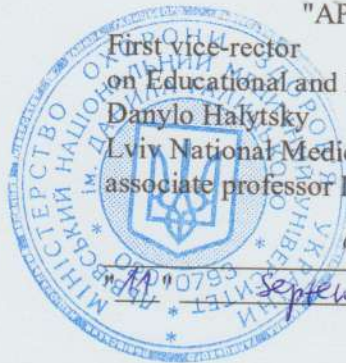


DANYLO HALYTSKY LVIV NATIONAL MEDICAL UNIVERSITY
DEPARTMENT OF SURGERY № 1

"APPROVED"

First vice-rector
on Educational and Pedagogical Affairs at
Danylo Halytsky
Lviv National Medical University
associate professor I.I. Solonyenko



I. Solonyenko

September

2023

WORK PROGRAM
"BASICS OF TRANSPLANTATION" (Choice Block 1.75)
(Elective course)
for training of specialists of the second (master's) level of high education
branch of knowledge 22 "Healthcare"
6th-year students of speciality 222 "Medicine"

"APPROVED"

at the meeting of the Department of Surgery № 1
meeting report № 15
12 april 2023
Chairman of the Department of Surgery № 1

[Signature]
prof. O.V. Lukavetsky

"APPROVED"

at the meeting of the Surgical Methodological
Commission of Danylo Halytsky Lviv National
Medical University meeting report № 20
27 april 2023
Chief of Surgical Methodological Commission

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"APPROVED"

Dean of Faculty of Foreign Students
Danylo Halytsky
Lviv National Medical University
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" " _____ 2023

DEVELOPERS OF PROGRAMME:

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INTRODUCTION

Work program of educational discipline "Basics of transplantation" formed in according to Standard of high education of Ukraine of second (masters) level of knowledge branch 22 "Health Care" of specialty 222 "Medicine" of educational qualification "Master of medicine".

Description of educational discipline

Transplantology is a branch of science that studies the etiology and pathogenesis of diseases that lead to failure of various organs and systems, develops and improves methods of early diagnosis, transplantation, improves methods of organ harvesting and graft implantation; develops measures to improve immunosuppressive therapy and improve the quality of life of patients after transplantation.

The chosen educational discipline "Basics of transplantation" provides an opportunity for students of the Faculty of Medicine in the 6th year of study to acquire knowledge, skills and practical skills that enable a specialist to correctly diagnose diseases and conditions, predict the development of insufficiency of organs and systems, and determine indications for transplantation. Mastery of the discipline is based on knowledge acquired by students in the process of studying other basic subjects. When mastering the "Basics of transplantation" discipline, it is rational to introduce into the educational process modern world developments and standards for diagnosis and prevention of critical organ failure, preparation of patients for transplantation.

The program has been developed in accordance with the following regulatory documents:

- Educational Qualification Characteristics (EQC), Educational and Occupational Programs (EOP) of specialists' training are approved by order of Ministry of Education and Science of Ukraine (MES) 16.04.03 №239 "Approval of the components of education standards of 1101 " Medicine ";
- Experimental curriculum which is based on the principles of the European Credit Transfer System (ECTS) and approved by order of the Ministry of Healthcare of Ukraine №52, 31.01.2005 of "Approval and introduction of new curriculum of training of the educational-qualification level - " Specialist ", qualification - " Medical Doctor " at the high educational institutions of III-IV levels of accreditation of Ukraine of such specialties as "Curative Medicine" and "Stomatology";
- The recommendations of development of the curriculum which are approved by the Ministry of Healthcare of Ukraine March 24,2004, №152 "Approval of the recommendations of development of the curriculum of the educational subjects", are followed with changes and supplements which were introduced by the order of Ministry of Healthcare of Ukraine from 12.10.2004, №492 "Changes and supplements to the recommendations of development of the curriculum of the educational subjects";
- The order of the Ministry of Healthcare of Ukraine, 31.01.2003, №148 "The implementation measures of the Bologna Declaration of the high education and science";
- The instruction of evaluation system of learning activities of students in accordance with the credit-modular system of education (Medical education in the world and in Ukraine which was approved by the Ministry of Healthcare of Ukraine as a study guide for teachers, masters, graduate and postgraduate education, Kyiv, Book-plus., 2005);
- The order of the Ministry of Healthcare of Ukraine, 17.05.2006, № 281 "The changes in the curriculum of training of the educational-qualification level - " Specialist ", qualification - "Medical Doctor" at the high educational institutions of III-IV levels of accreditation of Ukraine, approved by the Ministry of Healthcare of Ukraine from 31.01.05 № 52;

