MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
STEPAN GZHYTSKYI NATIONAL UNIVERSITY OF VETERINARY MEDICINE AND BIOTECHNOLOGIES LVIV
FACULTY OF VETERINARY MEDICINE
Department of Obstetrics, Gynecology and Biotechnology of Animal Reproduction named after GV Zvereva

APPROVED

Dean of the Faculty

_____
_
_____
(signature)
"_____" _____20___ year

WORK PROGRAM

2.10. OBSTETRICS, GYNECOLOGY AND BIOTECHNOLOGY OF ANIMAL REPRODUCTION

(code and name of the discipline)

level of higher education _____ second_master __
(name of educational level)

field of knowledge 21 Veterinary medicine ___
(name of the field of knowledge)

specialty 211 Veterinary medicine _____
(назва спеціальності

educational program _____Veterinary medicine _____

type of discipline ___required _____
(required / optional)

Lviv – 2022p.

WORK PROGRAM OBSTETRICS, GYNECOLOGY AND BIOTECHNOLOGY OF ANIMAL REPRODUCTION

for students **3rd – 4ht year FVM master's degree**
(educational level)
specialties _211_ Veterinary medicine _____
(code and name of the specialty)

Contributors:: Head of the Department of Obstetrics, Gynecology and Biotechnology of Animal Reproduction named after GV Zvereva, doctor of veterinary sciences Professor Stefanik V.Yu., assistant Basarab T.P.

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The working program was considered and approved at the meeting of the department obstetrics, gynecology and biotechnology of animal reproduction named after GV Zvereva_____Stefanyk V. Yu
(signature)

Protocol 8 of 16 April 2021 № 6

Approved by the commission for use
animals and ethical expertise
Prtocol #_____ from_____
Head of Commission_____

Approved by the decision of the educational and methodical VETERINARY MEDICINE

speciality __**veterinary medicine**
(name of the faculty)

Protocol № ____ of «____»_____20 y.

head of commission

_____
(signature, surname and initials)

Approved by the decision of the educational and methodical VETERINARY MEDICINE

faculty commissions __**veterinary medicine**
(name of the faculty)

Protocol № ____ of «____»_____20 y.

head of commission

_____
(signature, surname and initials)

Approved by the Academic Council of the Faculty veterinary medicine

Protocol № ____ of «____»_____20 y

1. Description of the discipline

Name of indicators	Hours in general
	Day form education
Number of credits / hours	11,5 / 345
Total hours of classroom work	160
including:	
• lectures, hours.	48
• practical classes, hours	
• laboratory classes, hours	112
seminars, hours	
Total hours of independent work	185

Type of control – etwo tests, term paper, exam.

Note

Part of student study time in percentage

2. Subject, purpose and objectives of the discipline

2.1. The purpose of studying the discipline Obstetrics, gynecology and biotechnology of animal reproduction

Obstetrics, gynecology and biotechnology of animal reproduction - a discipline that studies the norm and pathology of the reproductive system of animals. breast, newborn and animal reproduction technology.

The purpose of the discipline is the formation of students' theoretical knowledge and practical skills of the main stages of reproduction of animals as a whole in terms of species specificity of animals, taking into account their age and breed characteristics.

2.2. Tasks of the discipline (GC, PC)

The study of the discipline involves the formation of students necessary competencies:

– **general competencies**: (from the section "Program competencies" with ciphers)

2.1. ability to organize, carry out and control the document flow during the implementation of professional activities

2.2. ability to apply knowledge in practical situations.

2.2. Ability to use professional knowledge in the field of production and processing of livestock products.

2.3.. ability to organize, strategy of production and financial activities of marketing and management in veterinary medicine.

2.4. Ability to use modern knowledge about methods of reproduction, patterns of individual development of animals for effective management of the livestock industry.

professional competencies: (from the section "Program competencies" with ciphers)

3.1. ability to understand and establish the features of the structure and functioning of cells, tissues, organs, systems and apparatus of the animal body.

3.2. apply knowledge in practical situations.
3.3. ability to follow the rules of labor protection of asepsis and antiseptics during professional activities.
3.4. ability to develop strategies for disease prevention of various etiologies.
3.5. ability to organize, conduct and analyze laboratory and special diagnostic tests.

2.3. Program learning outcomes

As a result of studying the discipline, the student must be able to demonstrate the following learning outcomes:

Know:

1. Know the rules of safety, personal hygiene, asepsis and antiseptics.
2. Know the etiology, pathogenesis and diseases, analyze the conditions of keeping, feeding and exploitation of animals, take into account their physiological condition, species, breed and individual characteristics, know the methods and techniques of clinical trials.

3. Know the etiology and patterns of development of the pathological process of non-communicable diseases of animals, ways of their penetration, prevention and prevention.
4. Collect anamnestic data during registration and examination of animals. ability to plan, organize and conduct clinical trials of animals and samples of biological material.

