

**NATIONAL UNIVERSITY OF LIFE
AND ENVIRONMENTAL SCIENCES OF UKRAINE**
Department of Veterinary Surgery named after I. Povazhenko

APPROVED
Faculty of Veterinary Medicine
« 01st » of June 2026

CURRICULUM OF ACADEMIC DISCIPLINE
OPERATIVE SURGERY, TOPOGRAPHIC ANATOMY AND
ANESTHESIOLOGY

Area of knowledge: 21 «Veterinary»

Specialty 211 «Veterinary medicine»

Academic programme «Veterinary medicine»

Faculty of Veterinary Medicine

Developed by: PhD, Associate Professor Vadym KLYMCHUK

Description of the discipline

In the Veterinary Medicine study program, the discipline Operative Surgery with the Basics of Topographic Anatomy and Anesthesiology introduces students to surgical operations used in the treatment of animals and to increase their productivity. Surgical operations are characterized by great diversity and are among the most complex medical interventions. Successful surgical operations are impossible without knowledge of topographic anatomy.

With the help of surgical interventions, specific economic tasks are solved to restore lost or low productivity of animals in the shortest possible time, to promote the fastest recovery of the herd, to improve the quantitative and qualitative improvement of meat, dairy products or wool.

The operative surgery course consists of general and special parts. The general part covers general information about surgery, animal fixation, asepsis and antisepsis, anesthesia, elements of surgery, injections, and desmurgy.

The special part describes the anatomical and topographic structure and technique of various operations in the head, neck, trunk, limbs, and other parts of the animal's body.

Area of knowledge, specialty, academic programme, academic degree		
Academic degree	Master	
Specialty	211 «Veterinary medicine»	
Academic programme	«Veterinary medicine»	
Characteristics of the discipline		
Type	Compulsory	
Total number of hours	210	
Number of ECTS credits	7	
Number of modules	4	
Course project (work)	–	
Form of assessment	Credit / Exam	
Indicators of the discipline for full-time and part-time forms of study		
	Full-time form of study	Part-time form of study
Year of study	3	–
Term	5, 6	–
Lectures	60 hr.	– hr.
Practical classes and seminars	–	– hr.
Laboratory classes	90 hr.	– hr.
Self-study	60 hr.	– hr.
Number of hours per week for full-time students	5 Semester – 5 6 Semester – 5	–

1. Aim, competencies and program learning outcomes of the discipline

Aim is to familiarize students with surgical operations used to treat animals and increase their productivity. Surgical operations are characterized by great diversity and are among the most complex medical interventions. Successful surgical operations are impossible without knowledge of topographic anatomy.

List of academic disciplines that precede the study of the discipline "Operative surgery, topographic anatomy and anesthesiology": "Inorganic Chemistry", "Biophysics", "Latin Language and Terminology", "Organic Chemistry", "Domestic Animals Anatomy", "Animal Physiology", "Veterinary Microbiology", "Veterinary Virology", "Veterinary Immunology".

Competences acquired:

Integral competency (IC): the ability to solve specialized tasks and problems in professional activities in the field of veterinary medicine

General competencies (GC):

GC 2. Ability to apply knowledge in practical situations.

GC 7. Ability to conduct research at an appropriate level.

GC 9. Ability to make informed decisions.

GC 13. The ability to make decisions and act in accordance with the principle of non-acceptance of corruption and any other manifestations of dishonesty.

Professional (special) competencies (PC):

PC 2. The ability to use tools, special devices, devices, laboratory equipment and other technical means to carry out the necessary manipulations during professional activities.

PC 3. Ability to comply with the rules of labor protection, asepsis and antisepsis during professional activities.

PC 7. Ability to organize and conduct laboratory and special diagnostic studies and analyze their results.

PC 9. Ability to perform obstetric and gynecological and surgical procedures and operations.

PC 12. Ability to develop and implement measures aimed at protecting the population from diseases common to animals and humans.

PC 13. Ability to develop strategies for the prevention of diseases of various etiologies.

Expected learning outcomes (ELO):

ELO 3. To determine the essence of physico-chemical and biological processes that occur in the body of animals in normal and pathological conditions.

