko +380999496745
E-mail:	anesthpoltava@gmail.com
Department page on the PSMU website	https://www.umsa.edu.ua/fakultets/med/kafedry/anestz

BASIC CHARACTERISTICS OF EDUCATIONAL DISCIPLINE

The volume of discipline

The number of credits / hours – 3,0/90, of which:

Lectures (hours) - 10

Practical (seminars) (hours) - 40

Independent work (h). - 40

Type of control - Final modular control

Signs of academic discipline

The nature of the discipline (normative / selective) selective

Year of study – 5

X semester

Discipline Policy

The policy of the discipline is based on the principles of academic integrity and is determined by the system of requirements that the teacher imposes on the student when studying the discipline (rules of conduct in class, passes, use of mobile phones, retransmissions, etc.).

Applicants for higher education must adhere to educational and academic ethics and the schedule of the educational process; to be balanced, attentive.

Requirements may relate to attendance (inadmissibility of absences, delays, etc.); rules of conduct in the classroom (active participation, fulfillment of the required minimum of educational work, disconnection of telephones, etc.);

Preparation and participation in practical classes includes: acquaintance with the curriculum and plans of practical classes; study of theoretical material; performance of tasks proposed for self-study.

The applicant's response should show signs of independence of the tasks, the absence of signs of recurrence and plagiarism.

The presence of higher education students in practical classes is mandatory. Classes missed for good reasons must be completed. Attendance at lectures is a

mandatory component of the study of the material; at the lecture it is forbidden to distract the teacher from teaching the material, all questions, clarifications, etc. students ask at the end of the lecture in the allotted time;

Works that are submitted in violation of deadlines without good reason are evaluated at a lower score (75% of the possible maximum number of points for the type of activity points). Rearrangement of modules occurs in the presence of valid reasons (for example, hospital).

Academic Integrity Policy.

Adherence to academic integrity by students provides:

- independent performance of educational tasks, tasks of current and final control of learning outcomes;
- links to sources of information in case of use of abstracts, reports, Use of prohibited auxiliary materials or technical means during control measures (cheat sheets, abstracts, headphones, phones, smartphones, tablets, etc.);
- write-offs during control works are forbidden (including with use of mobile devices).

Mobile devices are allowed to be used only during online testing and preparation of practical tasks during the lesson. For violation of academic integrity, students may be held subject to the following academic liability: re-assessment (test, exam, test, etc.);

When organizing the educational process in PSMU teachers and students act in accordance with:

- Regulations on the organization of the educational process in the Poltava State Medical University.
- Regulations on the academic integrity of higher education seekers and employees of the Poltava State Medical University.
- Rules of procedure for students of the Ukrainian Poltava State Medical University.
- Regulations on the organization and methods of assessment of educational activities of higher education in the Poltava State Medical University.
- Regulations on the organization of independent work of students at the Poltava State Medical University.
- Regulations on working off missed classes and unsatisfactory grades by applicants for higher education of the Poltava State Medical University.
- Regulations on the procedure for forming individual educational trajectories by PSMU students.
- Regulations on the procedure for re-enrollment of academic disciplines and determination of academic difference.
- Regulations on the appeal of the results of the final control of knowledge of applicants for higher education.
- Regulations on the rating of applicants for higher education of the Poltava State Medical University.
- Regulations on financial incentives for academic success of students of the Poltava State Medical University.

The above provisions can be found at: (https://www.umsa.edu.ua/n-process/department-npr/normativni-dokumenti)

Description of the discipline (abstract)

“Anesthesiology and intensive care” is a clinical practice-oriented regulatory discipline, during which students develop professional skills in the organization of anesthesiology and intensive care of acute disorders of life support systems of patients. Professional skills in anesthesiology and intensive care are formed through the acquisition of theoretical knowledge and practical skills on issues such as organizational and legal aspects of the resuscitation service, anesthesiology, and intensive care, cardiovascular and cerebral therapy, protection of patients from the factors of surgical aggression, intensive therapy of disorders of oxygen status, water-electrolyte balance, acid-base state, separate states in the perioperative period and acute cerebral, respiratory, cardiac, renal, liver failure, shock, poisoning and so on. The assimilation of the material is accompanied by the acquisition of appropriate integral, general and professional competences.

The program of the discipline is presented by 1 module "Anesthesiology and intensive care" and does not provide meaningful modules

The educational process is organized according to the principles of the European Credit Transfer System.

Pre-requisition and postrequisition of the subject (interdisciplinary linkages)

Pre-requisition. Prerequisites The study of Anesthesiology and intensive care is based on the knowledge acquired by students in the study of such fundamental disciplines as anatomy, histology, physiology, pathological anatomy, pathological physiology, clinical anatomy and surgery; pharmacology, propedeutics of internal medicine, propedeutics of pediatrics, general surgery, neurology, emergency and emergency medical care.

Postrequisition Anesthesiology and intensive care lays the groundwork for the study of clinical surgery, internal medicine, pediatrics, traumatology and orthopedics, neurosurgery, and other disciplines that address diseases that are complicated by acute impaired vital functions.

