



Syllabus on the Discipline «Basics of Transplantation»

1. General information	
Faculty	Medical Faculty
Educational program <i>(field, specialty, level of higher education, form of education)</i>	22 Health care Specialty 222 "Medicine" second (master's) level of higher education, full-time
Academic year	2023 - 2024
Name of discipline, code <i>(internet)</i>	Surgery, Choice Block 1.75 https://new.meduniv.lviv.ua/kafedry/kafedra-hirurgiyi-1/
Department <i>(name, address, phone, e-mail)</i>	Surgery №1, 79010, Lviv, Yu. Roofa str., 4, Kaf_surgery_1@meduniv.lviv.ua
Head of the Department <i>(e-mail)</i>	Lukavetsky Oleksiy Vasyliovych, MD, PhD, DSc (in Medicine), Professor, Kaf_surgery_1@meduniv.lviv.ua
Year of study	6 year
Semester	11, 12
Name of the faculty	Elective course
Teachers	Professor, MD, PhD, DSc Vasyl Kolomytsev vasyl.kolomytsev@gmail.com Assoc. Professor MD, PhD Volodymyr Khomyak khomyak@gmail.com Assoc. Professor MD, PhD Orest Chemerys orestchemerys@gmail.com Ass. Prof. MD, PhD Ihor Stojanovsky dr_stojanovsky@meta.ua Ass. Prof. MD, PhD Volodymyr Marina marinavolodia@ukr.net Ass. Prof. MD, PhD Jaroslav Pavlovsky pavl_jarik@ymail.com
Erasmus yes/no	no
The person responsible for the syllabus	Lukavetsky Oleksiy Vasyliovych, MD, PhD, DSc (in Medicine), Professor, Kaf_surgery_1@meduniv.lviv.ua
ECTS credits	3,0
Number of hours <i>(lectures / practical classes / independent work of students)</i>	- /36/54
Language of instruction	English
Information for consultation	According to the schedule

Clinical Base	LNMU, Dept. of Surgery №1, 79010, Lviv, Yu. Roofa str., 4, Kaf surgery 1@meduniv.lviv.ua Lviv, CHospital «LOCL», Yu. Roofa str., 4
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2. Brief review of the subject

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".

Types of educational activities of students according to the curriculum are: practical classes, students' self-training work (SSW), in the organization of which a significant role is played by consultations of teachers.

Thematic plans of practical classes and SSW ensure the implementation in the educational process of all topics that are part of the units. The topics of the course reveal the problematic issues of the relevant sections of the discipline. Practical classes include supervision of patients, examination of patients with surgical pathology, study of the functional state of vital organs and systems of patients, practical application of surgical methods of diagnosis and treatment, solving clinical situational problems and tests, mastering the elements of medical equipment on patients and models, mastering operative skills, techniques during surgery and work in the dressing room.

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. The level of preparation of students is determined by answers to control questions, test control of knowledge, in solving clinical situational problems, evaluation and interpretation of clinical and laboratory and instrumental examinations, control of mastering practical skills and elements of medical equipment during patient supervision.

3. Aim and goals of the subject

1. **The purpose of studying of “Basics of Transplantation”** – learning theoretical and practical knowledge of the etiology, pathogenesis, typical and atypical clinical presentation, diagnostic methods, conservative and surgical treatment, and rehabilitation of end-stage organs pathology, that meet general practitioner training considering its specialty features.
2. **The aims of the discipline:**
 - Identify the most common symptoms and syndromes in patients with end-stage organs diseases.
 - Identify the major etiological and pathogenetic factors of the most common end-stage organs diseases.
 - Demonstrate the ability to perform the required medical manipulations.
 - To demonstrate the moral and ethical principles of medical specialist and principles of indication for transplantation.
 - Diagnose and provide medical care in urgent conditions for patients with diseases, that require transplantation.
 - Carry out the prognosis of life and ability to work for after successful transplantation.
 - Classify and analyze the typical clinical picture of the most common end-stage organs diseases.
 - Make up a plan of examination and analyze data from laboratory and instrumental investigations in patients with typical clinical course of the end-stage organs diseases.
 - Explain the general principles of treatment, rehabilitation after procedure of transplantation and prevention of end-stage organs diseases
 - Identify tactics (principles of surgical interventions and conservative treatment, rehabilitation) with end-stage organs diseases and their complications.