- The order of the Rector of the Danylo Halytsky Lviv National Medical University "On the implementation of the training plan for applicants of the second (master's) level of higher education in the specialty 222 Medicine", No. 656-z dated February 15, 2023.

Structure of educational discipline	Amount of credits, hours, of them			Year of learning (semester)	Kind of Control	
	Totally	Classrooms				
		Lectures (hours)	Practical classes (h.)			
Basics of transplantation	3,0 credits / 90 hours		36	54	6 year (11-12 semesters)	Current control

The subject of study of the educational discipline is the main manifestations of diagnosis, differential diagnosis of organ and system failure, principles of organ function replacement therapy, selection of patients for transplantation and immunosuppressive therapy.

Interdiscipline communications. Subject "Basics of transplantation" based on knowledge, that received by students during study such fundamental disciplines as anatomy, histology, physiology, pathologic anatomy, pathologic physiology, general surgery, of internal medicine, pharmacology, traumatology and orthopedics, urology, neurosurgery, obstetrics, gynecology, anesthesiology, resuscitation and other educational disciplines.

1. The purpose of studying of surgery

1.1. Study of theoretical and practical knowledge of etiology, pathogenesis, clinical manifestations of organ failure, diagnostic methods, organ function replacement treatment, principles of organ transplantation, immunosuppressive therapy and rehabilitation.

1.2. The main tasks of studying the discipline are mastering knowledge, skills and abilities to ensure adaptation of students to patients before and after successful transplantation; the ability to make a diagnosis, to choose the appropriate medical and diagnostic procedures, to know the methods of determining the compatibility of the donor-recipient pair, to provide assistance to patients with the corresponding pathology.

1.3. Competences and learning outcomes, the formation of which is facilitated by the discipline: relationship with the normative content of training of higher education seekers, formulated in the Standard of Higher Education.

According to the requirements of the Higher Education Standard, the discipline ensures that students acquire the following *competencies*:

Competency matrix

No	Competency	Knowledge	Skills	Communication	Autonomy and responsibility
General competences					
1.	Ability to abstract thinking, analysis and synthesis.	+	+	+	+

2.	Ability to learn and master modern knowledge.	+	+	+	+
3.	Ability to apply knowledge in practical situations.	+	+	+	+
4.	Knowledge and understanding of the subject area and understanding of professional activity.	+	+	+	+
5.	Ability to adapt and act in a new situation.	+	+	+	+
6.	Ability to make informed decisions.	+	+	+	+
7.	Ability to work in a team.	+	+	+	+
8.	Ability to interpersonal interaction.	+	+	+	+
9.	Ability to communicate in a foreign language	+	+	+	+
10.	Ability to use information and communication technologies.	+	+	+	+
11.	Ability to search, process and analyze information from various sources.	+	+	+	+
12.	Determination and persistence in relation to assigned tasks and assumed responsibilities.	+	+	+	+
13.	Awareness of equal opportunities and gender issues.	+	+	+	+
14.	The ability to realize one's rights and responsibilities as a member of society, to be aware of the values of a civil (free democratic) society and the need for its sustainable development, the rule of law, the rights and freedoms of a person and a citizen in Ukraine.	+	+	+	+
15.	The ability to preserve and multiply moral, cultural, scientific values and achievements of society based on understanding the history and patterns of development of the subject area, its place in the general system of knowledge about nature and society and in the development of society, technology and technologies, to use various types and forms of	+	+	+	+