Aim and objectives of the discipline:

the purpose of the discipline is

- mastering by students of systematic knowledge for organization of services of Anesthesiology and intensive care;
- development of strategy and tactics of an anesthesiologist while protecting the patient from factors of surgical aggression;
- development of strategy and tactics of the Clinician in the organization of intensive therapy;
- improving skills of diagnosis of the critical state, the organization and conduct of cardio-pulmonary resuscitation;
- formation of principles of clinical thinking in diagnosis of acute disorders of life support systems evaluation of patient's condition;
- develop an ability to make an informed decision regarding the choice of tactics of anesthetic management and organization of intensive therapy;

- development of professional skills, which are used in Anesthesiology and intensive care in severe violations of the life support functions of.

the main tasks of the discipline are

- identify basic principles of organization of services of Anesthesiology and intensive care;
- to choose methods and means of anesthesia;
- to anticipate possible anesthetic and operational risks and to justify their prevention;
- apply General principles and methods of anesthetic

security of different surgical interventions;

- to master the methods of diagnosis and organization of intensive care in certain acute disorders of vital functions;
- to interpret the main clinical manifestations and laboratory indicators of violations of vital functions;
- make a plan of examination and intensive care of patients with disorders of vital functions;

to diagnose clinical signs of death and terminal States

conduct SLCR:

- apply the basic algorithms of intensive care in patients with impaired vital functions.

Competencies and learning outcomes promoted by discipline (integral, general, special, matrix of competencies)

integral: the ability to solve typical and complex specialized tasks and practical problems in health care or training, which involves research and / or innovation and is characterized by the complexity and uncertainty of conditions and requirements;

general:

- ability to think abstractly, analyze and synthesize;
- the ability to learn and master modern knowledge;
- the ability to apply knowledge in practical situations;
- the ability to plan and manage time;
- knowledge and understanding of the subject area and understanding of professional activity;
- skills of using information and communication technologies;
- the ability to adapt and act in a new situation;
- the ability to make informed decisions;
- ability to work in a team;
- interpersonal skills;
- certainty and perseverance in terms of tasks and responsibilities;
- the desire to preserve the environment;
- ability to act on the basis of ethical considerations (motives);
-

pecial (professional, subject):

- Organization of work of Anesthesiology and intensive care service;

- Strategy and tactics of anesthesiologic support at various types of surgical interventions;
- Intensive care strategy and tactics for acute disorders of life support systems;
- Technology of professional medical actions used in the practice of Anesthesiology and intensive care;
- Cardiopulmonary and cerebral resuscitation.

Learning outcomes for the discipline:

Upon completion of the study, students must

on completion of study of discipline students must

1. Definition, history of development and legal aspects of the service of anesthesiology and intensive care.
2. And stage CPR.
3. Phase II CPR.
4. Stage III CPR.
5. Clinical pathophysiology and the General principles of pain therapy..
6. The tools and techniques of General anesthesia..
7. The organization of protection of patients against surgical aggression factors.
8. Anesthetic management of individual types of surgery.
9. Intensive therapy of certain types of acute disorders of life support:

- violations of the oxygen status; violations of the water-electrolyte balance and acid-base balance;
- individual States in perioperation period;

acute cerebral insufficiency;

- acute respiratory failure;
- acute heart failure;
- shocks;
- acute renal failure;
- acute liver failure;
- acute poisoning.

to be able to:

1. To organize work individual and team work of the Anesthesiology and intensive care;
2. To audit and sanitation of the oral cavity for the manual and machine ways.
3. To restore the patency of the respiratory tract (ingestion Safar, duct, laryngeal mask airway, komtur, Tubac trachea).
4. To arrange oxygen and respiratory therapy (elementary methods, manual and automatic respirators).
5. Hold compressions during indirect heart massage.
6. To establish peripheral dowanna of administration of medications.
7. To establish unallo of administration of medications.
8. Perform the basic, immediate and advanced complexes with CPR.
9. Use an electric defibrillator (automatic external and manual).
10. To assess the severity of pain on YOUR scales, Wong-Baker, FLACC.

11. To assess changes in indicators ntraoperative monitoring (pulse, blood pressure, pulse oximetry, capnography).
12. To determine the level of consciousness on a scale Glasgow FOUR.
13. To determine the type and degree of respiratory distress.
14. Measurement of Central venous pressure.
15. Calculation of daily water balance, determination of the degree of dehydration.
16. The calculation of the basic deficiencies of electrolytes,
17. Selection and calculation of the number of solutions to correct the acid-base balance.
18. The definition of the schedules of acid-base balance.
19. The calculation of the amount of infusion of funds to correct the schedules of KOS.
20. Draw up a program of intense therapy for a particular patient with acute disorders of the functions of life support.
21. Methods of detoxification (gastric lavage, forced diuresis).

Thematic plan of lectures (in modules) with the main issues discussed at the lectures

№	Name of the topic	Number of hours
1	**Anesthesiology. Clinical pathophysiology and general principles of pain therapy.** Legal support of medical care to the population. Determine the required amount of medical care for different segments of the population in accordance with the stage of providing medical care. Determine the necessary material and technical equipment for the various stages of medical care. Tasks and types of premedication. Features of preoperative preparation in childhood. Anesthesiological and operative risk assessments. Classification and physiological justification of the main types of anesthesia. Organization of the postoperative period in patients of different ages. Recommendations on the structure of the service of anesthesiology and IT in medical and preventive institutions of Ukraine. Classification of methods of inhalation narna semi-open, semi-closed and closed respiratory circuits. Clinic of inhalation anesthesia with the main inhalation anesthetics and its features in children. Possible complications during the use of inhalation anesthesia, their prevention, diagnosis and therapy. Classification and methods of conducting various types of non-inhalation anesthesia. Clinic of non-inhalation anesthesia with the main non-inhalation anesthetics and its features in children. Features of anesthesia depending on the route of administration of the anesthetic. Possible complications during the use of drugs for non-inhalation anesthesia, their prevention, diagnosis and therapy. The principle of operation, advantages and disadvantages of open circuit.	2
2	**Intensive care for acute respiratory failure (ARF).** Intensive care of acute respiratory failure (ARF). Classification of hypoxia, clinic,	2