To be able:

1. Take the necessary measures to comply with the rules of safety and personal hygiene,
2. Adhere to asepsis and antiseptics during professional activities;
3. Be able to operate with the basic concepts of biosafety and bioethics;
4. Analyze existing and emerging ethical issues in the biological and pharmaceutical industries;
5. Analyze the causes of epizootological situations and infectious and non-infectious diseases;
6. To organize and carry out preventive treatments against infectious and invasive diseases, as well as to carry out medical examinations of animals for the purpose of reasonable prevention of diseases and obtaining quality and safe products

The structure of the discipline

3.1. Distribution of classes by sections of the discipline

3rd year 6th semester

Names of sections and topics		Number of hours					
		Total	Including				
			L	P	Lab	Ind	I.W.
1		1	2	3	4	5	6
SECTION 1 Morphological and physiological bases of animal reproduction. Artificial insemination of animals.							
1.1	Topic 1. Introduction to the discipline. Morphological structure and function of male reproductive system	10	2	-	2	-	6
1.2.	Topic 2. Physiological basis and technique of obtaining sperm from broodstock.	14	2	-	4	-	8
1.3	Topic 3. Sperm, its composition and physico - chemical properties.	12	2	-	4	-	6
1.4	Topic 4. Evaluation of sperm quality	10	-	-	4	-	6
1.5	Topic 5. Dilution of sperm	12	2	-	4	-	6
1.6.	Topic 6. Methods of storage and transportation of sperm	10	-	-	4	-	6
1.7.	Topic 7. Morphological structure and function of the reproductive system of females.	11	2	-	2	-	7
1.8.	Topic 8. Estrus cycle	10	2	-	2	-	6
1.9.	Topic 9. Physiology of insemination of females	8	2	-	2	-	4
1.10	Topic 10. Technology of artificial insemination of females	8	2	-	4	-	2
Hours in general		**105**	**16**	**-**	**32**	**-**	**57**

SECTION 2.

Pregnancy in animals, their diagnosis and treatment of animals with complications

2.1.	Topic 11. Fertilization and embryogenesis	10	2	-	2	-	6
2.2.	Topic 12. Embryo transplantation.	10	2	-	4	-	4
2.3.	Topic 13. Physiology of pregnancy.	12	2	-	4	-	6
2.4.	Topic 14. Methods of pregnancy diagnosis	14	2	-	6	-	6
2.5.	Topic 15. Pathology of pregnancy	14	2	-	4	-	8
	Hours in general	**60**	**10**	**-**	**20**	**-**	**30**

SECTION 3

Give birth. Pathology of childbirth

3.1	Topic 16. Generations in animals	10	2	-	4	-	4
3.2.	Topic 17. Pathology of childbirth	12	2	-	6	-	4
3.3.	Topic 18. Operative obstetrics	8	2	-	2	-	4
	Hours in general	**30**	**6**	**-**	**12**	**-**	**12**

SECTION 4.

Postpartum period and its complications in animals. Diseases of newborns.

4.1.	Topic 19. Physiology of the postpartum period.	14	2	-	4	-	8
4.2.	Topic 20. Pathology of the postpartum period	18	2	-	6	-	10
4.3.	Topic 21. Diseases of newborns	18	2	-	6	-	10
4.4.	Topic 22.Obstetric medical examination	12		-	4	-	8
	Hours in general	**62**	**6**	**-**	**20**	**-**	**36**

SECTION 5.

Breast gland and its pathology.

5.1	Topic 23. Physiology of the breast	14	2	-	4	-	8
5.2	Topic 24. Diseases of the breast	14	2	-	4	-	8
5.3	Topic 25. Mastitis	16	2	-	6	-	8
Hours in general		**44**	**6**	-	**14**	-	**24**

SECTION 6.

Veterinary gynecology and andrology

6.1.	Topic 26. Forms of infertility of animals	18	2	-	6	-	10
6.2	Topic 27. Gynecological examination	14	2	-	4	-	8
6.3.	Topic 28. Andrological examination	12		-	4	-	8
Hours in general		**44**	**4**	**-**	**14**	**-**	**26**
Total for the discipline		**345**	**48**	**-**	**112**	**-**	**185**