	motor activity for active recreation and leading a healthy lifestyle.				
Professional competencies of the specialty					
1.	Ability to collect medical information about the patient and analyze clinical data.	+	+	+	+
2.	Ability to determine the necessary list of laboratory and instrumental studies and evaluate their results.	+	+		+
3.	Ability to establish a preliminary and clinical diagnosis.	+	+	+	+
4.	The ability to determine the necessary regime of work and rest in the treatment and prevention of diseases.	+	+	+	+
5.	The ability to determine the nature of nutrition in the treatment and prevention of diseases.	+	+	+	+
6.	Ability to determine the principles and methods of treatment and prevention of diseases.	+	+	+	+
7.	Ability to diagnose emergency conditions.	+	+	+	+
8.	Ability to determine tactics and provide emergency medical care.	+	+	+	+
9.	Ability to carry out medical evacuation measures.	+	+	+	+
10.	Ability to perform medical manipulations.	+	+	+	+
11.	Ability to solve medical problems in new or unfamiliar environments in the presence of incomplete or limited information, taking into account aspects of social and ethical responsibility.	+	+	+	+
15.	The ability to conduct an examination of working capacity.	+	+	+	+
16.	Ability to maintain medical documentation, including electronic forms.	+	+	+	+

21.	Clearly and unambiguously communicate own knowledge, conclusions and arguments on health care problems and related issues to specialists and non-specialists, in particular to people who are studying.	+	+	+	+
25.	Adherence to professional and academic integrity, to be responsible for the reliability of the obtained scientific results.	+	+	+	+
Program learning outcomes					
1.	Have thorough knowledge of the structure of professional activity. To be able to carry out professional activities that require updating and integration of knowledge. To be responsible for professional development, the ability for further professional training with a high level of autonomy.				
2.	Understanding and knowledge of basic and clinical biomedical sciences, at a level sufficient for solving professional tasks in the field of health care.				
3.	Specialized conceptual knowledge that includes scientific achievements in the field of health care and is the basis for conducting research, critical understanding of problems in the field of medicine and related interdisciplinary problems.				
4.	Identify leading clinical symptoms and syndromes (according to list 1); according to standard methods, using preliminary data of the patient's history, data of the patient's examination, knowledge about the person, his organs and systems, establish a preliminary clinical diagnosis of the disease (according to list 2).				
5.	Collect complaints, past medical history and history of the disease, assess the psychomotor and physical development of the patient, the state of organs and systems of the body, based on the results of laboratory and instrumental studies, evaluate information about the diagnosis (according to list 4), taking into account the age of the patient.				
6.	To establish the final clinical diagnosis by making a reasoned decision and analyzing the received subjective and objective data of clinical, additional examination, carrying out differential diagnosis, observing the relevant ethical and legal norms, under the control of the head physician in the conditions of the health care institution (according to the list 2).				
7.	Assign and analyze additional (mandatory and optional) examination methods (laboratory, functional and/or instrumental) (according to list 4), patients with diseases of organs and body systems for differential diagnosis of diseases (according to list 2).				
8.	Determine the main clinical syndrome or what causes the severity of the victim/victim's condition (according to list 3) by making a reasoned decision and assessing the person's condition under any circumstances (in the conditions of a health care facility, outside its boundaries), including in the conditions emergencies and hostilities, in field conditions, in conditions of lack of information and limited time.				
9.	Determine the nature and principles of treatment (conservative, operative) of patients with diseases (according to list 2), taking into account the age of the patient, in the conditions of a health care institution, outside its borders and at the stages of medical evacuation, including in field conditions, on the basis of a previous clinical diagnosis, observing the relevant ethical and legal norms, by making a reasoned decision according to existing algorithms and standard schemes, in case of the need to expand the standard scheme, be able to substantiate				

