

**Odessa National Medical University**  
**Medical faculty**  
**Department of Anesthesiology, Intensive Care and Emergency Medicine**

**Syllabus of the course**  
**"Anesthesiology and Intensive Care"**

<b>Workload</b>	90 hours (3 credits)
<b>Term, Year of study</b>	IX-X 5th
<b>Days, hour, location</b>	The discipline is taught according to the approved schedule Clinical bases of the department – Odesa Regional Clinical Hospital (ORCH), Municipal Clinical hospital (MCH) N 11, Odesa Regional Clinical Children’s Hospital (ORCCH), Center for Reconstructive and Restorative Medicine (University Clinic)
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Workplace	ORCH MCH N 11 ORCCH Center for Reconstructive and Restorative Medicine (University Clinic)
Consultations	The schedule of consultations is posted on the website of the department. Online consultations are conducted using the platform MS Teams, Zoom

## COMMUNICATION

Depending on the form of study (distance or classroom) communication with students will be carried out using E-mail, social networks, telephone, face-to-face meetings

## THE COURSE ABSTRACT

### Description of the discipline

**The subject of study of the discipline** "Anesthesiology and Intensive Care" are: methods of various types of anesthetic management, their peculiarities and possible complications; basics of intensive care; terminal states; transfusion of donor blood components, complications of blood transfusion and their prevention; cardiopulmonary resuscitation protocols; clinical course, diagnosis, treatment of acute respiratory failure, acute renal and hepatic failure; acute poisoning; coma;

diagnosis and correction of water-electrolyte imbalance; traumatic injuries; tactics of managing patients in a state of shock.

### **Interdisciplinary links**

Anesthesiology and intensive care, as a science, is closely related to other fundamental medical disciplines and:

a) is based on the study of human anatomy; histology, biochemistry, physiology, pathomorphology; pathophysiology; internal medicine, pediatrics, pharmacology and integrates with these disciplines, etc.;

b) lays the foundations for students of anesthesiology and intensive care of emergencies arising in the clinic of internal medicine, pediatrics, surgery, traumatology and orthopedics, neurosurgery, urology, obstetrics and gynecology and other disciplines, which use methods of anesthesia and intensive care, which needs the integration with these disciplines and the formation of skills to apply knowledge in the process of further study and professional activities;

c) provides an opportunity to gain practical skills and develop professional skills for the diagnosis and rendering emergency medical aid and intensive care for certain pathological conditions and during the period of patient care.

### **The aim of the discipline**

*The aim* of teaching the discipline "Anesthesiology and Intensive Care" is to get acquainted with the principles of local and general anesthesia, mastering algorithms for diagnosing terminal conditions, clinical death and measures for basic life support, acquaintance with the basics of transfusiology and mastering techniques for blood transfusion, blood transfusion complications, registration of its results in the medical card of an inpatient, show knowledge of methods of diagnosis and care in the main syndromes of vital functions, interpretation of the main clinical manifestations and laboratory indices of vital functions, planning examinations and treatment of patients with vital dysfunctions, diagnosis of signs of clinical death and terminal conditions, cardiopulmonary and cerebral resuscitation, application of general principles and methods of anesthesia providing various surgical interventions, the use of basic principles of emergency aid for victims of man-made and natural disasters, the use of basic algorithms for intensive care of emergencies.

*The main objectives of the discipline "Anesthesiology and Intensive Care" are:*

- mastering the basic measures necessary for the organization of work in the department of anesthesiology and intensive care;
- acquisition of practical skills for rendering medical aid in emergencies;
- acquisition of practical skills for preparation and transfusion of donor blood components;
- mastering the knowledge of the basics of local and general anesthesia, to acquire the ability to choose the method of anesthesia depending on the patient's condition and existing surgical pathology;
- acquisition of skills and abilities for examination of the patient and registration of results in the corresponding medical records;

- formation of moral and ethical and deontological qualities in professional communication with the patient.

The discipline provides students with the acquisition of competencies:

➤ *integral*: the ability to solve complex problems and problems in a particular field of professional activity or in the educational process, which involves investigation and / or innovation and is characterized by complexity and uncertainty of conditions and requirements;

➤ *general*:

1. the ability to abstract thinking, analysis and synthesis;
2. the ability to know and understand the subject area and professional activity;
3. the ability to communicate in the state language;
4. the ability to adapt and make an informed decision in a new situation;
5. the ability to work in a team;
6. the ability to assess and ensure the quality of work performed;
7. the ability to act on the basis of ethical considerations, socially responsible and consciously.

➤ *special (professional, subject)*:

1. communication skills and clinical examination of the patient;
2. the ability to determine a list of necessary clinical, laboratory and instrumental studies and evaluate their results;
3. the ability to diagnose emergencies;
4. the ability to determine tactics and give emergency medical care;
5. the ability to perform medical manipulations;
6. the ability to keep medical records.

Details of competencies according to NQF descriptors are in the form of "Competence Matrix".