	differential diagnosis of different types of hypoxia. Hypercapnia, clinic. Hypocapnia, clinic. ARF classification. Basic principles of ARF intensive care. Oxygen therapy: methods, indications, toxic effects of oxygen. Ventilation, indications, methods, efficiency criteria. Methods of restoring airway patency and improving lung drainage function. Rehabilitation of the tracheobronchial tree and oropharynx. Aspiration syndrome, pathogenesis, clinical manifestations, IT. Intensive care of postoperative ARF. Respiratory distress syndrome, adults, etiology, pathogenesis, clinical signs, intensive care.	
3	**Intensive care of shocks.** Clinical physiology of the hemodynamic system. Determination of shock. General principles of shock diagnostics. General principles of intensive care therapy. General principles of diagnosis and treatment of shocks. Cardiogenic shock. Obstructive shock. Distributive shocks. Hypovolemic shocks.	2
4	**Intensive care of acute kidney and liver disorders.** Causes and pathogenesis of acute renal failure. Differential diagnosis of prerenal, real and postrenal oliguria, anuria. Laboratory diagnosis of ARF. Stages of the clinical course of ARF. Basic principles of ARF treatment. Uremic coma, principles of intensive care. Indications for hemodialysis. Calculation of daily fluid requirements of patients with ARF. Causes of acute liver failure. Clinical manifestations of acute liver failure. Laboratory diagnostics. Basic principles of treatment of liver damage. Hepatic coma, principles of intensive care.	2
5	**Intensive care of acute poisoning**. Basic principles of acute IT poisoning. Basic principles of forced diuresis. Extracorporeal methods of detoxification, indications and contraindications, technical means, technique of execution. Principles of antidote therapy. Pathogenesis, clinic and IT in methyl alcohol poisoning. Pathogenesis, clinic and IT in poisoning by ethyl alcohol and its surrogates. Pathogenesis, clinic and IT are poisoned by payments and barbiturates. Pathogenesis, clinic and IT in organophosphorus poisoning. Pathogenesis, clinic and IT in acid and alkali poisoning. Pathogenesis, clinic and IT in carbon monoxide poisoning. Pathogenesis, clinic and IT in poisoning by poisonous fungi. Features of emergency care for insect and animal bites.	2
	Total	10

Thematic plan of seminars for modules and content modules, indicating the main issues addressed at the seminar

Not provided.

Thematic plan of practical classes by modules and content modules, indicating the main issues addressed in the practical training

№	Name of the topics	Number of hours
	Module 1. «Anaesthesiology and intensive care»	
1.	**Topic 1. Definition, history of development and organizational and**	2

	legal aspects of anesthesiology and intensive care service. Anesthesiology and intensive care: definition as an independent scientific and practical medical discipline, development in Ukraine and the world, purpose, tasks, organization of service in Ukraine.	
2.	**Topic 2. Resuscitation.** Stage I of cardiopulmonary and cerebral resuscitation (CPCR). Clinical pathophysiology of terminal conditions. Diagnosis of clinical death. Causes of circulatory arrest. Stages and stages of CPCR according to P. Safar. And (immediate) stage of CPCR: technology, features of CPCR in hospital, depending on the cause of clinical death and age of the patient. Evaluation of the effectiveness of resuscitation measures.	2
3.	**Topic 3. Resuscitation.** Stage II of cardiopulmonary and cerebral resuscitation (CPCR). Technology and features in the hospital conditions of the second stage of CPCR, ECG-diagnosis of circulatory arrest, defibrillation (types, indications, safety), diagnosis and elimination of potentially reversible causes of circulatory arrest, the scope and justification of drug therapy during resuscitation. Teamwork.	2
4.	**Topic 4. Resuscitation.** Stage III of cardiopulmonary and cerebral resuscitation (CPCR). Tasks and stages of the third stage of CPCR. Scales for assessing the severity of the patient's condition. Definitions, stages, medical tactics at post-resuscitation disease. Nonspecific measures to restore consciousness. Features of the course of terminal conditions in modern conditions: the concept of intensive care disease, multiorgan failure syndrome. Chronic vegetative state: definitions, types. Diagnosis of brain death. Criteria for termination of resuscitation. Signs of biological death.	2
5.	**Topic 5. Anesthesiology**. Clinical pathophysiology and general principles of pain therapy. Pain: definitions, types, stages and theories of formation. Characteristics of antinociceptive systems. Pain rating scales. Classification of anesthesia. Means and methods of analgesia, local and regional anesthesia. Strategies for treating acute and chronic pain.	2
6.	**Topic 6. Anesthesiology.** Means and methods of general anesthesia. General anesthesia: definitions, types, theories, components, methods. Clinic of general anesthesia on the example of ether anesthesia. Inhalation anesthesia: equipment, tools, anesthesia circuits, the principle of the evaporator, modern tools. Non-inhalation anesthesia: types, modern means. The concept of combined anesthesia. Clinical pharmacology of muscle relaxants.	2
7.	**Topic 7. Anesthesiology.** Organization of patient protection against factors of surgical aggression. The effect of surgery and anesthesia on homeostasis. Stages of perioperative management of the patient from the standpoint of anesthesiologist. Preoperative period: purpose, tasks, features of collection of anesthesiological anamnesis and examination, anesthesiological risks, their prevention, definition, purposes, types of premedication, features of anesthesiological preparation of the patient	2