	personalized recommendations under the control of the head physician in the conditions of a medical institution.
10.	Determine the necessary mode of work, rest and nutrition of the patient based on the preliminary and/or final clinical diagnosis, observing the relevant ethical and legal norms, by making a reasoned decision according to existing algorithms and standards.
14.	Determine tactics and provide emergency medical care for emergency situations (according to list 3) in limited time conditions according to existing clinical protocols and standards.
15.	To organize the medical aid and medical evacuation measures to the population and military personnel in emergency situations and combat operations, including in field conditions.
16.	Form rational medical routes for patients; organize interaction with colleagues in their own and other institutions, organizations and institutions; apply tools for the promotion of medical services on the market, based on the analysis of the needs of the population, in the conditions of the functioning of the health care institution, its division, in a competitive environment.
17.	Perform medical manipulations (according to list 5) in the conditions of a medical institution, at home or at work based on a previous clinical diagnosis and/or indicators of the patient's condition by making a reasoned decision, observing the relevant ethical and legal norms.
18.	To determine the state of functioning and limitations of a person's vital activities and the duration of incapacity for work with the preparation of relevant documents, in the conditions of a health care institution, based on data about the disease and its course, peculiarities of a person's professional activity, etc. Maintain medical documentation regarding the patient and the contingent of the population on the basis of regulatory documents.
19.	Plan and implement a system of anti-epidemic and preventive measures regarding the occurrence and spread of diseases among the population.
21.	Search for the necessary information in the professional literature and databases of other sources, analyze, evaluate and apply this information.
22.	Apply modern digital technologies, specialized software, statistical methods of data analysis to solve complex healthcare problems.
23	Assess the impact of the environment on human health to assess population morbidity.
24.	Ensure the necessary level of individual safety (your own and the people you care about) in case of typical dangerous situations in the individual field of activity.
25.	Clearly and unambiguously to convey one's own knowledge, conclusions and arguments on health care problems and related issues to specialists and non-specialists.
26.	Manage healthcare workflows that can be complex, unpredictable and require new strategic approaches; to organize the work and professional development of personnel taking into account the acquired skills of effective team work with adherence to leadership positions, appropriate quality, accessibility and fairness, ensuring the provision of integrated medical care.
27.	Communicate freely in the national and English languages both orally and in writing to discuss professional activities, research and projects.
28.	Make effective decisions about health care problems, evaluate the necessary resources, take into account social, economic and ethical consequences.

Learning outcomes:

Integrative final program learning outcomes, the formation of which is facilitated by the educational discipline: apply knowledge in practical situations; perform experimental research and demonstrate skills in professional subjects, adapt to new situations, work effectively both autonomously and as part of a team; to be responsible for the work performed in order to achieve the set goal; use information and communication technologies to solve various research and professional tasks; search for information in various sources to solve the problems of the specialty, make informed decisions with an assessment of their consequences, show the ability for public, business and scientific communications; adhere to the code of professional ethics, moral norms and values, rules of etiquette, understand the basic principles of labor protection and life safety in the field of professional activity; to have techniques for providing medical care for various types of surgical pathology; the ability to make a diagnosis, to choose appropriate medical and diagnostic manipulations, to provide emergency care to patients with surgical pathology.

Learning outcomes for the discipline: mastering the basic principles of organizing surgical care for the population of Ukraine, clinical and laboratory and additional methods of diagnosing surgical pathology of the body; etiology, pathogenesis, clinic, diagnosis and methods of treatment of surgical diseases (within the curriculum); etiological, pathogenetic factors, clinical manifestations and diagnosis of emergency conditions; emergency surgical care tactics; organization of medical evacuation measures; carrying out the main methods of the general clinical examination of the patient (survey, examination, palpation, auscultation), determining the scope of additional studies and analyzing the obtained data to establish a preliminary diagnosis; performing general medical manipulations (bandages, injections, gastric lavage, stopping bleeding, local anesthesia, etc.); providing the necessary assistance in case of short-term loss of consciousness, collapse, maintaining medical records.