3.2. **LECTURE CLASSES**

№	Topic names and summary of the curriculum	Number of hours
1	2	3
1.	**Introduction. Morphological structure and function of male reproductive system.** The content of the subject. A brief history of the development of veterinary obstetrics, gynecology and biotechnology of animal reproduction. Morphological characteristics and species features of male genitals (testicles, testicular appendages, additional gonads, rod). Wicket and its functions. Additional gonads and their purpose. Spermiogenesis. Male sexual reflexes are unconditional and conditioned. Dependence of the manifestation of male sexual reflexes on the type of nervous activity.	2
2.	**Physiological bases and technique of obtaining sperm from broodstock.** Methods of obtaining sperm: the method of artificial vagina, vaginal, using a sponge, collector, manual, ejaculator, etc.), their advantages and disadvantages. Physiological basis of sperm production. The value of sexual reflexes in obtaining sperm (pressure, temperature, mucus). Sanitary and hygienic requirements for semen collection. Physiological bases of use of pedigree broodstock: conditions of maintenance of use of pedigree broodstock for maintenance of their sexual activity of reception of high-grade sperm, high fertility of females, qualitative offspring. Influence of feeding, maintenance of a mode of sexual use of broodstock on sexual activity and quality of sperm. Monitoring their health. rules for handling broodstock. Conditions for preventing their aggression, safety rules.	2

3.	**Morphological structure and function of female reproductive system.** External and internal genitals of females, their morphological structure and species characteristics in cows, sheep, pigs, mares and small animals; innervation, blood supply and lymph circulation of the genitals; maturation and atresia of follicles. Ovogenesis. Ovulation. Yellow body, its types, development, structure and function. Sexual and physiological maturity of females. Influence of feeding and keeping animals on their puberty. Age of breeding use of animals.	2
4.	**Estrous cycle** Morphological changes in the reproductive system of females due to their function. Folliculin and luteal phases of the cycle. Stages of the sexual cycle: arousal, inhibition and balance. Heat, general reaction (sexual arousal), sexual hunting and ovulation. Methods of their definition. Monocyclic and polycyclic animals. Full, synchronous and asynchronous and defective (anestral, areactive, alibid, anovulatory) sexual cycles. The influence of external and internal factors on the sexual function of females (feeding, keeping insolation, male, etc.).	2
5.	**Physiology of female insemination. Types of insemination of females.** Sexual intercourse, its specific features. Sexual reflexes. Types of natural insemination, sperm survival in different parts of the female reproductive system. Preparing females for insemination. Types of insemination: natural and artificial; their production and veterinary-sanitary assessment. Organization of insemination: veterinary and zootechnical control over its carrying out in cattle breeding, pig breeding, horse breeding, sheep breeding, dog breeding.	2

6.	**Technology of artificial insemination of females** Methods of artificial insemination: vaginal, cervical, uterine, tubal and their modifications. Evaluation of sperm quality at the point of artificial insemination, requirements for motility and quantity of sperm in the dose for fertilization of females of different species of animals during artificial insemination. Methods of artificial insemination of cows, sheep, goats, pigs, mares, bitches. Preparation for insemination of cows, sheep, pigs, mares, bitches, determination of the optimal time of their insemination, time and frequency of insemination. Insemination of animals with sexed semen. Features of artificial insemination of poultry.	2
	Fertilization. Pregnancy in animals, their diagnosis and treatment animals with complications Sexual intercourse, its specific features. Sexual reflexes. External and internal factors acting on sexual reflexes. Types of natural insemination. The mechanism of movement and survival of sperm in different parts of the female reproductive system. Capacitation process. Methods of artificial insemination: vaginal, cervical, uterine. The essence of fertilization and the factors that determine it. Place of fertilization. Uterine motility. Movement and survival of the egg. Dynamics of the fertilization process.	2
8.	**Embryo transplantation.** Physiological bases and applied value of embryo transplantation. Methods of inducing poliovulation (superovulation) in donors, its mechanisms. Xypurgical and non-epiphygic production of embryos. Methods of evaluation, cultivation and long-term storage of embryos. Obtaining, maturing and fertilizing oocytes in vitro. Methods of embryo transfer.	2
9.	**Physiology of pregnancy.** The processes of fragmentation and movement of the zygote in the fallopian tube to the uterine horn (yolk period of development), nidation (nesting) of the zygote, its timing and features in different species of animals. Embryonic period of	2

	development, differentiation of internal organs and manifestation of their physiological function. The mechanism of nutrition of the embryo and its development in different species of animals. Development of fruit membranes. Implantation process, terms and species features. Types and functions of the placenta, species characteristics. Pregnancy as a complex physiological process in which all systems of the pregnant animal's body take part. Neuro-humoral mechanisms of pregnancy regulation. Influence of exogenous factors on pregnancy, growth and development of the fetus. Duration of pregnancy in different species of animals. Fetal circulation.	
10.	**Methods of pregnancy diagnosis**. The importance of timely and accurate determination of pregnancy and infertility of animals. Clinical methods of pregnancy diagnosis. Reflexological method, diagnosis of pregnancy. External methods of diagnosing pregnancy of animals of different species. Internal methods of diagnosis of pregnancy and infertility (rectal and vaginal). Topography of the uterus in pregnant and non-pregnant animals. Methods of rectal examination of large animals for pregnancy and determining its timing.	2
11.	**Pathology of pregnancy.** Diseases of pregnant animals. Influence of external factors and the state of the organism on diseases of pregnant animals. Hydrocephalus of the fetus and amniotic membranes. Pathology of the placenta. Inflammation of the placenta. Uterine bleeding. Premature contractions and attempts. Swelling of pregnant women. Addiction of pregnant women. Uterine hernias. Ectopic pregnancy. Inversion and prolapse of the vagina. Abortions, their classification (according to AP Studentsov): hidden (death resorption of the zygote of the embryo), complete, incomplete. Abortions are non-infectious, infectious and invasive, idiopathic, symptomatic. Fetal	2