#### **Learning outcomes:**

#### **Integrative final learning outcomes of the curriculum, the formation of which is facilitated by the discipline:**

- To have communication skills and clinical examination of the patient. Take data on patient complaints, medical history, and life history.
- To evaluate diagnosis information using a standard procedure based on the results of laboratory and instrumental studies. Determine a list of necessary clinical, laboratory and instrumental studies and evaluate their results.
- To diagnose emergencies.
- To determine tactics and render emergency medical aid.
- To perform medical manipulations.
- To keep medical records.
- To plan, implement and analyze activities for the organization and integration of medical aid.
- To adhere to the requirements of ethics, bioethics and deontology in their professional activities.

#### **To know:**

- Modern concepts of domestic and foreign theoretical and practical anesthesiology

- Basics of the organization of a rational mode and treatment of the patient in intensive care unit;
- General elements of patient care in the intensive care unit;
- Theoretical and practical aspects of transfusion of donor blood products and blood substitutes;
- Complications during blood transfusion, measures for their prevention and treatment;
- Fundamentals of resuscitation, clinical manifestations of terminal conditions, their diagnosis, stages and measures in cardiopulmonary resuscitation;
- Acute renal and hepatic failure
- Acute respiratory failure (respiratory distress syndrome)
- Impaired consciousness. Comas
- Asphyxia (including at birth)
- Hypertensive crisis
- Acute heart failure. Acute coronary syndrome
- Collapse
- Cardiac arrest
- Acute heart rhythm disorders
- Acute blood loss syndrome, including that in the field conditions and in emergencies
- Acute cerebral insufficiency
- Electrotrauma
- Acute anaphylactic reactions
- Bites of snakes, insects, animals
- Convulsive syndrome
- Circulatory disorders. Shocks
- Cold, heat injury, including that in the field condition
- Acute poisoning, including combat poisons
- Drowning

**To be able to:**

1. Ensure airway patency:
  - suction of sputum and removal of foreign bodies from the mouth and throat
  - withdrawal of the lower jaw
  - introduction of the artificial airway
  - the use of Heimlich's method
2. Perform intubation of the trachea
3. Perform artificial ventilation of the lungs by the simplest methods ("mouth to mouth", "mouth to nose").
4. Perform indirect heart massage.
5. Perform lectrical defibrillation
6. Register a standard ECG in 12 leads
7. Perform artificial lung ventilation with an Ambu bag and with the help of an S-shaped tube.
8. Use methods of oxygen therapy, oxygen therapy with a mouth-nose mask
9. Determine the type and degree of respiratory failure

10. Measure CVP.
11. Calculate daily water balance, determination of the degree of dehydration.
12. Calculate of deficiencies of basic electrolytes (potassium, sodium, chlorine), selection and calculation of the number of solutions for the correction of electrolyte disturbances.
13. Determine the type of CBS disorder and calculate the volume of infusions for correction.
14. Know methods of detoxification (introduction of a probe into the stomach, gastric lavage, forced diuresis).
15. Assess of the state of consciousness.
16. Know methods of artificial lung ventilation in newborns and young children.
17. Make indirect heart massage in newborns and young children.
18. Know indications and intratracheal administration of drugs.
19. Perform venous puncture, installation of a venous catheter.
20. Carry out enterosorption.
21. To diagnose and render first aid in:
  - hypovolemic shock
  - acute vascular insufficiency (collapse)
  - acute left and right ventricular failure
  - cardiac arrhythmias
  - hypertensive crises
  - acute blood loss (external and internal)
  - comatose states
  - acute poisoning
  - acute renal failure
  - acute liver failure

## **THE COURSE DESCRIPTION**

### ***Forms and methods of teaching***

The course will be presented in the form of lectures (10 hours) and practical classes (40 hours), organization of individual students' work (40 hours).

***Types of educational activities of students according to the curriculum are:*** lectures, practical classes, individual students' work (ISW) with active consultation of the teacher.

### **Contents, workload and structure of the discipline "Anesthesiology and Intensive Care"**

#### **Syllabus of the lectures**

1. General and clinical anesthesiology.
2. Intensive care of acute respiratory failure.
3. General principles of intensive care of acute poisoning.
4. Shock. Pathogenesis, classification, clinical manifestations, laboratory diagnosis, monitoring, modern intensive care of various types of shock.
5. Intensive care of acute renal and hepatic failure

#### **Syllabus of the practical classes**

1. Cardiopulmonary and cerebral resuscitation. Physiological and pathophysiological features of resuscitation in the context of the terminal state of incurable disease.
2. General and clinical issues of anesthesiology.
3. Acute poisoning.
4. Acute renal and hepatic failure.
5. Acute respiratory failure (ARI) - common issues.
6. Intensive care of diseases accompanied by acute respiratory failure.
7. Comatose states.
8. Acute circulatory disorders. Shock.
9. Graded test: control of theoretical training, ISW, practical training.