2. INFORMATIONAL VOLUME OF THE ACADEMIC DISCIPLINE.

3,0 ECTS credits (90 hours) are assigned to the study of the academic discipline.

3. STRUCTURED PLAN OF ACADEMIC DISCIPLINE "BASICS OF TRANSPLANTATION" FOR STUDENTS OF 6TH-YEAR

Topic	Lectures	Practical classes	SSW	Individual work
Topic 1. Organization of transplantation care. Classification of transplantation of organs and tissues. Bioethics in transplantation: ethical, social, legal and religious aspects. Methods of preservation and preparation for the transplantation of organs and tissues. Transplantation immunology. Principles of immunosuppressive therapy. Matching of donor-to-recipient. Rejection syndrome. Graft-vs-host reaction.		6	9	
Topic 2 Renal failure: aetiology, classification, symptoms, diagnosis, treatment. Hemodialysis. Kidney and pancreas transplantation: indications and surgical aspects. Postoperative care of donor and recipient. Complications and prognosis.		6	9	
Topic 3. Acute and chronic liver failure: aetiology, classification, symptoms, diagnosis, treatment. Extracorporeal desintoxication methods. Indication to liver transplantation. Total and partial liver transplantation. Postoperative course and complications.		6	9	
Topic 4. Transplantation of intestine, pancreas and islets of Langerhans. Enteral insufficiency; total parenteral nutrition. Indications to transplantation. Endocrine failure: aetiology, classification, symptoms, diagnosis, treatment. Indication to pancreas transplantation and transplantation of pancreas-kidney complex. Complications.		6	9	
Topic 5. Transplantation of heart, vessels and heart valves. Classification of heart failure; indications for heart transplantation. Methods of transplantation. Prognosis and results of heart transplantation. Postoperative course and complications.		6	9	
Topic 6. Transplantation of lung and cardio-pulmonary complex. Classification of respiratory failure; chronic obstructive pulmonary disease and pulmonary hypertension. Indications to lung and cardio-pulmonary complex transplantation. Methods of transplantation. Prognosis and results.		6	9	
Totally		36	54	
Totally for discipline	90 hours/3,0 credits ECTS			
Final control	Current control			

4. THEMATIC PLAN OF PRACTICAL CLASSES ON THE DISCIPLINE "BASICS OF TRANSPLANTATION"

№	Topic	H-s
1.	Organization of transplantation care. Classification of transplantation of organs and tissues. Bioethics in transplantation: ethical, social, legal and religious aspects. Methods of preservation and preparation for the transplantation of organs and tissues. Transplantation immunology. Principles of immunosuppressive therapy. Matching of donor-to-recipient. Rejection syndrome. Graft-vs-host reaction.	6
2.	Renal failure: aetiology, classification, symptoms, diagnosis, treatment. Hemodialysis. Kidney and pancreas transplantation: indications and surgical aspects. Postoperative care of donor and recipient. Complications and prognosis.	6
3.	Acute and chronic liver failure: aetiology, classification, symptoms, diagnosis, treatment. Extracorporeal desintoxication methods. Indication to liver transplantation. Total and partial liver transplantation. Postoperative course and complications.	6
4.	Transplantation of intestine, pancreas and islets of Langerhans. Enteral insufficiency; total parenteral nutrition. Indications to transplantation. Endocrine failure: aetiology, classification, symptoms, diagnosis, treatment. Indication to pancreas transplantation and transplantation of pancreas-kidney complex. Complications.	6
5.	Transplantation of heart, vessels and heart valves. Classification of heart failure; indications for heart transplantation. Methods of transplantation. Prognosis and results of heart transplantation. Postoperative course and complications.	6
6.	Transplantation of lung and cardio-pulmonary complex. Classification of respiratory failure; chronic obstructive pulmonary disease and pulmonary hypertension. Indications to lung and cardio-pulmonary complex transplantation. Methods of transplantation. Prognosis and results.	6