	death, its mummification, maceration, putrefactive decomposition. Hidden abortion. Diagnosis and prevention of abortion.	
12.	**Physiology of childbirth in females.** The course of childbirth in animals. Factors that determine childbirth. Anatomical and topographic relationship of the fetus to the birth canal during childbirth. Precursors of childbirth. Birth contractions and attempts. Stages of childbirth: preparatory, fetal withdrawal, sequential and their duration. Species features of the dynamics of the patrimonial act.	2
13.	**Pathology of childbirth.** Causes of pathological births: a) depending on the organism of the mother; b) associated with improper placement of the fetus. Manure retention. Prevention of childbirth pathology. .	2
14.	**Operative obstetrics.** Fetotomy: indications and contraindications. Fetotomy methods, advantages and disadvantages. Cesarean section in cows, pigs, sheep and other animals. Hysterectomy. Amputation of the inverted uterus. Artificial abortion.	2
15.	**Physiology of the postpartum period in females.** The course of the postpartum period and its duration in different species of animals .. General changes in the body of females. Involution of sexual washes. Jloxiï. Dependence of the duration of nepe6igy childbirth and the postpartum period on the state of the animal's body, conditions of feeding, keeping, care and operation in different species of animals. The relationship between the breast and reproductive system after childbirth.	2
16.	**Pathology of the postpartum period in females.** Factors that cause complications in the postpartum period. Subinvolution of the uterus. Postpartum vulvitis, vestibulitis, vaginitis, cervicitis, metritis. Uterine prolapse. Postpartum infection and intoxication. Parametritis and perimetritis. Postpartum paresis. Postpartum eclampsia. Postpartum neurosis. Addiction after childbirth. Eating manure and offspring. Measures to prevent animal diseases that occur during childbirth and	2

	in the postpartum period. Organization of control over nepebir of the postpartum period in cows.	
17.	**Diseases of newborns.** Causes that cause the birth of a weak, with reduced resistance of the offspring (alimentary, immunological, infectious, etc.). The main criteria for assessing the viability of newborn calves, foals, lambs, piglets. Methods of diagnosis and treatment of diseases of newborns. Hypoxia. Asphyxia, its clinical forms. Malnutrition. Meconium retention. Bleeding from the vessels of the navel stump. Inflammation of the navel. Urachus fistula. Congenital anomalies and ugliness of newborns. Contracture of the joints. Congenital absence of anus and rectum. Prevention of diseases of newborns. Complete feeding and keeping of animals during pregnancy. Timely and qualified assistance during childbirth.	2
18.	**Physiology of the breast.** Morphological structure of a cow's udder. Circulation and innervation of the breast. The role of the neurohumoral system in the processes of milk production and milk production Influence of external factors on the development and function of the breast. Influence of machine, manual milking, sucking on the condition of the breast. Rules and techniques of machine and manual milking.	2
19.	**Diseases and anomalies of the breast.** Anomalies of udder development; malformations of the teat canal, agalactia and hypogalactia, circulatory disorders, traumatic injuries, udder skin diseases, functional disorders of the udder.	2
20.	**Mastitis.** Classification of mastitis according to AP Studentsov, gastritis and chronic mastitis, serous, catarrhal, purulent, fibrinous, hemorrhagic mastitis. Gangrene of the udder. Consequences of mastitis: recovery, induration, gangrene and udder atrophy. Diagnosis of mastitis. Laboratory methods for the diagnosis of mastitis. Treatment of cows with various forms of mastitis. Subclinical (hidden) mastitis and its effect on milk	2

	quality. Comprehensive system for the prevention of mastitis. The spread of mastitis and economic losses. The role of external and internal factors in the etiology of breast disease.	
21.	**Forms of infertility of animals.** The essence of veterinary gynecology and its tasks in the prevention and elimination of infertility of domestic animals. The concept of infertility and infertility of females. Spread of infertility and economic losses from it. Classification of animal infertility. The main causes and forms of infertility. Infertility as a consequence of diseases of the genitals and other organs. Vulvitis, vestibulitis, vaginitis. Diseases of the cervix. Diseases of the uterus, fallopian tubes and ovaries. Diagnosis of infectious, invasive and non-communicable diseases of the genitals in animals .. Persistent corpus luteum. Kits of yellow bodies. Anaphrodisia. Follicular cysts. Nymphomania. Ovarian hypofunction.	2
22.	**Gynecological examination** Diagnostic, preventive and curative measures for the diagnosis, treatment and prevention of obstetric and gynecological diseases of animals. The main measures for the prevention of symptomatic infertility. Purpose and principles of gynecological medical examination.	2
Hours in general		**48**