- Demonstrate the moral and ethical principles of medical specialist and principles of professional subordination in surgery and transplantation.
Provide emergency medical care with end-stage organ diseases.
- Plan examination of the patient, interpret the results of laboratory and instrumental examinations for end-stage organ diseases and their complications.
- Carry out differential diagnosis, justify and formulate preliminary diagnosis of end-stage organ diseases.
- Conduct primary and secondary prevention of end-stage organ diseases.
- Determine a plan of conservative and operative treatment of end-stage organ diseases depending on the pathogenetic factors and the severity of the patient condition.
- Demonstrate the ability to conduct medical records at the clinic of surgical diseases.
- Diagnose complicated and atypical forms of the most common diseases.
- Provide medical care in urgent conditions at the clinic of end-stage organ diseases and perform urgent surgical manipulations and operations.
- Planning scheme of examination of particular patient depending on the clinical features of the disease.
- Carry out differential diagnosis of end-stage organ diseases in transplantation surgery.

Competences and results of study, formation of which promotes the discipline - the relationship with the regulatory content of the training of higher education applicants, formulated in terms of learning outcomes in the Standard.

According to demands of standard the discipline provides the acquiring by students the **competences**:

- integral: the ability to solve typical and complex problems and practical problems in the field of professional activity 22 "Health care", which involves the application of certain theoretical knowledge, skills, practical skills and methods of relevant professional orientation;
 - general:
 1. The ability to abstract thinking, analysis and synthesis;
 2. The ability to study and to master by modern knowledge;
 3. The ability to use knowledge in practical situations;
 4. The ability to plan and manage by time;
 5. The knowledge and understanding of professional activity;
 6. The skills of application of informative and communicative technologies;
 7. The ability to adaptation and action in the new situation;
 8. The ability to accept the substantiated decisions;
 9. The ability to work in the team;
 10. The skills of interpersonal interaction;
 11. The certainty and persistence about given tasks and taken obligations;
 12. The aspiring to saving of environment;
- The ability to act on principle of ethical rationale (motives); - special (professional):
1. To call - over of anamnesis in surgical patient;
 2. Ability to determine the required list of laboratory and instrumental examinations and evaluate their results
 3. Making of plan of investigation and evaluation their results;
 4. Carrying out of differential diagnostics;
 5. Carrying out of preliminary and clinical diagnosis;
 6. Ability to determine the principles and methods of disease treatment
 7. Ability to determine the required mode of work and rest in the treatment of diseases;
 8. Ability to determine the nature of nutrition in the treatment of diseases;
 9. To reveal and estimate an urgent medical conditions;
 10. Ability to determine the tactics of emergency medical care;
 11. Ability to carry out medical and evacuation measures;
 12. Emergency care skills

13. Skills to perform medical manipulations;
15. Ability to carry out sanitary and hygienic and preventive measures.
16. Ability to keep medical records;
17. Ability to conduct an incapacity examination
18. Ability to conduct epidemiological and medical-statistical studies of public health
19. Ability to analyze the activities of a physician, department, health care institution
20. Ability to take measures to organize and integrate medical care and marketing of medical services

4. Prerequisites of the discipline

«Basics of Transplantation» as a discipline is based on the knowledge gained by students in the study of normal and pathological anatomy, topographic anatomy, normal and pathological physiology, biochemistry, histology, microbiology, pharmacology, clinical radiology, internal diseases, general surgery, anesthesiology and intensive care, hygiene, social medicine, organization and economics of health care

5. Program results of study

List of the results of study

Code of the result of study	Content of the result of study	Link to the code in the matrix of competencies
Code is created while filling out the syllabus (categories: Kn – knowledge, Ab – ability, C – competence, AR – autonomy and responsibility)	Results of study determine that the student must know, understand and be able to perform, after completing the discipline. Results of study follow from the set learning goals. To enroll in the discipline, it is necessary to confirm the achievement of each result of study.	Symbol of the Program Result of study Code in the Higher Education Standard
Kn – 1, Ab – 1, C – 1, AR – 1	Collect data on patient complaints, medical history, life history, conduct and evaluate the results of physical examination. Evaluate information about the diagnosis based on the results of laboratory and instrumental investigations. Highlight the leading clinical symptom or syndrome. Establish the most probable or syndromic diagnosis of the disease. Assign laboratory and / or instrumental examination of the patient. Carry out differential diagnosis of diseases. Establish a preliminary and clinical diagnosis.	PR 1
Kn – 2, Ab – 2, C – 2, AR – 2	Determine the necessary therapeutic nutrition in the treatment of the patient. Determine the principles and methods of treatment (conservative, operative) of patient. Determine the tactics of urgent medical care based on the diagnosis of emergency. Provide emergency medical care based on a diagnosis of emergency.	PR 2