	for planned and urgent surgical interventions. Operational period: purpose, tasks, modern standards of anesthesiological monitoring, principles of work and interpretation of results of the basic devices of monitoring of vital functions, the characteristic and anesthesiological tactics at the main life-threatening complications. Postoperative period: purpose, tasks, criteria for awakening the patient, the concept of accelerated rehabilitation surgery, the main complications of the postoperative period, general principles of anesthesia management of the patient in the postoperative period.	
8.	**Topic 8. Anesthetic management of certain types of surgical interventions.** Features of anesthesiological tactics in neurosurgery, thoracic, abdominal, pediatric, minimally invasive cavity and bariatric surgery, urology, orthopedics and traumatology, obstetrics and gynecology, in an outpatient setting.	2
9.	**Topic 9. General issues of intensive care.** Oxygen status and its disorders. Clinical physiology of respiration. Stages of oxygen transport. Types of hypoxia. Diagnosis of hypoxic conditions. Oxygen therapy: methods, indications. Respiratory therapy: methods, concepts of basic principles of operation and modes of ventilators. Hyperbaric oxygenation: principle, indications and contraindications. The concept of extracorporeal membrane oxygenation. Complications of oxygen, respiratory therapy and their prevention.	2
10.	**Topic 10. General issues of intensive care.** Water-electrolyte balance (WEB), Acid-base state (ABS) and their violations. Clinical physiology, types of disorders of water and electrolyte metabolism (sodium, potassium, chlorine, calcium), their causes, methods of diagnosing the condition of WEB and osmolarity, general principles of correction. ABS and its disorders: clinical physiology, the role of buffer systems, types of disorders, methods of diagnosis and correction	2
11.	**Topic 11. General issues of intensive care.** The basics of infusion-transfusion therapy (ITT) and clinical nutrition. Principles for determining the patient's needs for fluid volume and composition. Classification and principle of choice of ITT tools. Methods, means of organization, complications of ITT. Features of infusion therapy in children and the elderly. Complications of infusion therapy. Clinical nutrition: the concept of gastrointestinal insufficiency, definition, ways, classification of means for enteral and parenteral nutrition, technique of organization and monitoring of effectiveness.	2
12.	**Topic 12. Intensive care of specific conditions of the perioperative period.** Prevention and treatment of non-specific complications in patients who require intensive care. Clinical pathophysiology, diagnosis of homeostasis disorders, anesthesia tactics and intensive care of pyloroduodenal stenosis, intestinal obstruction, acute pancreatitis, gastrointestinal bleeding, peritonitis, multiple traumatic lesions	2
13.	**Topic 13. Intensive care of acute cerebral insufficiency (ACI).**	2

	Clinical anatomy and physiology of cerebral homeostasis. The concept of GCN. Types and methods of assessing the level of disturbance of consciousness. Brain edema: causes, types, principles of intensive care. Coma: definition, causes, tactics of the doctor at a coma of an unclear etiology. Methods of differential diagnosis of comatose states. Intensive care for insects of various etiologies (hypo-, hyperglycemic, hyperosmolar, hepatic, uremic). Acute cerebrovascular disorders: definition, causes, diagnosis, intensive care.	
14.	**Topic 14. Intensive care of acute respiratory failure (ARF).** Clinical anatomy and physiology of the respiratory system. ARF: definition, classification, general principles of therapy. Intensive care of ARF at separate pathological states in the postoperative period, at drowning, an aspiration syndrome, an asthmatic condition, pulmonary edema, an acute respiratory distress syndrome of adults. Classification, etiology and pathogenesis, diagnosis and intensive care of pneumonia	2
15.	**Topic 15. Intensive care of acute heart failure (AHF).** Clinical anatomy and physiology of hemodynamics. Definitions and types of acute heart failure. Acute left ventricular failure: causes, clinic, diagnosis, general principles of intensive care. Organizational and therapeutic tactics in acute left ventricular failure due to myocardial infarction, cardiac arrhythmias and conduction.	2
16.	**Topic 16. Intensive therapy of shocks.** Shock: definition, classification, diagnosis, general principles of intensive care. Pathophysiology, diagnosis, features of the course and intensive care of certain types of shock (cardiogenic, obstructive, hemorrhagic, traumatic, burn, anaphylactic, septic).	2
17.	**Topic 17. Intensive care of acute renal (ARF) and liver(ALF) failure.** Clinical anatomy and physiology of the urinary system. Acute kidney damage: definition, classification. ARF: forms, causes, pathophysiology, clinical course, methods of diagnosis and intensive care depending on the stage. Methods of renal replacement therapy. Clinical anatomy and physiology of the liver. GPN: definition, classification, forms, causes, pathophysiology, clinical course, methods of diagnosis and intensive care depending on the stage.	2
18.	**Topic 18. Intensive care of acute poisoning.** Definition of "poison" and "antidote". Classification of poisonings. General principles of intensive care in acute poisoning. Intensive therapy of acute poisoning by tranquilizers, barbiturates, opiates, organophosphorus substances, ethyl and methyl alcohols, carbon monoxide, cauterizing liquids, poisonous mushrooms. Intensive care for insect and animal bites. Principles, indications and contraindications to the use of detoxification methods	2
19.	FINAL MODULE CONTROL	4
	Total	40