ELO 4. To collect anamnestic data during registration and examination of animals, make decisions on the choice of effective methods of diagnosis, treatment and prevention of animal diseases.

ELO 7. Formulate conclusions about the effectiveness of the selected methods and means of keeping, feeding and treating animals, prevention of contagious and non-contagious diseases, as well as production and technological processes at enterprises for the keeping, breeding or exploitation of animals of various classes and species.

ELO 20. To have specialized software tools for performing professional tasks

First day competencies:

1. Act in a way that shows understanding of the ethical and legal framework within which veterinarians should work, including professional-, animal welfare-, client-, public health-, societal- and environmental-related aspects.

4. Promote, monitor and contribute to maintaining health and safety of oneself, patients, clients, colleagues and the environment in the veterinary setting; demonstrate knowledge about the principles of quality assurance; apply principles of risk management in practice.

9. Be able to review and evaluate literature and presentations critically.

10. Understand and apply principles of One Health to ensure veterinary Good Clinical Practice, and research-based and evidence-based veterinary medicine.

12. Use of professional capabilities to contribute to the advancement of veterinary knowledge and the One Health concept, in order to promote the health, safety and welfare of animals, people and the environment, as well as the United Nations Sustainable Development Goals.

18. Perform a complete clinical examination and demonstrate ability in clinical decision-making.

19. Develop appropriate treatment plans and administer treatment in the interests of the animals under their care with regard to the resources available and to appropriate public health and environmental considerations.

20. Attend in an emergency and perform first aid in common animal species. Prioritise situational urgency and allocate resources accordingly.

24. Use basic diagnostic equipment and carry out an examination effectively as appropriate to the case, in accordance with good health and safety practice and current regulations. Understand the contribution of digital tools and artificial intelligence in veterinary medicine.

25. Recognise signs of possible notifiable, reportable and zoonotic diseases as well as abuse of animals and take appropriate action, including notifying the relevant authorities.

27. Prescribe and dispense medicines correctly and responsibly in accordance with legislation and latest guidance.

30. Perform aseptic procedures appropriately.

31. Safely perform sedation, and general and regional anaesthesia; implement chemical methods of restraint.

32. Prevent, assess and manage pain.

2. Program and structure of the discipline

Modules and topics	Hours quantity						
	full-time education						
	week	total	у тому числі				
			lecture	pract.	laboratory	ind	s.st.
Module 1. <i>Teaching about surgery, asepsis and antisepsis, anesthesiology, general and local anesthesia.</i>							
Topic №1 Introductory. The doctrine of surgery. The importance of operative surgery in a number of clinical disciplines. Classification of operations. The content of operations.	1	10	2		6		2
Topic №2 Asepsis and antisepsis in veterinary surgery	2-3	10	2		6		2
Topic №3 Anesthesiology. Premedication. General anesthesia. Neuroleptanalgesia. Preparation of the animal for anesthesia. Monitoring. Anesthesia of certain species of animals. Complications	4-5	18	6		6		6
Topic №4 Local anesthesia. Superficial, infiltration, regional, spinal.	6-7	12	4		6		2
Total Module 1		50	14		24		12
Module 2. <i>Administration of drugs, novocaine blockades, bleeding, separation and connection of biological tissues, elements of plastic surgery, desmurgy</i>							
Topic №5 Nonspecific stimulation therapy in veterinary surgery.	8	6	2		2		2
Topic №6 Novocaine blockades. Novocaine therapy. The effect of novocaine on the body. Theoretical bases of novocaine blockades, means of increasing their effectiveness. Indications and contraindications.	9-10	16	4		6		6
Topic №7 Injections, punctures of vessels and cavities, infusions. Hemotransfusions.	11	6	2		2		2
Topic №8 Disconnection and connection of biological tissues.	12	8	2		4		2
Topic №9 Temporary and	13	6	2		2		2