Kn – 3, Ab – 3, C – 3, AR – 3	Demonstrate the ability to perform the required medical manipulations. Determine the presence and degree of restrictions on life, type, degree and duration of disability with the registration of relevant documents. Demonstrate the ability to prepare an annual report on personal activities; to conduct medical records at the clinic of surgical diseases. Conduct screening for major diseases; evaluate morbidity indices, integrated health indicators; identify risk factors for the occurrence and course of diseases. Identify negative environmental factors; determine the relationship between the environment and	PR 3
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	health; develop preventive measures. Carry out analysis of morbidity of the population, identifying risk groups, risk areas, risk factors. Assess the impact of socioeconomic and biological determinants on the health of the individual, family, population.	
Kn – 4, Ab – 4, C – 4, AR – 4	Investigate the scope and effectiveness of the physician, department, health care institution; identify defects in activities and causes. Estimate the cost of medical services; substantiate the choice of an adequate method of financing (payment) and the choice of rational forms of organization of medical services. Apply methods of economic analysis when choosing methods of diagnosis, prevention, treatment, rehabilitation. Form goals and determine the structure of personal activities. Organize the work of medical staff; to form rational medical routes of patients.	PR 4

6. Discipline format and scope

Discipline format (<i>full-time / part-time</i>)	Full-time	
Type of classes	Hours	Number of groups
lectures	-	
practical classes	36	
seminars	-	
self-training work	54	

7. Topics and scope of the discipline

Code of the class type	Topic	Scope of study	Code of the study result	Teaching staff
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<p>P-1 <i>(practical class 1)</i></p>	<p>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.</p>	<p>History of transplantology. The current state of affairs. The concept of brain death, donor, recipient, immunosuppression, familial and postmortem transplantation. Legal and moral aspects. Complications and organ rejection reaction. Modern approaches to immunosuppression. The main problems of the industry and development trends.</p>	<p>Kn-1-2, Ab-1, C – 1; AR-3, PR-1-4</p>	<p>Assoc.prof. O. Chemerys; Assoc.prof. V. Khomyak; As.prof. V. Marina; As.prof. Ya. Pavlovsky</p>
<p>P-2 <i>(practical class 2)</i></p>	<p>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.</p>	<p>Discussion on the relevance of kidney pathology, the need for transplantation in Ukraine and the world, ways to solve problems. The principle of operation and types of hemodialysis, indications. Waiting list and transplant restriction. Technique of heterotopic kidney transplantation. Immunosuppression. Quality control, follow-up, biopsy after transplantation. Insulin resistance. Indications for isolated pancreas transplantation, drainage options. Diabetes mellitus and renal failure: transplantation of the pancreas-kidney complex</p>	<p>Kn-2-4 Ab-2-4 PR-2-4</p>	<p>Assoc.prof. O. Chemerys; Assoc.prof. V. Khomyak; As.prof. V. Marina; As.prof. Ya. Pavlovsky</p>

<p>P-3 <i>(practical class 3)</i></p>	<p>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.</p>	<p>The urgency of liver pathology, cirrhosis, hepatitis C, alcoholism. Acute and chronic liver failure. Prognosis, MELD scales, Child-Puge. Waiting list and priorities of recipients. Methods of complete and partial liver transplantation. Place of family transplantation. Principles of immunosuppression. Small intestine pathology and chronic enteral insufficiency. Advantages and disadvantages of total parenteral nutrition. Technique of small bowel transplantation and liver-intestine complex.</p>	<p>Kn-2-4 Ab-2-4 PR-2-4</p>	<p>Assoc.prof. O. Chemerys; Assoc.prof. V. Khomyak; As.prof. V. Marina; As.prof. Ya. Pavlovsky</p>
<p>P-4 <i>(practical class 4)</i></p>	<p>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.</p>	<p>Endocrine and exocrine pancreatic insufficiency. Transplantation of pancreas and islets of Langerhans. Enteral insufficiency; total parenteral nutrition. Transplantation of intestine.</p>	<p>Kn-2-4 Ab-2-4 PR-2-4</p>	<p>Assoc.prof. O. Chemerys; Assoc.prof. V. Khomyak; As.prof. V. Marina; As.prof. Ya. Pavlovsky</p>
<p>P-5 <i>(practical class 5)</i></p>	<p>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.</p>	<p>Classification of heart failure; indications for heart transplantation. Transplantation of heart, vessels and heart valves. Methods of transplantation. Prognosis and results of heart transplantation. Postoperative course and complications.</p>		<p>Assoc.prof. O. Chemerys; Assoc.prof. V. Khomyak; As.prof. V. Marina; As.prof. Ya. Pavlovsky</p>