5. TOPICS OF STUDENTS' SELF-TRAINING WORK (OUTCLASSES WORK) (INCLUDING INDIVIDUAL WORK) ON THE DISCIPLINE "BASICS OF TRANSPLANTATION"

№	Topic	Hours
1.	Preparations for the classes.	36
2.	Topics not included in the plan of classes: <ol style="list-style-type: none"> 1. History of transplantation in Ukraine and abroad; 2. Bioethics in transplantation: ethical, social, legal and religious aspects; 3. Postoperative monitoring of patients; 4. Surgical features of donor organ removal; 5. Infectious complications after organ transplantation: prevention, treatment 6. Rehabilitation, quality of life and social issues after organ transplantation. 	18

The types of educational activity of students are:

A). Practical training, B) Students' self-training work (SSW) in the organization of which counseling teachers have a significant role. All topics which are a part of subject module are implemented by the thematic plan of practical training classes and SSW to the educational process. Various teaching tools such as multimedia presentations, training films, slides, demonstration of patients cases are used throughout the lecture course.

Practical classes include:

- examination of patients with surgical diseases;
- study of the condition of vital organs and systems of patients;
- practical application of methods of diagnosis and surgical treatment;
- discussion of clinical cases and MCQs;
- mastering the elements of medical techniques on patients and medical simulators;
- training the skills of operative techniques during surgery and work in dressing rooms.

Methodology of practical classes

Classes, as recommended by the typical program, should be conducted at a the department of surgery near the patients bed, in the dressing room, operating room, diagnostic rooms in small groups of students (4-6 persons). The results of examination of the patients, accuracy of the diagnosis, efficiency of treatment should be discussed by group (subgroup) of students in the training room under supervision of teacher. Students must write daily report with reflection of diagnosis, efficiency of methods of treatment and conducted manipulations.

The regular control of students training levels are supervised during practical classes according to specific goals.

It is planned to use following methods of determination of training level of students:

- answers to control questions
- MCQs on PC
- solving clinical cases
- evaluation and interpretation of the results of clinical, laboratory and instrumental examinations
- control of practical skills command

Assessment of students academic success from discipline is rating and exhibited by multi-scale based on mastering of the submodules.

6. EVALUATION OF CURRENT STUDY:

The share of each topic within a module is the same but may be different for different modules of single discipline. Evaluation of current educational system of students is described in the study program of the discipline. During each class of the module for current study student gets marks: "5" (excellent), "4" (good), "3" (satisfactory), "2" (unsatisfactory).

Mark "5" (excellent) – gets student who deeply and reliably learned program material, thoroughly, consistently, competently and methodically explains theoretical knowledge, in whose answers theory is closely related with practice. The student does not hesitate to answer on modified tasks, easily cope with the clinical cases and questions of the second and third level of knowledge assessment, shows acquaintance with monographic literature, correctly justifies the decision, possesses elements of doctors abilities, skills and techniques of practical work. Practical skills performs without error, in professional activities can efficiently use the acquired knowledge.

Mark "4" (good) – gets student who knows program material correctly and essentially explains it, who does not make significant errors in responses to questions and in carrying out the necessary practical skills.

Mark "3" (satisfactory) – gets student who has knowledge of the basic material only, but does not learned details, not correctly formulate answers, has difficulties in performing practical skills or performs them with significant errors, has difficulties in solving clinical cases of the third level of knowledge control.

Mark "2" (unsatisfactory) - gets student who does not know a large part of the program

material, makes substantial errors, uncertainly executes practical works, does not solve II-III level tasks of control.

The final control of academic performance is carried out in the form of a semester test based on the results of his work in practical classes. Semester credit in disciplines is held after the end of its study, before the examination session.

Scheme of scoring and distribution of points received by students:

Maximal amount that can be collected by student during module is 200 points.

Minimal amount that can be collected by student during module is 120 points.

