Ministry of Education and Science of Ukraine
Sumy National Agrarian University
Faculty of Veterinary Medicine
Department of Obstetrics and Surgery

Work program (syllabus) of the educational component

(*selective*)

Professional selective discipline 6
(Modern technologies of artificial insemination of animals)

Specialty	211 "Veterinary Medicine"
Educational program	"Veterinary Medicine"
Level of education	second (master's)

Sumy - 2024

Developer: _____ **Musiienko Yurii, PhD, Associate Professor**

Considered, approved and approved at the meeting of the Department of Obstetrics and Surgery	Protocol dated 04.05.2024, №11
	Head of Department_____ Oksana Shkromada

Agreed:

Guarantor of the educational program _____ Roman Petrov

Dean of the Faculty,
where the educational program is implemented _____ Oleksandr Nechyporenko

Review of the work program (attached) provided by: _____ Anatolii Fotin

_____ Oleksandr Stockiy

Methodist of the Department of Education Quality,
licensing and accreditation _____ (Hanna Tsaruk)
(signature) (full name)

Registered in the electronic database: date: 11.07 2024

1. MODULE OVERVIEW

1.	Title	**Veterinary andrology**			
2.	Faculty/Department	Faculty of Veterinary Medicine, Department of Obstetrics and Surgery			
3.	Type (compulsory or optional)	Obligatory			
4.	Program(s) to which module is attached (to be filled in for compulsory types)	211- Veterinary medicine			
5.	Module can be suggested for (to be filled in for optional types)	Gynecology			
6.	Level of the National Qualifications Framework	(2 master's) 7			
7.	Semester and duration of module	7 semester			
8.	ECTS credits number	5			
9.	Total workload and time allotment	Directed study			Self-directed study
		Lectures	Practicals	Labs	
	V semester			**4**	**146**
10.	Language of instruction	English			
11.	Module leader	Musiienko Yurii			
12.	Module leader contact information	yurii.musiienko@snau.edu.ua			
13.	Module description	EP Veterinary andrology is part of the educational process related and with common goals to train highly qualified veterinarians. Provides mastery of ability to apply knowledge in practical situations; follow the rules of protection labor, asepsis and antiseptics during professional activities; possess knowledge regarding techniques for fixing animals, training the obstetrician's hands, instruments and operating field, and also knowledge of the action of analgesics, antimicrobials and other drugs that they used during professional activities; plan, organize and implement measures for the treatment of animals, obstetric and gynecological manipulations and operations.			
14.	Module aim	The purpose of the educational component OK at Obstetrics and gynecology has the purpose of students' special competences on theoretical foundations, rules, methods and application techniques of cryopreservation of semen. Effects of cryopreservation on spermatozoa, semen quality and fertility in animals. It is a component of the learning process that ensures the achievement of goals, competencies and significant results in the learning process.			

15.	Module Dependencies (prerequisites, co-requisites, incompatible modules)	1. Normative discipline "Veterinary andrology" is based on knowledge of such disciplines as "Animal Anatomy", "Cytology, Histology, Embryology", "Chemistry", "Animal Physiology", "Pathological Physiology", "Veterinary Microbiology", "Clinical diagnosis and diagnostic imaging", "Pharmacology and pharmacotherapy", studied in previous semesters . 2. writing a master's thesis
16.	The policy of academic integrity	Assimilation of OK in compliance with academic integrity, plagiarism is prohibited. In case of systematic violation of these requirements, it is recommended to re-study the OK. In case of plagiarism in the performance of tasks - they are performed repeatedly
17	Link in Moodle	https://cdn.snau.edu.ua/moodle/course/view.php?id=3972