<p>P-6 (<i>practical class 6</i>)</p>	<p>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.</p>	<p>Features of examination of the functional state of the heart and determination of the reserve. NYHA classification. Methods of cardiac arrest. Means of extracorporeal circulation, "artificial heart". Immunosuppression tactics. Complications and prevention of rejection. Respiratory failure. Selection of recipients. Pathogenesis of pulmonary hypertension. Advantages and disadvantages of heart-lung transplantation. Rehabilitation and quality of life of patients after lung transplantation and heart-lung complex.</p>		<p>Assoc.prof. O. Chemerys; Assoc.prof. V. Khomyak; As.prof. V. Marina; As.prof. Ya. Pavlovsky</p>
<p>SSW-1 (<i>students' selftraining work 1</i>)</p>	<p>History of transplantation in Ukraine and abroad</p>	<p>Key figures in the development of transplantation in Ukraine and the world. Voronoy, Demikhov. Karel, Barnard, Murray, Starzl. Transplantology as an indicator of modern society. Presumption of consent. Legislation and financing of transplantation in Ukraine. The Church as an ally of the state in the development of transplantation.</p>	<p>C-1, C-2, AR-3, PR-1-4</p>	<p>Assoc.prof. O. Chemerys; Assoc.prof. V. Khomyak; As.prof. V. Marina; As.prof. Ya. Pavlovsky</p>
<p>SSW-2 (<i>students' selftraining work 2</i>)</p>	<p>Bioethics in transplantation: ethical, social, legal and religious aspects.</p>	<p>Bioethics in transplantation: ethical, social, legal and religious aspects.</p>	<p>C-1, C-2, AR-3, PR-1-4</p>	<p>Assoc.prof. O. Chemerys; Assoc.prof. V. Khomyak; As.prof. V. Marina; As.prof. Ya. Pavlovsky</p>

SSW-3 (students' selftraining work 3)	Postoperative monitoring of patients.	Restrictions after transplantation. Nutrition, activity regime, treatment of concomitant diseases. Features of immunosuppression correction in somatic diseases. Graft insufficiency and repeated operations. The concept of living donor and postmortem transplantation. "Thermal" and cold ischemia. Methods of extracorporeal blood circulation and cold perfusion. Conservation of graft organs.	Kn-1-4 Ab-1, Ab-3,4 C-2, AR-1, PR-1-4	Assoc.prof. O. Chemerys; Assoc.prof. V. Khomyak; As.prof. V. Marina; As.prof. Ya. Pavlovsky
SSW-4 (students' selftraining work 4)	Surgical features of donor organ removal.	Techniques of organ removal and methods of organ preservation.	Kn-1-4 Ab-1, Ab-3,4 C-2, AR-1, PR-1-4	Assoc.prof. O. Chemerys; Assoc.prof. V. Khomyak; As.prof. V. Marina; As.prof. Ya. Pavlovsky
SSW-5 (students' selftraining work 5)	Infectious complications after organ transplantation: prevention, treatment.	Early and late complications after transplantation. Opportunistic infections. Antibiotic therapy regimen and correction of immunosuppression. Differential diagnosis of infections and graft organ dysfunction. Fungal infections.	C-1, C-2, AR-1-3 PR-1-4	Assoc.prof. O. Chemerys; Assoc.prof. V. Khomyak; As.prof. V. Marina; As.prof. Ya. Pavlovsky
SSW-6 (students' selftraining work 6)	Rehabilitation, quality of life and social issues after organ transplantation.	Medical and social support for donors and recipients. Psychological rehabilitation. Quality of life control and ways to	C-1, C-2, AR-1-3 PR-1-4	Assoc.prof. O. Chemerys; Assoc.prof. V. Khomyak; As.prof.

		improve results in transplantation.		V. Marina; As.prof. Ya. Pavlovsky
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8. Verification of study result

Current control

Forms of control and evaluation system is carried out according to the requirements of the discipline program and instruction of the system of evaluation of learning activities of students in creditmodular system of educational process, approved by the Ministry of Healthcare of Ukraine (2005). Grade for the discipline is determined based on the results of the current study and evaluation of students' assimilation of the separate modules according to the Act on rating system of evaluation of learning activities of students in High Medical (Pharmaceutical) Educational Establishments in Ukraine.

In carrying out all types of control (at each class, on the final class of semantic modules, on the final module control) will be applied objective methods for evaluating the level of knowledge and practical skills – MCQs for theoretical knowledge, individual control of students actions, complicated clinical cases.