permanent bleeding control. Assistance in case of significant blood loss.							
Topic №10 Plastic surgery	14	6	2		2		2
Topic №11 Desmurgy	15	7	2		3		2
Total Module 2		55	16		21		18
<i>Credit (Test)</i>							
Total in 5th Semester	105	30	45		30		105
Module 3. <i>Typical surgical interventions in the area of the head, neck, chest wall of domestic animals, laparotomy, gastroenterology, enterotomy</i>							
Topic №1 Operations in the head area. Topographic anatomy. Operations in the orbit area. Operations on horns, paranasal sinuses. Operations for sheep tetanus. Operations on teeth, tongue, salivary glands. Ringing of bulls. Rhinoplasty. Operations on the ears.	1	8	2		4		2
Topic № 2 Operations in the abdomen. Topographic anatomy. Laparotomy, laparocentesis, gastronomy. Enterotomy, intestinal resection. Roumenocentesis, Roumenotomy. Abomasotomy. Hernias. Herniotomy.	2	6	2		2		2
Total Module 3	3	6	2		2		2
Module 4. <i>Typical surgical interventions in the genitourinary organs, anus, rectum, and tail. Castration of domestic animals. Operations on the limbs</i>							
Topic №3 Surgical interventions in the genital area. Castrations.	8	9	2		4		3
Topic № 4 Operations in the pelvic area. Urethrotomy, urethrostomy. Cystotomy.	9	8	2		4		2
Topic № 5 Operations in the anus and rectum. Operations on the tail.	10-11	11	4		4		3
Topic № 6 Topographical anatomy of the thoracic and pelvic extremities. Operations on the limbs	12-13	12	4		6		2
Total Module 4		55	16	-	24	-	15
Total in 6th Semester		105	30		45		30
Total hours		210	60		90		60
Exam							

3. Lecture topics

No	Topic	Hours Qty
1	The doctrine of surgical operation. Organization of surgical work	2
2	Asepsis and antisepsis in veterinary surgery	4
3	Anesthesiology	4
4	Local anesthesia.	2
5	Nonspecific stimulant therapy in veterinary surgery.	2
6	Novocaine blockades. Novocaine therapy.	2
7	Injections, punctures, infusions	2
8	Disconnection and connection of biological tissues.	4
9	Bleeding. Help with blood loss.	4
10	Plastic surgery	4
11	Desmurgy	2
12	Operations in the head area.	6
13	Surgeries in the abdomen	6
14	Surgical interventions in the genital area	6
15	Operations in the pelvic area.	2
16	Operations in the anus and rectum area	2
17	Operations on the limbs	6
	Total hours	60

4. Laboratory class topics

No	Topic	Hours Qty
	5 Semester	
1.	Safety precautions during operations. Organization of surgical work. Work in the operating room and on the field.	2
2.	Fixation and fall of animals.	4
3.	Asepsis and antisepsis. Types and means. Treatment of surgeon's hands and surgical field. Sterilization of suture and dressing material and surgical linen. Sterilization of surgical instruments. Surgical instruments.	6
4.	Anesthesiology. Superficial, infiltration anesthesia. Local anesthetics. Preparation of solutions. Regional anesthesia of the head and lateral rib wall. Regional anesthesia of the soft abdominal wall. Regional anesthesia of the genitourinary organs. Spinal anesthesia.	10
5.	Injections, punctures of vessels, cavities. AUFOC. Hemotransfusions.	2
6.	Separation of tissues. Types of bleeding and ways to stop it.	2
7.	Tissue connection. Requirements, materials and methods of tissue connection. Varieties of knots and sutures. Types of sutures of soft biological tissues. Special types of sutures. Intestinal, tendon sutures.	6
8.	Elements of plastic surgery.	2
9.	Desmurgy. Types of bandages and dressings	2
10.	Novocaine blockades. Head, neck, chest area. Novocaine blockades. Abdomen, genitourinary organs, other types n/a.	4
11.	Operations in the head area	5
	6 Semester	
12.	Trepanation of additional nasal cavities. Operations on the auricles. Operations on the salivary glands. Operations on the teeth. Operations in the orbit area.	6
13.	Operations on the vessels of the neck. Esophagotomy. Tracheotomy. Tracheostomy.	4
14.	Surgical interventions in the chest area. Thoracentesis, rib resection.	2
15.	Laparotomy, laparocentesis, gastronomy. Roumenocentesis, rumenotomy. Enterotomy, resection of the intestine. Intestinal anastomoses. Herniotomy	6
16	Castration of males. Castration of cryptorchids. Castration of females. Post-	8

	castration complications.	
17	Operations on the penis and prepuce. Preparation of test bulls.	4
18	Catheterization of the bladder. Urethrotomy, urethroplasty. Cystocentesis, cystotomy. Urethroplasty.	6
19	Operations in the anus and rectum. Operations on the tail.	3
20	Extirpation of subcutaneous mucous membranes. Punctures of joints, tendon sheaths and bursae. Regional anesthesia on the limbs. Osteosynthesis in small animals.	6
	Total hours	90