1.2 INFORMATION ABOUT THE TEACHER / TEACHERS .

1. Musiienko Yurii - Candidate of Veterinary Sciences, Associate Professor of Obstetrics and Surgery, Sumy NAU

2. LEARNING OUTCOMES FOR THE EDUCATIONAL COMPONENT AND THEIR RELATIONSHIP WITH SOFTWARE LEARNING OUTCOMES

MLOs: On successful completion of the module the learner will be able to:	Program learning outcomes, the achievement of which is aimed at OK								**How assessed**
	PLOs 1. Know and use the terminology of veterinary medicine.	**PLOs** 2. Use information from domestic and foreign sources to develop diagnostic, treatment and business strategies	**PLOs** 4. 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.	**PLOs** 7. To formulate conclusions on the effectiveness of selected methods and means of keeping, feeding and treatment of animals, prevention of infectious and non-communicable diseases, as well as production and technological processes at enterprises for keeping, breeding or operation of animals of different classes and species.	**PLOs** 8. Monitor the causes of the spread of diseases of various etiologies and biological pollution of livestock waste, as well as materials and veterinary products.	**PLOs** 15. Know the rules of storage of various pharmaceuticals and biologicals, ways of their enteral or parenteral use, understand the mechanism of their action, interaction and complex action on the body of animals.	**PLOs** 17. Know the rules and requirements of biosafety , bioethics and animal welfare.	**PLOs** 18. Carry out accounting reporting during professional activities.	
MLO1. Know and use the terminology of obstetrics and gynecology. Use information from domestic and foreign sources to develop diagnostic, treatment strategies for obstetrics and gynecology	**X**								1. Survey in laboratory-practical classes.
MLO2. Collect anamnestic data during registration and examination of animals, make decisions on the choice of effective methods of help	**X**	**X**							1. Computer survey and analysis of kahoot students' knowledge
MLO3. Formulate conclusions about the effectiveness of selected methods of obstetrics and gynecology and non-communicable diseases.			**X**						1. Written survey, solving situational problems
MLO4. Monitor causes of the spread of diseases of obstetrics and gynecology pathology, pollution of the environment with waste from help, as well as materials and veterinary products.				**X**					1. Registration of the abstract
MLO5. Know the rules of storage various pharmaceuticals and biologicals, drugs and ways of their enteral or parenteral use, to understand the mechanism of their action, interaction and complex action on the body of animals.					**X**				1. Survey in laboratory-practical classes, notebook design
MLO6 Know the rules and requirements of biosafety, bioethics and animal welfare.						**X**			2. Computer survey and analysis of students' knowledge (certification)
MLO7 Carry out accounting reporting of sick animals, use of drugs and potent drugs.							X	X	3. Multiple choice test (exam)

3. MODULE INDICATIVE CONTENT
Autumn semester

Topic.	Distribution of hours				Learning resources
	Directed study			Self-directed study	
	Lectures	Pract	Labs		
Topic 1. *General andrology*			2	46	1, 2, 3, 4, 17, 21, 22, 23
1. Puberty and sexual maturity, role of hypothalamic-pituitary-gonadal axis in attainment of puberty and sexual maturity.				6	1, 2
2. Spermgenesis, oogenesis and ovulation and associated endocrine pattern, manipulation of follicular waves, synchronization of estrus and ovulation and induction of ovarian activity.			2	20	1, 3-7
3 Gamete transport, fertilization, implantation and maternal recognition of pregnancy.				20	8-23
Topic 2. Artificial insemination			2	100	1-29
1. History of artificial insemination. Methods of semen collection.				10	11-23
2. Semen evaluation: macroscopic, microscopic, biochemical and microbiological Computer assisted semen analysis (CASA).				10	11-23
3. Semen preservation. Extenders for preservation of semen at different temperatures. Semen additives for enhancement of motility and fertilizing capacity of spermatozoa.				20	1, 2, 3, 4, 17, 21, 22, 23
4. Cryopreservation of semen. Effects of cryopreservation on spermatozoa, semen quality and fertility.				20	1, 3-7
5. Thawing protocols of frozen semen. Factors affecting post-thaw semen quality. Ideal protocol for AI in different species of animals. Factors affecting success of AI.			2	20	8-29
6. The sense of andrology and it tasks. Impotention, Coupling impotention and it kinds.				20	10-23
Total			4	146	