Thematic plan for self-learning modules and semantic modules indicating the main issues

№	Name of the topics	Number of hours
	Module 1. «Anaesthesiology and intensive care»	
1	**Preparation for practical classes – theoretical preparation and development of practical skills**	18
2	**Topic 1. Resuscitation.** Stage III of cardiopulmonary and cerebral resuscitation (CPCR). Tasks and stages of the third stage of CPCR. Scales for assessing the severity of the patient's condition. Definitions, stages, medical tactics at post-resuscitation disease. Nonspecific measures to restore consciousness. Features of the course of terminal conditions in modern conditions: the concept of intensive care disease, multiorgan failure syndrome. Chronic vegetative state: definitions, types. Diagnosis of brain death. Criteria for termination of resuscitation. Signs of biological death.	10
3	**Topic 2. Intensive therapy of shocks.** Shock: definition, classification, diagnosis, general principles of intensive care. Pathophysiology, diagnosis, features of the course and intensive care of certain types of shock (cardiogenic, obstructive, hemorrhagic, traumatic, burn, anaphylactic, septic).	10
4	**Preparation for final module control**	2
	Total	40

Individual tasks

Preparation of student scientific work on the subject of discipline

List of theoretical questions for preparing students for final module control:

1. AIC: definition as an independent scientific and practical medical discipline, development in Ukraine and the world, purpose, tasks, organization of service in Ukraine.
2. AIC: development in Ukraine and the world, purpose, objectives, organization of service in Ukraine.
3. AIC: purpose, tasks, organization of service in Ukraine.
4. Clinical pathophysiology of terminal conditions.
5. Diagnosis of clinical death.
6. Reasons for stopping the circulation.
7. Steps and stages of CPCR by P. Safar.
8. I (immediate) stage of CPCR: technology, features of CPCR in hospital settings, depending on the cause of clinical death and age of the patient.
9. Evaluation of the effectiveness of resuscitation activities.
10. Technology and features in hospital conditions of the second stage of CPCR.
11. ECG-diagnostics of type of stopping of blood circulation.
12. Defibrillation: types, indications, safety,
13. Diagnosis and elimination of potentially reversible causes of stoppage of blood circulation, volume and justification of drug therapy during resuscitation.

14. Objectives and Stages of Phase III of the CPCR.
15. Patient severity scales.
16. Definition, stages, medical tactics in post-animation diseases.
17. Non-specific measures of consciousness recovery.
18. Features of the course of terminal states in modern conditions: the concept of intensive care disease, multi-organ failure syndrome.
19. Chronic vegetative state: definition, species.
20. Diagnosis of brain death. Criteria for termination of resuscitation. Signs of biological death.
21. Pain: definition, types, stages and theories of formation.
22. Characteristics of antinociceptive systems.
23. Pain assessment scales.
24. Classification of anesthesia.
25. Means and methods of analgesia, local and regional anesthesia.
26. Strategies for the treatment of acute and chronic pain.
27. General anesthesia: definition, types, theories, components, methods.
28. Clinic of general anesthesia on the example of ether anesthesia.
29. Inhalation anesthesia: equipment, instruments, anesthetic circuits, the principle of evaporator operation, modern means.
30. Non-inhalation anesthesia: types, modern means.
31. The concept of combined anesthesia.
32. Clinical pharmacology of muscle relaxants.
33. Occupational hazards in anesthesiology.
34. Effect of surgery and anesthesia on homeostasis.
35. Stages of perioperative management of the patient from the position of anesthesiologist.
36. Preoperative period: purpose, objectives.
37. Features of collecting anesthetic history and examination.
38. Anesthetic risks, their prevention.
39. Definition, goals, types of premedication.
40. Features of anesthetic preparation of the patient for planned and urgent surgical interventions.
41. Operating period: purpose, objectives.
42. Modern standards of anesthesiology monitoring.
43. Principles of operation and interpretation of the results of the basic vital function monitoring devices.
44. Characterization and anesthetic tactics for major life-threatening complications.
45. Postoperative period: purpose, objectives.
46. Criteria for awakening the patient, the concept of surgery for accelerated rehabilitation.
47. The main complications during the postoperative period.
48. General principles of anesthesiologic management of the patient in the postoperative period.
49. Features of anesthesiologic tactics in neurosurgery.
50. Features of anesthesiological tactics in thoracic surgery
51. Features of anesthesiology tactics in abdominal surgery.