5. Self-study topics

No	Topic	Hours Qty
1	Organization of surgical work. Work in the operating room and on-site.	5
2	Different ways of fixing animals	5
3	Equipment for sterilization of surgical instruments	5
4	Local anesthesia for different animals.	5
5	Types of suture material.	5
6	Features of different types of surgical sutures.	5
7	Modern approaches to the use of narcotic drugs	5
8	Removal of horns in calves in different ways.	5
9	Features of surgical intervention in rumenotomy.	5
10	Features of surgical intervention during operations on the chest wall.	5
11	Features of surgical intervention during operations in the pelvic area.	5
12	Features of surgical intervention on the limbs	5
	Total hours	60

6. Methods of assessing expected learning outcomes:

- oral and written questioning;
- interview;
- test passing;
- course work examination.

7. Teaching methods:

- project-based learning method;
- method of flipped classroom, blended learning;
- method of learning through research;
- method of educational discussions and debates;
- method of teamwork, brainstorming

8. Results assessment.

The student's knowledge is assessed by means of a 100-point scale converted into the national grades according to the "Exam and Credit Regulations at NULES of Ukraine" in force.

8.1. Distribution of points by type of learning activity

Type of learning activity	Learning outcomes	Evaluation
Module 1. Teaching about surgery, asepsis and antisepsis, anesthesiology, general and local anesthesia.		
Laboratory work 1	Safety precautions during operations. Organization of surgical work. Work in the operating room and on the field.	8
Laboratory work 2	Fixation and fall of animals.	8
Laboratory work 3	Asepsis and antisepsis. Types and means. Treatment of surgeon's hands and surgical field. Sterilization of suture and dressing material and surgical linen. Sterilization of surgical instruments. Surgical instruments.	8
Laboratory work 4		8
Laboratory work 5	Anesthesiology. Superficial, infiltration anesthesia. Local anesthetics. Preparation of solutions. Regional anesthesia of the	8
Laboratory work 6		9

	head and lateral rib wall. Regional anesthesia of the soft abdominal wall. Regional anesthesia of the genitourinary organs. Spinal anesthesia.	
Laboratory work 7	Injections, punctures of vessels, cavities. AUFOC. Hemotransfusions.	9
Self-study 1-3		12
Module intermediate control 1		30
Total Module 1		100
Module 2. Administration of drugs, novocaine blockades, bleeding, separation and connection of biological tissues, elements of plastic surgery, desmurgy		
Laboratory work 8	Separation of tissues. Types of bleeding and ways to stop it.	6
Laboratory work 9	Tissue connection. Requirements, materials and methods of tissue connection. Varieties of knots and sutures. Types of sutures of soft biological tissues. Special types of sutures. Intestinal, tendon sutures.	8
Laboratory work 10		7
Laboratory work 11		7
Laboratory work 12	Elements of plastic surgery.	6
Laboratory work 13	Desmurgy. Types of bandages and dressings	6
Laboratory work 14	Novocaine blockades. Head, neck, chest area. Novocaine blockades. Abdomen, genitourinary organs, other types n/a.	9
Laboratory work 15	Operations in the head area	9
Self-study 4-6		12
Module intermediate control 2		30
Total Module 2		100
Class work	$(M1 + M2)/2 * 0,7 \leq 70$	
Credit (Test)	30	
Total in 6th Semester	$(\text{Class work} + \text{Credit}) \leq 100$	
Module 3. Typical surgical interventions in the area of the head, neck, chest wall of domestic animals, laparotomy, gastroenterology, enterotomy		
Laboratory work 16	Trepanation of additional nasal cavities. Operations on the auricles. Operations on the salivary glands. Operations on the teeth. Operations in the orbit area.	6
Laboratory work 17		8
Laboratory work 18	Operations on the vessels of the neck. Esophagotomy. Tracheotomy. Tracheostomy.	7
Laboratory work 19	Surgical interventions in the chest area. Thoracentesis, rib resection.	7
Laboratory work 20	Laparotomy, laparocentesis, gastronomy. Roumenocentesis, rumenotomy. Enterotomy, resection of the intestine. Intestinal anastomoses. Herniotomy	6
Laboratory work 21		6
Laboratory work 22	Castration of males. Castration of cryptorchids. Castration of females. Post-castration complications.	9
Laboratory work 23		9
Self-study 7-9		12
Module intermediate control 3		30
Total Module 3		100
Module 4. Typical surgical interventions in the genitourinary organs, anus, rectum, and tail. Castration of domestic animals. Operations on the limbs		
Laboratory work 24	Operations on the penis and prepuce. Preparation of test bulls.	8
Laboratory work 25		8
Laboratory work 26	Catheterization of the bladder. Urethrotomy, urethrotomy.	8