3rd year 6th semester

3.3 LABORATORY-PRACTICAL CLASSES - 32 hours.

№	The name of the topic of classes and their summary	Number of hours.
1	**Morpho-physiological bases of animal reproduction.** Organization of work and vet - san rules at stations and points of artificial insemination of animals. Methods of disinfection of instruments and materials, rules of preparation of solutions for technology of artificial insemination	2
2	**Obtaining sperm.** The structure of artificial vaginas and the technology of obtaining sperm selected, bull, stallion and boar.	4
3	**Macroscopic evaluation of sperm.** Determination of sperm density and activity.	4
4	**Determination of sperm concentration in** semen in the counting chamber, using FEC and optical standards.	4
5	**Determination of the percentage of live sperm**, tissue respiration, pathological sperm in the semen of farm animals.	2
6	**Microbial contamination and semen titer**. Effects on sperm of physical and chemical factors	2
7	**Sperm diluents**. Technique of making HCG diluent for sheep semen	2
8	**Methods of sperm storage and sperm transportation**. Sperm freezing technologies. Departure to the breeding enterprise	4
9	**Morphology and physiology of the female reproductive system** Features of the estrous cycle in female farm animals	4
10	**Artificial insemination of domestic animals** Methods of artificial insemination of cows and heifers	2

11	**Methods of artificial insemination** of sheep, mares and pigs	2
12	**Accounting and reporting** in the reproduction of animals	2
13	**Pregnancy**. Fertilization embryogenesis	4
14	**The structure of the amniotic membranes**. Preparation of female genitals.	2
15	**Embryo transplantation**	4
16	**Methods of pregnancy diagnosis**. Clinical and laboratory methods of research of cows, mares, pigs and sheep for pregnancy.	6
17	**Pathology of pregnancy**. Etiology, methods of diagnosis and prevention of abortion in females	4
18	**Give birth**. Study of species characteristics of the pelvis in female farm animals. Organization of maternity wards. Species features of childbirth in females Help with normal childbirth. Conditional obstetric concepts.	4
19	**Rules of care for pathological childbirth**. Obstetric instruments. Obstetric care for small animals. Mastering the techniques of manure separation. Treatment of animals with addiction, postpartum paresis. Manipulations on the phantom to correct the wrong position, position, presentation and placement of the fetus	4
20	**Fetotomy methods**. Conducting obstetric operations. Basic principles of operative obstetrics. The use of surgical techniques for incorrect placement of the fetal head in large animals (lateral and lower positions) and twisting of the neck. Amputation of the head and limbs of the fetus, etc.	4
21.	**Physiology of the postpartum period**. Analysis of the postpartum period in cows, sheep, pigs, mares and other animals. Lochia. Research of indicators of physiological course and the end of the postpartum period. Study of uterine subinvolution. Postpartum vulvitis, vestibulitis, vaginitis, cervicitis. Metrite, perimeter and	4

	parametrite. Postpartum infection and intoxication. Obstetric sepsis. Puerperal septicemia, pyemia, septicopia. Postpartum sapremia. Postpartum paresis. Postpartum eclampsia. Obstetric examination.	
22.	**Pathology of the postpartum period**. Varieties of patrods and techniques of obstetrics. Acquisition of skills to correct misplacement of the fetus.	8
23.	**Diseases of newborns**. Consideration of the main criteria of viability of newborn calves, foals, lambs, piglets. Study of methods for diagnosing and treating diseases of newborns. Comprehensive prevention of neonatal pathology. Newborn care.	4
24.	**Obstetric medical examination**. Obstetric examination of uterine livestock. Methodology of medical examination.	4
25.	**Physiology of the breast**. Examination of the structure, blood supply and innervation of the cow's udder. Lactation. Udder dysfunction. Methods of diagnosis of breast diseases. Laboratory study of milk.	4
26.	**Diseases of the breast**. Treatment of animals with skin diseases of the udder and teats. Functional disorders of the breast. Prevention of breast diseases.	4
27.	**Mastitis.** Establishing the causes of mastitis. Differential diagnosis of clinically severe mastitis. Methods of treatment of animals with mastitis, introduction of drugs into the udder, operations on teats (animals, slaughter material). Application of laboratory methods for diagnosing subclinical mastitis. Organization of diagnostics. Treatment and prevention of mastitis in cows in complexes and on large farms. Work with sick animals in the clinic and farm.	6
28.	**Forms of infertility**. Gynecological examination of females. Methods of treatment and methods of diagnosis of gynecological diseases, prevention of gynecological diseases.	4