Current control carried out at each class according to the specific goals of each topic. In evaluating the learning activities of students is planned use of standardized methods of control: MCQs solving, structured written answers on open questions, control of conduction of practical skills.

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 perform 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.

Final control

General evaluation system	Participation to the classes during the semester – 60%/40% on a 200-point scale.	
Evaluation scales	Traditional 4-point scale, multi-point (200-point) scale, ECTS rating scale.	
Conditions of admission to the final control	The student attended all practical (laboratory, seminar) classes and received at least 120 points for current performance.	
Type of final control	Methods of final control	Enrollment criteria

Credit	It is necessary to enroll all topics submitted for current control. Grades from the 4-point scale are converted into points on a multi-point (200point) scale in accordance with the Regulation “Criteria, rules and procedures for evaluating the results of students’ learning activities”.	<i>The maximum number of points is 200.</i> <i>The minimum number of points is 120</i>
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The maximal number of points that a student can score for the current academic activity for admission to the exam / differentiated test is 200 points.

The minimal number of points that a student must score for the current academic activity for admission to the exam / differentiated test is 120 points.

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

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

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

4-point scale	200-point scale	4-point scale	200-point scale	4-point scale	200-point scale	4-point scale	200-point 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		
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	< 3	Not enough
4.5	180	3.97	159	3.42	137		
4.47	179	3.94	158	3.4	136		

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 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
<p style="text-align: center;">Criteria for assessing an objective structured practical exam / Complex of practice-oriented exam</p> <p>Assessment of students' knowledge at stations №4 (solving a clinical situational problem) and №5 (performing practical skills) is based on checklists, which provide the following categories:</p> <ul style="list-style-type: none"> - performed 0.1-0.2 points, - partially performed 0.1-0.05 points, - not 0 points. <p>The student can receive a maximum of 1 point for the answer at the station. Points for stations are added and converted into a mark.</p>	
9. Policy of discipline	
<p><i>Academic Integrity: Students' work is expected to be their original research or reasoning. Lack of references to sources used, fabrication of sources, copying, interference in the work of other students, etc. are examples of possible academic dishonesty. Identification of signs of academic dishonesty in the student's work is the basis for non-enrollment by the teacher, regardless of the extent of plagiarism or deception.</i></p> <p><i>Sources of training: the source base can be provided by the teacher exclusively for educational purposes without the right to transfer it to third parties. Students are encouraged to use other literature that is not listed in available thematic plans.</i></p>	
10. References	
<ol style="list-style-type: none"> 1. Chronic Kidney Disease, Dialysis, and Transplantation E-Book A Companion to Brenner and Rector's the Kidney. Jonathan Himmelfarb, T. Alp Ikizler. Elsevier Health Sciences, 2018 - 768p. 2. Living Related Transplantation. Nadey S Hakim, Ruben Canelo, Vassilios E Papalois. World Scientific. 2010 - 228p. 3. Primer on Transplantation. American Society of Transplantation John Wiley & Sons.2011- 318p. 4. Organ transplantation. A clinical guide. Edited by Andrew A. Klein. Cambridge.2015 - 391p. 5. Textbook of Organ Transplantation. Edited by Allan D. Kirk et al. John Wiley & Sons, Ltd. 2014 - 1798p. 	
11. Equipment and software of the discipline / course	
<ol style="list-style-type: none"> 1. Guidelines for medical students. 2. Sets of MCQs for test control of knowledge. 3. MCQs, guidelines and selected materials of lectures on the platform for distance learning Misa. 4. Multimedia presentations, videos. <p style="text-align: center;">12. Additional information</p> <p><i>Responsible persons for the educational process at the department of Surgery №1 – ass. prof. Volodymyr Marina;</i></p> <p><i>Responsible for student's research group of the department of Surgery №1 – assoc. prof. Ihor Sroianovskyy.</i></p> <p>Venue of classes – Department of Surgery №1, Lviv, Yu. Roofa str., 4.</p> <p>Links to website - https://new.meduniv.lviv.ua/kafedry/kafedra-hirurgiyi-1/</p>	

Syllabus compliers: V. Kolomyitsev, professor, MD, PhD, DSc
V. Khomyak, MD, PhD, associate professor;
V. Marina, MD, PhD, assistant professor;

Chairman of Department
O. Lukavetsky, professor, MD, PhD, DSc

A square image containing a handwritten signature in blue ink. The signature is stylized and appears to be the initials 'OL' followed by a flourish.