Laboratory work 27	Cystocentesis, cystotomy. Urethroplasty.	8
Laboratory work 28	Operations in the anus and rectum. Operations on the tail.	8
Laboratory work 29	Extirpation of subcutaneous mucous membranes. Punctures of joints, tendon sheaths and bursae. Regional anesthesia on the limbs. Osteosynthesis in small animals.	9
Laboratory work 30		9
Self-study 10-12		12
Module intermediate control 4		30
Total Module 4		100
Class work	(M1 + M2)/2*0,7 ≤ 70	
Exam	30	
TOTAL for discipline	(Class work + Exam) ≤ 100	

8.2. Scale for assessing the knowledge of a higher education student

Higher education student rating, points	National grade based on credit / exam results
90-100	Excellent
74-89	Good
60-73	Satisfactory
0-59	Unsatisfactory

8.3. Assessment policy

Deadlines and exam retaking rules	works that are submitted late without valid reasons will be assessed with a lower grade. Module tests may be retaken with the permission of the lecturer if there are valid reasons (e.g. a sick leave).
Academic integrity rules	cheating during tests and exams is prohibited (including using mobile devices). Term papers and essays must have correct references to the literature used
Attendance rules	Attendance is compulsory. For good reasons (e.g. illness, international internship), training can take place individually (online by the faculty dean's consent)

9. Teaching and learning aids:

- e-learning course of the discipline (on the educational portal of NULES of Ukraine eLearn - <http://elearn.nubip.edu.ua/course/view.php?id=555>);
- textbooks, manuals, workshops:
 - Оперативна хірургія з основами топографічної анатомії, анестезіології (частина 1). Сухонос В.П., Малюк М.О., Куліда М.А., Солонін П.К., Ткаченко С.М., Ткаченко В.В., Дорошук В.О. – Київ :НУБіП України, 2021. 460 с
 - Оперативна хірургія з основами топографічної анатомії, анестезіології (частина 2) // Сухонос В.П., Малюк М.О., Куліда М.А., Солонін П.К., Ткаченко С.М., Ткаченко В.В., Шупик О.В., Климчук В.В., Тарнавський Д.В. – Київ: НУБіП, 2022 . – 370 с.
- програма навчальної та виробничої практики навчальної дисципліни.

10. Recommended sources of information

1. Veterinary Anesthesia and Analgesia, the 6th Edition of Lumb and Jones. Kurt Grimm. ISBN 9781119830276 Wiley & Sons, Incorporated, John, 2024, 1456p.
2. Manual of Small Animal Surgical Emergencies. Filippo Cinti, Matteo Rossanese, Marie Burnek. ISBN 9781962679459 Edra Publishing, 2024, 416p.
3. Surgical Techniques in Veterinary Medicine. Maria Muray. ISBN 9781639875092 Murphy & Moore Publishing, 2022, 252p.
4. Small Animal Soft Tissue Surgery. Eric Monnet. ISBN 9781119693680 Wiley & Sons, Incorporated, John, 2023, 1040p.
5. Surgery of Exotic Animals. Geoff W. Pye ISBN 9781119139584. Wiley & Sons, Incorporated, John, 2022, 480p.