29.	**Gynecological medical examination**. Diagnosis, treatment and prevention of symptomatic infertility caused by functional disorders. Work with sick animals in the clinic and farm. Calculation of economic losses from infertility of animals using the method. Development of a set of measures for the prevention and elimination of infertility.	4
30.	**Andrological medical examination**. Methods of andrological medical examination. Diagnosis and treatment of andrological diseases	4
	Hours in general	**112**

3.4. Independent work

№	The name of the topic of classes and their summary	Number of hours.
1	MORPHO-PHYSIOLOGICAL FUNDAMENTALS OF ANIMAL REPRODUCTION Artificial insemination as a biological method of purposeful reproduction of animals (in the historical aspect). The value of artificial insemination in the prevention of sexually transmitted infections in animals	4
2	OBTAINING SPERMS Species features of morphological structure and physiological function of the male reproductive system. Function and pathology of additional gonads. Sexual reflexes.	4
3	MORPHOLOGY AND PHYSIOLOGY OF THE FEMALE SEXUAL SYSTEM. Generative and endocrine function of the ovaries Basic principles of neuro-endocrine regulation of sexual function in females and males. The value of gonadotrophic and steroid hormones	
4	ARTIFICIAL EVALUATION. Species features of biotechnology of artificial insemination of animals. The value of the environment of the female genital tract for sperm movement, fertilization and embryo development.	4
5	EMBRYON TRANSPLANTATION Physiological bases and applied value of embryo transplantation. Methods of inducing poliovulation (superovulation) in donors, its mechanisms. Methods of evaluation, cultivation and long-term storage of embryos. Obtaining, maturing and fertilizing oocytes in vitro. Methods of embryo transfer in different species of animals. New directions of biotechnology of animal reproduction.	4
6	PREGNANCY Basic principles of neuro-endocrine regulation of the reproductive cycle in animals (fertilization, pregnancy, childbirth). Pathology of pregnancy. Etiology, methods of diagnosis and prevention of abortion in females	4 4
7	CHILDBIRTH. Some aspects of childbirth pathology and postpartum complications in animals.	4
8	DISEASES OF NEWBORN. Congenital and acquired diseases of newborn animals	4
9	OBSTETRIC MEDICAL examination in the system of measures to prevent infertility of animals	4

10	BREAST GLAND Physiological bases of lactogenesis. Lactorrhea, hypo- and agalactia. The procedure for starting cows. The value of dryness for subsequent lactation and colostrum for newborn offspring.	4
11	MASTITIS. The spread of mastitis and economic losses. Comprehensive system for the prevention of mastitis.	4
12	GYNECOLOGY. The essence and meaning of the terms infertility and infertility. The role of gynecological pathology in causing infertility in females .	4
13	ANDROLOGY The importance of andrology in the study of diseases of the male genital organs, their treatment and prevention. Andrological medical examination of breeding bulls. Growing and staffing of breeding enterprises with breeding bulls. Veterinary and sanitary rules of work of breeding enterprises, laboratories and points of artificial insemination of animals.	4
	Total	48
	Preparation for training programs and control measures	137
	Hours in general.	185

4. Term Paper

To consolidate the theoretical knowledge of the course "Obstetrics, Gynecology and Biotechnology of Animal Reproduction", the curriculum provides for the implementation of final course work by students, which can be presented in the form of a medical history.

History of the disease (historia morbi) is the main clinical document, which includes all data on a sick animal that was in an inpatient setting and as an exception to outpatient treatment. Records are made throughout the curation period. It is made out according to the scheme which will be stated in the following sections of these methodical recommendations.

Curation and writing a medical history produce students' logical thinking, teach them to use and in-depth analysis of special literature. In addition, keeping and recording a medical history requires students to use and possess new research and diagnostic methods, effective means of therapy and prevention.

The medical history is an important educational document presented to the state examination commission. The curator should conduct a laboratory test of blood (for erythrocytes, hemoglobin, leukocytes, leukograms), urine (physicochemical properties), the contents of the scar. If necessary, conduct more in-depth biochemical studies of blood and urine (levels of carotene, vitamin A, alkaline reserve, calcium, inorganic phosphorus, ketone bodies, etc.).

The medical history is one of the important documents that indicates the level of professional training. It is a set of information that reflects the causes of the disease, course, symptoms, diagnosis, prognosis, effectiveness of treatment and prevention.