52. Features of anesthesiologic tactics in pediatric surgery.
53. Features of anesthesiology tactics in minimally invasive cavity surgery.
54. Features of anesthesiology tactics in bariatric surgery
55. Features of anesthesiology tactics in urology.
56. Features of anesthesiology tactics in orthopedics and traumatology.
57. Features of anesthesiology tactics in obstetrics and gynecology
58. Features of anesthesiologic tactics in an outpatient setting.
59. Clinical physiology of respiration. Stages of oxygen transport.
60. Types of hypoxia. Diagnosis of hypoxic conditions.
61. Oxygen therapy: methods, indications.
62. Respiratory therapy: methods, concepts about the basic principles of operation and modes of artificial ventilation apparatus.
63. Hyperbaric oxygenation: principle, indications and contraindications.
64. The concept of extracorporeal membrane oxygenation.
65. Complications of oxygen, respiratory therapy and their prevention.
66. Clinical physiology, types of disorders of exchange of water and electrolytes (sodium, potassium, chlorine, calcium),
67. Methods for diagnosis of WEB status and osmolarity,
68. General principles of WEB correction.
69. Clinical physiology of ABS, role of buffer systems,
70. Types of ABS disorders, diagnostic and correction methods
71. Principles of determining the patient's needs in the volume and composition of the fluid.
72. Classification and Principle of Choosing ITT Funds.
73. Methods, means of organization, complications of ITT.
74. Features of infusion therapy in children and the elderly.
75. Complications of infusion therapy.
76. The concept of Gastrointestinal insufficiency
77. Definition, ways, classification of means for enteral and parenteral nutrition,
78. Technique of organization and monitoring of efficiency of clinical nutrition
79. Clinical pathophysiology, diagnostics of homeostasis disorders, anesthesiology tactics and intensive therapy of pyloroduodenal stenosis
80. Clinical pathophysiology, diagnostics of homeostasis disorders, anesthesiology tactics and intensive therapy of intestinal obstruction
81. Clinical pathophysiology, diagnosis of homeostasis disorders, anesthesiology tactics and intensive care of acute pancreatitis
82. Clinical pathophysiology, diagnostics of homeostasis disorders, anesthesiology tactics and intensive therapy of gastrointestinal bleeding
83. Clinical pathophysiology, diagnosis of homeostasis disorders, anesthesiology tactics and intensive care of peritonitis
84. Clinical pathophysiology, diagnostics of homeostasis disorders, anesthesiology tactics and intensive treatment of multiple traumatic lesions.
85. Concept of ACF.
86. Types and methods of assessing the degree of consciousness impairment.
87. Brain edema: causes, types, principles of intensive care.
88. Coma: definition, causes, tactics of the doctor in a coma of unclear etiology.

89. Methods of differential diagnosis of coma.
90. Intensive therapy in insects of different etiology (hypo-, hyperglycemic, hyperosmolar, hepatic, uremic).
91. Acute disorders of the cerebral circulation: determination, causes, diagnosis, intensive care.
92. Acute respiratory tell your: definition, classification, general principles of therapy.
93. Intensive therapy of acute respiratory failure at separate pathological conditions in the postoperative period,
94. Intensive care of acute respiratory failure at drowning
95. Intensive therapy of acute respiratory failure in aspiration syndrome
96. Intensive therapy of acute respiratory failure at an asthmatic condition,
97. Intensive therapy of acute respiratory failure for pulmonary edema,
98. Intensive care of acute respiratory failure in acute respiratory distress syndrome in adults.
99. Classification, etiology and pathogenesis, diagnosis and intensive care of pneumonia
100. Clinical anatomy and physiology of hemodynamics.
101. Definition and types of acute heart failure.
102. Acute left ventricular insufficiency: causes, clinic, diagnosis, general principles of intensive care.
103. Organizational and therapeutic tactics for acute left ventricular failure due to myocardial infarction,
104. Organizational and therapeutic tactics for acute left ventricular failure due to paroxysmal tachycardia.
105. Organizational and therapeutic tactics for acute left ventricular failure due to complete complete atrioventricular blockade.
106. Shock: definition, classification, diagnosis,
107. Shock: general principles of intensive care.
108. Pathophysiology, diagnosis, features of the course and intensive care of cardiogenic shock
109. Pathophysiology, diagnosis, features of the course and intensive care of obstructive shock
110. Pathophysiology, diagnosis, features of the course and intensive care of hemorrhagic shock
111. Pathophysiology, diagnosis, features of the course and intensive care of traumatic shock,
112. Pathophysiology, diagnosis, features of the course and intensive care of burn shock,
113. Pathophysiology, diagnosis, features of the course and intensive care of anaphylactic shock
114. Pathophysiology, diagnosis, features of the course and intensive care of septic shock.
115. Clinical anatomy and physiology of the urinary system.
116. Acute kidney damage: definition, classification.
117. Acute renal failure: forms, causes, pathophysiology, clinic, methods of diagnosis and intensive care of stage I.

118. Acute renal failure: forms, causes, pathophysiology, clinic, methods of diagnosis and intensive care of stage II.
119. Acute renal failure: forms, causes, pathophysiology, clinic, methods of diagnosis and stage III intensive care.
120. Methods of renal replacement therapy.
121. Clinical anatomy and physiology of the liver.
122. Acute liver failure: definition, classification, forms, causes,
123. Acute liver failure: pathophysiology, clinic, methods of diagnosis and intensive care.
124. Definition of "poison" and "antidote".
125. Classification of poisons.
126. General principles of intensive care in acute poisoning.
127. Intensive therapy for acute poisoning by tranquilizers
128. Intensive therapy of acute barbiturate poisoning
129. Intensive care for acute opiate poisoning
130. Intensive therapy of acute poisoning with organophosphorus substances
131. Intensive care for acute poisoning with ethyl alcohol
132. Intensive therapy for acute poisoning with methyl alcohol
133. Intensive care for acute carbon monoxide poisoning
134. Intensive therapy for acute poisoning with incendiary liquids
135. Intensive therapy for acute poisoning by poisonous mushrooms.
136. Intensive care for insect and animal bites.
137. Principles, indications and contraindications to the use of detoxification methods.