4. METHODS OF TEACHING AND TEACHING

MLO	Teaching methods (directed study)	hours	Learning methods (self-directed study)	hours
MLO 1. Know and use the terminology of veterinary medicine . Using information from local an d foreign sources for the development of diagnostic , therapeutic and Mr i dpryyemnytskyh strategies	- presentation of lecture material according to the plan; - proposals for literature on each topic of lectures; - use Moodle , Zoo m	6 hours	- mastering research methods; - independent work during research - fixation of research results; - analysis of research results ;	14 hours
MLO 2 . 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	- consultations of students in the process of mastering OK - methodical registration of all types of students' works; - control of the educational process	6 hours	- registration of the journal of sick animals ; - fixation of lecture material - mandatory preparation for the hospital, mastering the lecture material for the hospital.	14 hours
MLO 3 . Formulate conclusions on the effectiveness of selected methods and means of treatment of animals, prevention of infectious and non-communicable diseases, as well as production and technological processes in enterprises for keeping, breeding or operation of animals of different classes and species.	presentation of lecture material according to the plan; - proposals for literature on each topic of lectures; - use Moodle , Zoo m	6 hours	registration of the journal of sick animals, medical hist ory ; - fixation of lecture material - mandatory preparation for the hospital, mastering the lecture material for the hospital.	14 hours
MLO 4 . Monitor the causes of the spread of diseases of various etiologies and biological pollution of livestock waste, as well as materials and veterinary products.	presentation of lecture material according to the plan; - proposals for literature on each topic of lectures; - use Moodle, Zoom	6 hours	drawing conclusions from the received data; - fixation of lecture material - mandatory preparation for the hospital, mastering the lecture material for the hospital.	14 hours
MLO 5. Know the rules of storage of various pharmaceuticals and biological products, ways of their enteral or parenteral use, understand the mechanism of	consultations of students in the process of mastering OK - methodical registration of all	6 hours	drawing up a journal of class A and B medicines ; - fixation of lecture material	16 hours

their action, interaction and complex action on the body of animals.	types of students' works; - control of the educational process		- obligatory preparation for LPZ, mastering of lecture	
MLO 6 Know the rules and requirements of biosafety , bioethics and anim al welfare .	presentation of lecture material according to the plan; - proposals for literature on each topic of lectures; - use Moodle, Zoom	8 hours	drawing conclusions from the received data; - fixation of lecture material - mandatory preparation for the hospital,	16 hours
MLO 7 Carry out accounting reporting during professional activities.	consultations of students in the process of mastering OK - methodical registration of all types of students' works; - control of the educational process	8 hours	drawing up logs of the work of the enterprise or clinic - fixation of lecture material - mandatory preparation for the hospital, mastering the lecture material for the hospital.	16 hours

5. ASSESSMENT

5.1. Diagnostic assessment

5.2. Summative assessment

5.2.1. Intended learning outcomes methods:

No	Summative assessment methods	Grades	Deadline
Autumn semester			
1.	Survey in laboratory-practical classes, notebook design	15 / 15%	3, 8, 12.15 weeks
2.	Design Abstract	15 / 15%	15 weeks
3.	Computer survey and analysis of students' knowledge (testing , current control)	45 / 45%	Week 17
4.	Tect multiple choice (credit)	25/ 25%	Week 18

5.3. Evaluation criteria

Autumn semester

Summative assessment method	Unsatisfactory	Satisfactory	Good	Excellent
Survey in laboratory-practical classes	< 6 points	6 - 8 points	9 - 12 points	13 - 15 points
	The student has only some concepts, can	Has a general concept of the topic, makes a	Has all the questions, makes a small number of	Fully masters all questions, does not make mistakes