Themes of case histories

1. Postpartum paresis in cows.
2. Dependence of cows before birth.
3. Vaginal prolapse in cows (goats).
4. Uterine inversion and prolapse in cows.
5. Swelling of the udder in cows.
6. Retention of manure in cows.
7. Pathological genera in animals.
8. Cesarean section in cows.
9. Cesarean section in small animals.
10. Postpartum sepsis.
11. Weak attempts and contractions.
12. Pyometra in small animals.
13. Subinvolution of the uterus in cows.
14. Subclinical endometritis in cows.
15. Postpartum purulent - catarrhal metritis in cows.
16. Chronic purulent - catarrhal metritis in cows.
17. Postpartum metritis in small animals.
18. Serous mastitis in cows.
19. Catarrhal mastitis in cows.
20. Fibrinous mastitis in cows.
21. Subclinical mastitis in cows.
22. Diseases of newborns.
23. Ovarian hypofunction in cows.
24. Ovarian hypofunction in small animals.
25. Syndrome mastitis - metritis - agalactia in sows.

5. Teaching methods

The study of the subject "Obstetrics, gynecology and biotechnology of animal reproduction" is carried out using the following methods:

- teaching lecture material;
- use of educational visual material (tables, diagrams, stands, models, slides, etc.);
- use of computer programs, videos;
- solving situational tasks;
- conducting clinical trials, curation and evaluation of the results;
- conducting laboratory tests and evaluation of the obtained results;
- Scientific research work;
- independent work of students.

The main types of training according to the curriculum are:

- Lectures;
- laboratory classes;

- independent extracurricular work of students (SMS).

The main purpose of the lecture course is the development of students' scientific medical thinking and its use to assess the clinical condition of the animal, improving the methodology and methodology of research, choosing the right treatment, raising the theoretical level; learn to correctly combine the results of general clinical and additional research methods, objectively assess the symptoms, think logically and draw the right conclusions. Use the acquired knowledge to diagnose and provide medical care. The main task is to develop students' medical thinking

Laboratory classes according to the method of their organization are practice-oriented and include:

- study of methods of research of animals, equipment and sequence of their application at research of separate bodies and systems, ie medical equipment, for the purpose of recognition of diseases of internals;

- learn to analyze the indicators identified in the study of individual organs and systems (body temperature, heart rate and respiration, scar reduction, heart rate, respiratory noises, etc.) and their deviation from the performance of healthy animals;

- learn to summarize the symptoms obtained during the study of a sick animal, group them into pathogenetically related groups (symptom complexes or syndromes) and on this basis to diagnose and prescribe treatment.

Current control is carried out in the laboratory in accordance with the specific objectives of the current topic. Assimilation of each topic is controlled in the classroom (initial control - as the level of readiness for laboratory classes and the final - the level of knowledge and skills acquired) through oral or written interviews, machine-programmed control, solving situational problems.

Final control is carried out upon completion of its study. Assessment of mastering is carried out at the final control lesson in the form of a written survey, solving situational problems and performing practical skills near the animal.

6. Methods of current control, colloquium and exam

Control of knowledge and skills of students (current and final) in the discipline is carried out according to the requirements of the credit-module system of organization of the educational process. The current control uses methods of oral, written, computer testing and self-monitoring of students.

7. Criteria for evaluating student learning outcomes

The general rating of the student on mastering of educational discipline is defined on a 100-point scale. It consists of a rating of academic work, for the assessment of which is assigned a maximum of 50 points, a rating of certification

(control) maximum - 20 points in the form of control - exam in the second semester - 30 points.

Students who have completed all types of work provided by the curriculum are allowed to take credit, term paper, exam.

Rating	point		Requirements for the student
Perfectly (відмінно)	90-100	A	The student demonstrates complete and solid knowledge of the program material of the discipline, correctly and reasonably makes the necessary decisions in various practical tasks, is able to engage in discussion and can defend their own position. A decrease in the score of 100 may be due to insufficient disclosure of issues or uncertainty in the interpretation of theoretical provisions or practical tasks.
Fine (добре)	82-89	B	The student demonstrates good knowledge, is well versed in the program material of the discipline, is able to apply theoretical principles in solving practical problems. However, it makes some minor mistakes that it can correct on its own.
	74-81	C	The student in general is well aware of the basic theoretical principles of the program material of the discipline and uses them to correctly solve practical problems..
Satisfactorily (задовільно)	64-73	D	The student has mastered the theoretical material of the discipline, understands practical problems, has suggestions for their solution, however, makes a significant number of inaccuracies and gross errors that can be eliminated with the help of the teacher.
	60-63	E	The student has some knowledge of the discipline, has the basic theoretical provisions at the minimum allowable level with difficulty explaining the solution of practical problems.
Unsatisfactorily (незадовільно)	35-59	FX	Despite the implementation of the program discipline, the student's answers to theoretical and practical questions are incorrect and unfounded. There is no integrity in understanding the curriculum.
	0-34	F	The student did not fully meet the requirements of the work program in the discipline. The student is not allowed to take the exam.