List of practical skills for final module control:
1. Organize the work of individual and team work of the AIC service;
2. To carry out the audit and rehabilitation of the oral cavity by manual and hardware methods.
3. To restore airway patency (Safari techniques, air duct, laryngeal mask, kombiutub, tracheal intubations).
4. Organize oxygen and respiratory therapy (elementary methods, manual and automatic respirators).
5. Compression with indirect heart massage.
6. Set up peripheral prescription medication.
7. Set up intraosseous medication.
8. To conduct basic, immediate and extended complexes of cardiopulmonary resuscitation.
9. Use an electric defibrillator (automatic external and manual).
10. Assess the severity of pain on the scale of VAS, Wong-Baker, FLACC.
11. To estimate changes of indicators of intraoperative monitoring (pulse, blood pressure, pulse oximetry, capnography).
12. To determine the level of consciousness on the Glasgow scale, FOUR.
13. To determine the type and degree of respiratory failure.
14. Measurement of central venous pressure.
15. Calculation of daily water balance, determination of the degree of dehydration.
16. Calculation of deficits of basic electrolytes,

17. Selection and calculation of quantity of solutions, for correction of WEB.
18. Determining the type of ABS schedule.
19. Calculation of volumes of infusion means for correction of the schedule of ABS.
20. Develop an intensive care program for a specific patient with acute life-threatening disorders.
21. Perform gastric lavage,
22. Draw up a program of forced diuresis.

System of current and final control

Current control is carried out by the researcher and pedagogue systematically, during practical classes, the implementation of a specific type of work provided for in the working curriculum of the discipline.

With the beginning of teaching the discipline, the requirements for current control are brought to the notice of applicants for higher education.

The teacher must assess the success of each student in each class on a four-point (traditional) scale, taking into account standardized, generalized criteria for assessing the knowledge of higher education.

Table 1

Standardized generalized criteria for assessing the knowledge of higher education students in UMSA

On a 4-point scale	Score in ECTS	Evaluation criteria
5 (excellent)	A	The student shows special creative abilities, is able to acquire knowledge independently, without the help of the teacher finds and processes the necessary information, is able to use the acquired knowledge and skills for decision-making in unusual situations, convincingly argues answers, independently reveals own talents and inclinations, possesses not less than 90 % of knowledge on the topic both during the survey and all types of control.
4 (good)	B	The student is fluent in the studied amount of material, applies it in practice, freely solves exercises and problems in standardized situations, independently corrects errors, the number of which is insignificant, has at least 85% knowledge of the topic as during the survey, and all types of control .
	C	The student is able to compare, summarize, systematize information under the guidance of a scientific and pedagogical worker, in general, independently apply it in practice, control their own activities; to correct mistakes, among which there are significant ones, to choose arguments to confirm opinions, has at least 75% of knowledge on the topic both during the survey and all types of control.

3 (satisfactory)	D	The student reproduces a significant part of the theoretical material, shows knowledge and understanding of the main provisions 3 with the help of research and teaching staff can analyze educational material, correct errors, among which there is a significant number of significant, has at least 65% knowledge 3 topics as during the survey, and all types of control.
	E	The student has the educational material at the level of higher than the initial, a significant part of it reproduces at the reproductive level, has at least 60%) knowledge of 3 topics both during the survey and all types of control.
2 (unsatisfactory)	PX	The student has the material at the level of individual fragments that make up a small part of the material, has less than 60%) knowledge of the topic both during the survey and all types of control.
	P	The student has the material at the level of elementary recognition and reproduction of individual facts, elements, has less than 60%) knowledge of the topic as during the survey, and all types of control.

After the current lesson, which precedes the final module control, the conversion of the total assessment of renal performance for the module and the traditional 4-point scale is converted into a multi-point (maximum 120 points) according to table 2.

table 2

Unified table of correspondence of scores for current performance, scores for FMC, exam, and traditional four-point score.

Average score for current performance (A)	**Points for current success from the module (A * 24)**	**Points for PMK from the module (A * 16)**	**Points for the module and / or exam (A * 24 + A * 16)**	**ECTS Category**	**By 4-point scale**
2	48	32	80	F	2 unsatisfactory
2,1	50	34	84	FX	
2,15	52	34	86		
2,2	53	35	88		
2,25	54	36	90		
2,3	55	37	92		
2,35	56	38	94		
2,4	58	38	96		
2,45	59	39	98		
2,5	60	40	100		

2,55	61	41	102		
2,6	62	42	104		
2,65	64	42	106		
2,7	65	43	108		
2,75	66	44	110		
2,8	67	45	112		
2,85	68	46	114		
2,9	70	46	116		
2,95	71	47	118		
3	72	50	122	E	3 satisfactory
3,05	73	50	123		
3,1	74	50	124		
3,15	76	50	126		
3,2	77	51	128		
3,25	78	52	130	D	
3,3	79	53	132		
3,35	80	54	134		
3,4	82	54	136		
3,45	83	55	138		
3,5	84	56	140	C	4 good
3,55	85	57	142		
3,6	86	58	144		
3,65	88	58	146		
3,7	89	59	148		
3,75	90	60	150		
3,8	91	61	152		
3,85	92	62	154		
3,9	94	62	156		
3,95	95	63	158		
4	96	64	160	B	
4,05	97	65	162		
4,1	98	66	164		
4,15	100	66	166		
4,2	101	67	168		
4,25	102	68	170		
4,3	103	69	172		
4,35	104	70	174		
4,4	106	70	176		
4,45	107	71	178		
4,5	108	72	180	A	5 excellent
4,55	109	73	182		
4,6	110	74	184		
4,65	112	74	186		
4,7	113	75	188		

4,75	114	76	190		
4,8	115	77	192		
4,85	116	78	194		
4,9	118	78	196		
4,95	119	79	198		
5	120	80	200		

The final module control is carried out after the completion of the study of all topics of the module at the last control session of the module.