The calculation of the number of points is based on the student's score on a 4-point (national) scale during the study of the discipline, by calculating the arithmetic mean (CA), rounded to two decimal places. The resulting value is converted into points on a multi-point scale as follows:

$$x = \frac{CA \times 200}{5}$$

For convenience, the table of recalculation on a 200-point scale is given:

Recalculation of the average grade for current activities in a multi-point scale for disciplines that end with a credit

4- score scale	200- score scale	4- score scale	200- score scale	4- score scale	200- score scale	4- score scale	200- score scale
5	200	4.45	178	3.92	157	3.37	135
4.97	199	4.42	177	3.89	156	3.35	134
4.95	198	4.4	176	3.87	155	3.32	133
4.92	197	4.37	175	3.84	154	3.3	132
4.9	196	4.35	174	3.82	153	3.27	131
4.87	195	4.32	173	3.79	152	3.25	130
4.85	194	4.3	172	3.77	151	3.22	129
4.82	193	4.27	171	3.74	150	3.2	128
4.8	192	4.24	170	3.72	149	3.17	127
4.77	191	4.22	169	3.7	148	3.15	126
4.75	190	4.19	168	3.67	147	3.12	125
4.72	189	4.17	167	3.65	146	3.1	124
4.7	188	4.14	166	3.62	145	3.07	123
4.67	187	4.12	165	3.57	143	3.02	121
4.65	186	4.09	164	3.55	142	3	120
4.62	185	4.07	163	3.52	141	< 3	Not enough
4.6	184	4.04	162	3.5	140		
4.57	183	4.02	161	3.47	139		
4.52	181	3.99	160	3.45	138		
4.5	180	3.97	159	3.42	137		
4.47	179	3.94	158	3.4	136		

Students' outclasses work is assessed during the current control of the topic in the relevant lesson. Assimilation of topics that are submitted only for outclasses work is controlled during the final control.

Assessment in the discipline "Surgery", section "Abdominal Surgery" is based on the results of current educational activities and is expressed on a two-point scale "credited" or "not credited". To be enrolled, a student must receive a score of at least 60% of the maximum amount of points in the discipline (120 points) for the current academic activity.

The scores of students studying in one specialty, taking into account the number of points scored in the discipline are ranked on the ECTS scale as follows:

The number of points of the discipline, which accrued student, converted to ECTS scale as follows:

Mark ECTS	Statistical index
A	Best 10% of students
B	Next 25% of students
C	Next 30% of students
D	Next 25% of students
E	Last 10% of students

Percentage of students is determined among all students of the course within a corresponding specialty. Students who have been assessed FX, F ("2") are not ranked even after retaking the module. These students will automatically receive points E after retaking the module.

Mark on discipline FX, F ("2") is assigned to students who have not passed at least one module on discipline after completion of the study.

Mark FX ("2") assigned to students who score a minimum number of points for current educational activity, but not passed the final module control. They have the right to repeat the final module control, but not more than 2 (two) times according to the schedule approved by the Academic department. Mark F is assigned to students who attended all classes of module, but did not receive the minimal number of points for current educational activity and does not admitted to the final testing. This category has the right to re-study module.

Assessment of students of the discipline is rating and is calculated by multi-scale marks as the arithmetic mean score of mastering appropriate modules and a determination by the ECTS system and the traditional scale accepted in Ukraine.

The number of points for the discipline that accrued students converted to a four-point scale by absolute criteria as explained in the table below:

Points for discipline	Mark according to four-point scale
From 170 to 200 points	excellent (5)
From 140 to 169 points	good (4)
From 126 to 139 points	satisfactory (3)
Less then 126	unsatisfactory (2)

Evaluation of ECTS in traditional is not converted as ECTS scale and four-point scale are independent.

Methodological support

Teaching the discipline in practical classes is provided by methodological developments, topics of independent and individual tasks, visual aids (presentations, educational films, mannequins and other tools for practicing the skills of resuscitation, hemostasis, etc.), information resources of departments, algorithms for practical skills and structured skills control algorithms. Independent and individual work in the study of the discipline is provided by methodological developments for outclasses work of students.

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