### **A list of recommended literature**

#### **Basic literature:**

1. Morgan JE, Mikhail MS Clinical anesthesiology. McGraw-Hill Education| Medical ; 6 th Edition, 2018
2. Paul G.Barash, Bruce F. Cullen Clinical anesthesia. LWW; 8 th Edition, 2017
3. Keit G. Allman, Iain H. Wilson Oxford Handbook of Anaesthesia ; 4 th Edition, 2016

#### **Additional literature:**

1. Jean- Louis Vincen, Edward Abraham Textbook of critical care. Elsevier; 7 th Edition, 2017
2. Edward Scarth Drugs in anesthesia and intensive care. 5 th Revised Edition, 2016
3. Ted Lin, Tim Smith, Colin Pinnok Fundamentals of Anaesthesia ; 4 th Edition, 2016

### **ASSESSMENT**

**Control methods.** Tests of initial and final level of knowledge on the topic of practical training. Oral answer to standardized questions on the material of the current topic, previous topics and lecture material. Solution of typical and atypical clinical situational problems. Control of practical skills. Control of the student's activity while working in small groups. The final grade for all types of the student's activities during the practical class.

#### **Forms of control.**

*The grade for the discipline* is determined on the basis of the sum of grades of current educational activity (arithmetic mean of current performance) and examination grade (traditional grade), which is given when assessing theoretical knowledge and practical skills according to the lists defined by the discipline curriculum.

Thus, the shares of the results of the assessment of current educational activities and graded test are 50 and 50 percent, respectively. Current control is carried out in accordance with specific objectives during each of the practical classes and during individual work in the hospital department. The following control is recommended to determine the level of students' training: control of

practical skills, theoretical training, and the solution of situational problems. The current assessment of students on the corresponding training subjects is carried out according to the traditional 4-point system (excellent, good, satisfactory, unsatisfactory).

Assessment of the learning activities of all students is not required in every practical class. However, at least 50% of students must be assessed in a practical class.

At the end of the course, the current performance is calculated as the average score of all grades obtained by the student on a traditional scale, rounded to 2 (two) decimal places.

Achievement of topics of individual students' work, which is provided by the program, is checked during the graded test.

The graded test is taken upon completion of the study of the discipline. Students who have completed the curriculum "Emergency and Emergency Medical Care", have no academic debt, received at least grade 3.00 for current activities and passed a set of practical skills in the discipline according to the list are allowed to take the graded tests. Assessment of the graded test consists of the student's answer to 2 theoretical questions from the list of questions provided by the curriculum of the discipline. The graded test is assessed on a 4-point (traditional) scale.

The student has the right *to retake current unsatisfactory grades* only in order to achieve a minimum academic grade average. Retaking of current unsatisfactory grades or positive grades to increase a student's rating is prohibited.

The assessment of the discipline consists of two components:

- 50% - current performance (arithmetic mean of all student grades)
- 50% - assessment of the graded test.

### **Individual students' work (ISW)**

#### **Types of individual students' work (ISW) and its control.**

1. Social problems of brain death and autonomic state. Legal, deontological and medical problems.
2. Psychological aspects in anesthesiology.
3. Modern issues of efferent therapy in transplants and emergencies.
4. DIC syndrome in critical conditions.
5. Modern methods of approach to infusion therapy in critical conditions, especially in children.
6. Intracranial pressure and cerebral blood flow as a criterion for the adequacy of intensive care for cerebral edema.
7. Treatment of acute pain, modern approaches and features in children.
8. Extracorporeal methods of blood circulation. Modern approaches.
9. Innovative technologies in anesthesiology.
10. Ethical and legal issues of euthanasia. Consultation of relatives of incurable patients and specialists in related specialties.
11. Intensive care of traumatic injuries: polytrauma, long compression syndrome, electrotrauma.
12. Clinical manifestations and diagnosis of acute heart failure, heart rhythm disorders. The main directions of intensive care.



13. Intensive care of convulsive and hyperthermic syndromes.

14. Methods of diagnosis and correction of disorders of water-electrolyte metabolism and acid-base status.

**Tasks for individual work:**

- training for practical classes
- theoretical training
- fulfillment of test assignments
- solution of situational problems
- training on practical skills

**THE COURSE POLICY**

Policy on deadlines and retaking, policy on academic integrity, policy on attendance and late attendance, mobile devices, behavior in the class-room is in accordance with the "Regulations on the organization of the educational process by higher education students in ONMedU", 2019.

**Deadline and retaking policy:**

Retaking of module tests is allowed in case of valid excuses (for example, sickness certificate).

**Academic Integrity Policy:**

Cheat-offs during testing and solving assignments are prohibited (including with the use of mobile devices).

**Attendance and late attendance policy:**

Lectures and practical classes attendance is mandatory; late attendance is not desirable. An excuse for absence from classes is an illness, which is confirmed by a certificate from a doctor (hospital).

**Mobile devices:**

Mobile devices are allowed to be used only during online testing and training of practical tasks in class.

**Classroom behavior:**

The course involves teamwork. The communication environment is friendly, creative, open to constructive criticism.