Students who have attended all the classrooms provided by the curriculum in the discipline and have scored at least the minimum number of points during the study of the module are admitted to the final control. do not have unexploited omissions of lectures, practical classes, have mastered the topics made for independent work within the module.

A student who, for valid or non-valid reasons, has missed classes is allowed to work off academic arrears until a certain deadline.

The minimum convertible sum of points of current success for all modules of the discipline **is 72 points**.

The FMC score is evaluated in points and is not converted into a traditional 4-point score. The maximum number of FMC points is 80 points. The minimum number of FMC points at which the control is considered completed is 50 points. The maximum number of points per module is 200 points (of which up to 120 points for current performance).

Applicants for higher education, who during the study of the module, had an average score of 4.50 to 5.0 are exempted from the FMC and automatically (by agreement) receive a final grade, respectively (to Annex 1), with the presence of the applicant at the FMC is required.

conditions of violation by the applicant of higher education of the rules of academic integrity (p.2.2.5. Rules of Procedure) the results of the assessment obtained during the preparation of the FMC student for the answer is graded "unsatisfactory".

The form of final module control is standardized and includes control of theoretical and practical training.

FMC structure

Test control 50 tests = 50 minutes	0-20 points
Theoretical question	0-30 points
Practical experience: -Cardiopulmonary resuscitation	0-30 points

The result of the final module control is evaluated in points (traditional 4-point evaluation is not given). The maximum number of points of the final modular control is 80 points. The minimum number of points of the final module control, for which the control is considered to be passed, is 50 points.

Learning methods.

The basic types of educational activity of students according to the curriculum are:

- verbal (lecture, explanation, story, conversation);
- visual (observation, illustration, demonstration);
- practical (different types of management: performing manipulations, assisting the doctor in clinical situations, drawing up a treatment plan).
Active teaching methods: (thematic discussions, brainstorming, analysis of specific situations (case method), trainings, business games)

Control methods:
- oral control;
- written control;
- test control;
- programmable control;
- practical check;
- self-control;
- self-esteem
Types of control:
- previous (incoming);
- current;
- final modular control.

Methodological support:
1. Work curriculum;
2. Methodical development of lectures;
3. Guidelines for teachers;
4. Methodical instructions for independent work of students during the preparation for practical training and at the class
5. List of recommended literature;
6. materials for control of students' knowledge, skills and skills:
- tests of different levels of difficulty;
- tests from the bank of licensing examinations "Step-2: General medical preparation";
- situational tasks;
7. Videos;
8. Multimedia presentations.

Recommended Books
Basic

1. John F. Butterworth IV, David C. Mackey, John D. Wasnick, Morgan & Mikhail's Clinical Anesthesiology. Sixth ed. 2018, - 1400 pp.
2. Allman KG, Wilson IH. Oxford Handbook of Anaesthesia. Oxford University Press. 2016, 1228 pp.

Auxiliary:

1. Hadzic Admir, ed. New York School of Regional Anesthesia. «Textbook of regional anesthesia and acute pain management» New York: McGraw-Hill Education, 2016.

2. Pilbeam's Mechanical Ventilation: Physiological and Clinical Applications, 6th Ed. Edited by J.M. Cairo 2016, - 589 pp.
3. van de Velde M, Clark V, Fernando R. Oxford Textbook of Obstetric Anaesthesia. Oxford University Press. 2016, 1072 pp.

Information resources

1. Official site of the European Resuscitation Council - https://www.erc.edu/
2. Official site of the Association of Anesthesiologists of Ukraine - http://aay.org.ua
3. Official site of the Association of Anesthesiologists, Kyiv - http: // http: //criticalcare.kiev.ua
4. Official site of the European Association of Anesthesiologists -http: //www.euroanesthesia.org
5. Official site of the European Intensive Care Association - http://www.esicm.org
6. Official site of the American Association of Anesthesiologists http://www.asahq.org/homepageie.html
7. Official site of the international scientific periodical Emergency Medicine Journal - https://emj.bmj.com/
8. The fictitious website of the international scientific periodical, Journal of Emergency Medicine, https://www.jem-journal.com/
9. The Official Journal of the American Journal of Emergency Medicine - https://www.jamjournal.com/
10. Official site of the international scientific periodical Anesthesiology - http://www.anesthesiology.org
11. Official site of the international scientific periodical Anesthesia and Analgesia - http://www.anesthesia-analgesia.org
12. British Journal of Anaesthesia Official Website of the British Scientific Periodical - http://www.bja.oupjournals.org
13. British Medical Journal Official Website - http://www.bmj.com
14. Canadian Journal of Anaesthesia Official Website of the Canadian Scientific Periodical - http://www.cja-jca.org
15. Official site of the international scientific periodical The Lancet - http://www.thelancet.com
16. Official site of the British Scientific Periodicals History of Anesthesia Society - http://www.histansoc.org.uk
17. Scopus Scientific Literature Search Resource - https://www.scopus.com
18. Web os Science Fiction Search -http: //ipscience.thomsonreuters.com/product/web-of-science/
19. Cochrane Collaboration Medical Literature Search Resource - http://www.cochrane.org
20. PubMed medical literature search resource - http://www.ncbi.nlm.nih.gov/PubMed/
21. Medical Literature Search Resource (Anesthesiology and Intensive Care Unit - http://www.twirpx.com/files/medicine/anaesthesiology/anesthesio

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