	not draw conclusions	significant amount of mistakes	unprincipled mistakes	
Design Abstract	< 8 points	9-11 points	12-14 points	15 points
	Task not performed	The abstract is designed without understanding the relationship between the tasks to be solved, not able to critically evaluate information from the literature	The abstract at a good level of analysis, synthesis, generalization and critical evaluation of data from literature sources cited in the Abstract , able to critically evaluate information from literature sources	The abstract is designed flawlessly, logically arranged material with an understanding of the relationships of the processes disclosed on this topic, demonstrates a highly developed ability to critical academic literature and other sources of information
Computer survey and analysis of students' knowledge (certification)	< 20 points	20 - 34 points	35 - 44 points	4 5 points
	Task not performed	The computer survey was performed without understanding the relationship between the tasks to be solved, unable to critically evaluate information from the literature	Computer survey performed at a good level analysis, synthesis, generalization and critical evaluation of data from literature sources , able to critically evaluate information from literature sources	The computer survey is performed flawlessly, logically arranged material with an understanding of the relationships of the processes disclosed on this topic, demonstrates a highly developed ability to critical academic literature and other sources of information
Tect multiple choice (test)	< 10 points	10-14 points	15-24 points	2 5 points
	Task not performed	Task done by 50%	Task 75% completed	Task 100% done

5.2. Formative assessment

Formative exercises are designed to enable students to develop particular aspects of their learning, prior to summative assessments. Formative exercises are designed to help students use feedback and self-reflection to manage and develop their learning so that they can see how to improve their work.

№	**Formative Assessment elements**	**Date**
1	Survey in laboratory-practical classes, notebook design	According to the schedule
2	Design Abstract in	Within a week until the end of the educational process
3	Computer survey and analysis of students' knowledge (certification)	The last week of classes
4	Offset and sleep - multiple choice test	According to the exam schedule

6. LEARNING RESOURCES

6.1. Key resources

1. Noakes, D. E., Parkinson, T. J., & England, G. C. W. (2019). Veterinary Reproduction and Obstetrics. W.B. Saunders.

2. Noakes, D. E., Parkinson, T. J., & England, G. C. W. (2009). Veterinary reproduction and obstetrics. Edinburgh: Saunders.

3. Singh, K. P., & Singh, B. (2019). Handbook of Veterinary Gynaecology and Obstetrics: Veterinary Gynaecology and Obstetrics.

4. Shivhare, M., Thakur, M. S., & Shukla, S. P. (2015). Practical manual of veterinary gynaecology & obstetrics.

5. Zenuto, R. R., Vitullo, A. D., & Busch, C. (August 01, 2003). Sperm characteristics in two populations of the subterranean rodent ctenomys talarum (rodentia: octodontidae). Journal of Mammalogy, 84, 3, 877-885.

6. Williams, W. L. (2010). Veterinary obstetrics, including the diseases of breeding animals and of the new-born. Memphis, Tenn: General Books.

7. Jackson, P. G. G. (2004). Handbook of veterinary obstetrics. Edinburgh: Saunders.

8. Akhtar, M. S. (2012). Practical manual of veterinary obstetrics: Bovine obstetrics. Saarbrücken: LAP Lambert Academic Publishing.

6.2. Guidelines

9. American Journal of Obstetrics and Gynaecology
10. Animal Reproduction
11. Animal Reproduction Science
12. Animal Science Journal
13. Bibliography of Reproduction
14. Biology of Reproduction
15. Equine practice

6.3 e-Resources

16. www.anirgyep.elsevier.com (Animal Reproduction Science)
17. www.blackwellpublilshing.com (International Journal of Andrology)
18. www.bioreprod.org (Biology of reproduction)
19. www.domesticanimalendo.com (Domestic Animal Andocrinology)
20. www.reproduction-onlline.org (Journal of Andrology)
21. www.reproduction-online.org (Reproduction)
22. www.interscience.wiley.com (Reproduction in domestic animals)
23. www.theriojournal.com (Theriogenology)
24. www.buffaloresearch.com (Buffalo Journal)
25. www.eje-online.org (European journal of Endocrinology)
26. www.sciencedirect.com (The Veterinary Journal)
27. www.blackwellpublishing.com (Asian journal of Andrology)
28. www.editorijar@yahoo.co.in (Indian Journal of Animal Reproduction)

6.4. **Computer Applications and soft**

29. Computer assisted semen analysis (CASA).