The student's success is assessed by conducting current and final control (colloquium, exam).

The course "Obstetrics, gynecology and biotechnology of animal reproduction" for 3rd year students of the Faculty of Veterinary Medicine is taught during the 6th, 7th and 8th semesters.

DISTRIBUTION OF POINTS RECEIVED BY STUDENTS

The student's success is assessed by conducting current and final control (colloquium, exam).

The course "Obstetrics, Gynecology and Biotechnology of Animal Reproduction" for 3rd year students of the Faculty of Veterinary Medicine is taught during the 5th and 6th semesters.

The maximum number of points for the discipline in the 6th semester (ending with a transitional credit) is 100, they are distributed as follows:

50 (РК) + 50 (К) = 100, where:

50 (РК) – 50 the maximum scores on the current control that a student can earn per semester

РК = 50•SAZ/5 = 10•SAZ;

50 (К) – 50 the maximum points that a student can score for the colloquium.

Based on the results of the semester control, the student's credit score in the column "on the national scale" is graded "passed / not credited".

The transition test is characterized by a colloquium. The colloquium can be held in the form of:

- oral individual conversation of the teacher with the student, during which students learn to express their point of view on certain issues, defend their position, applying the acquired knowledge, and the teacher has the opportunity to assess the level of students' learning material;

- checks of abstracts, projects, written works, etc.

The maximum number of points for the discipline in the 6th semester (ending with the exam) is 100, they are distributed as follows:

50 (РК) + 50 (Е) = 100,

That means:

50 (РК) – 50 maximum points for current control (PC) that a student can score per semester;

50 (Е) – 50 maximum points that a student can score for the exam.

The results of the current control are evaluated on a four-point ("2", "3", "4", "5") scale. At the end of the semester, the arithmetic mean (SAZ) of all grades obtained by the student is calculated, followed by its translation into points according to the formula:

РК = 50 •SAZ /5 = 10 SAZ

The score on the current control can be changed due to incentive points:

- students who do not have class absences during the semester (2 points are added);

- for participation in university student Olympiads, scientific conferences (2 points

are added), at the interuniversity level (5 points are added);

- for other types of educational and research work points are added by the decision of the department.

Table 1

Semester	**Form of control**	**Scores**	**Total**
6	РК	50	**100**
	К	50	
7	РК	50	**100**
	К	50	
8	РК	50	**100**
	Е	50	

The maximum number of points for the course work (medical history) is 100, the components of which are points for the practical and theoretical part of the work, its design, defense, etc. Defense of term papers is carried out before a commission consisting of 2-3 teachers of the department, including the head of the term paper (medical history).

Course works (medical histories) are stored at the department for 1 year, then written off in the prescribed manner.

Evaluation criteria developed by the department and approved by the dean's office are reflected in the guidelines for implementation.

Table 2

Modular assessment for course work (maximum possible)

Components of the course work	Maximum number of points
Execution of the practical part	60
Registration of work	15
Content of answers in defense	25
	100

The translation of the final rating scores from the discipline, expressed in points on a 100 - point scale, into grades on the national scale and the ECTS scale is carried out in accordance with table. 3 and is entered in the appendix to the diploma of the expert.

Table 3

For 100 - point scale	On a national scale		On a scale ECTS
	Examination	Test	
90 – 100	Perfectly (відмінно)	Credited	A
82 – 89	Fine (добре)		B
74 – 81			C
64 - 73	Satisfactorily (задовільно)		D
60 - 63			E
35 - 59	Unsatisfactory (not credited) with the possibility of re-assembly (незадовільно, з можливістю перездачі)		FX
0 - 34	Unsatisfactory (not credited) with mandatory re-study of the discipline (незадовільно, без можливості перездачі)		F

9. Recommended Books:

Basic

1. Pradeep K. Applied Veterinary Gynaecology & Obstetrics Textbook Student Edition / Kumar Pradeep., 2008. – 363 c.
2. Arthur's Veterinary Reproduction and Obstetrics / D. Noakes, T. Parkinson, G. England, G. Arthur., 2001. – 884 c.

Intermediate

1. Tandle M. K. Veterinary Andrology and Artificial Insemination in Domestic Animals / Tandle., 2017. – 300 c.

Internet resource of professional publications for distance learning of students

1. Європейська асоціація відтворення дрібних тварин. [Електронний ресурс] – Режим доступу до ресурсу: http://www.evssar.org/.

2. Товариство теріогенології [Електронний ресурс] – Режим доступу до ресурсу: https://www.therio.org/page/Membership.