

Module code	M_WE_SEM9 ANDR
Field of study	Veterinary medicine
Module name, also the name in English	Andrology and Artificial Insemination
	Andrologia i unasiianie zwierząt
Language of instruction	English
Module type	Obligatory
Level of studies	Long-cycle master's degree studies
Form of study	Full-time
Year of study in the field of study	V
Semester of study in the field of study	IX
ECTS credits, divided into contact/non-contact hours	2 (1,6/0,4)
Academic title/degree, name of the person responsible for the module	Leszek Krakowski prof.dr hab.
Unit teaching the module	Clinic of Animal Reproduction, Faculty of Veterinary Medicine, University of Life Sciences in Lublin
Module objective	<p>The aim of the module is to familiarize students with the fundamentals of andrology and artificial insemination of livestock and companion animals. The programme of the module covers the following issues in andrology: anatomy and physiology of the male reproductive system, endocrine regulation of gonadal function and male sexual desire, methods of semen collection and evaluation in male livestock and companion animals. In addition, the programme also includes practical elements of clinical veterinary andrology in the treatment of infertility and diseases of the male reproductive system.</p> <p>Additionally, it includes topics on biotechnological assisted reproductive techniques, such as semen evaluation and preparation for assisted reproductive procedures, artificial insemination, embryo transfer, gamete and embryo micromanipulation as well as gamete and embryo cryopreservation. Acquainting students with the applicable national and European Union law in this field</p>
The learning outcomes for the module include a description of the knowledge, skills and social competences that the student will gain after completing the module.	Knowledge:
	K1. - knows and interprets pathophysiological changes in the reproductive and motor, nervous, and endocrine systems that cause male fertility disorders and knows how to treat them.
	K2. - knows and describes the biology of infectious agents that cause reproductive tract diseases and how they are transmitted.
	K3. - knows biotechnological methods used in animal reproduction
	Skills:
	S1.- is able to carry out a history and specialised clinical examination of males for their suitability for reproduction and to collect, store and evaluate semen.
S2.- can select methods and procedures related to insemination of females, can determine the optimal time of mating or insemination	

	S3. - can select and apply appropriate treatment in fertility disorders
	Social competences:
	C1. is aware of responsibility for the decisions made in andrology
	C2. - is aware of the need to maximize professional skills in andrology to improve the quality of veterinary care
	C3. - demonstrates an understanding of the need and necessity for continuing education for ongoing development in andrology
Prerequisites and additional requirements	In accordance to sequence of subjects
Module program content	<p>Lecture content: hormonal regulation of the male reproductive system, disorders in the structure of spermatozoa and the composition of semen plasma in the aspect of kinetic disorders of motility of spermatozoa and loss of fertilisation ability, considering species differences; the organisation of natural mating and insemination in Poland of farm animals and EU directives in this field; congenital and acquired diseases of the reproductive system of male farm and companion animals and their treatment; legal regulations concerning the production, processing, storage and distribution of semen in Poland, the EU and countries outside the EU - lecture on invitation.</p> <p>Content of classes: structure of the male reproductive system (isolated organs) and clinical aspects of its differences in individual species, semen collection and macroscopic and microscopic evaluation of semen, andrological examination in males (specialised clinical examination of the male reproductive system, <i>rectal</i> examination and ultrasound of accessory sex glands, collection of preputial sac fluid from breeding bulls, determination of optimal moment for mating or insemination in females of farm animals, insemination in females of farm animals and female dogs, diluents and methods of packaging and then storing semen in a liquid form and frozen at low temperature, embryo transfer (superovulation methods), insemination techniques.</p>
List of core and supplementary literature	<ol style="list-style-type: none"> 1. Reproductive Technologies in Farm Animals. I. Gordon, CAB Publishing, 2005 2. Large Animal Theriogenology. R.F. Youngquist, W.L. Threlfall. 2nd ed. Saunders, Elsevier. 2007 3. Veterinary Andrology & Artificial Insemination. M.S. Saxena. CBS Publishers & Distributors, 2011 4. Applied Veterinary Andrology and Frozen Semen Technology. M.K. Shukla, NIPA 2011
Planned forms/activities/teaching methods	The following teaching methods are used during the course: lectures, classes (multimedia presentations), hand-on classes conducted in laboratory and in the form of field practice, demonstrations. Discussion

<p>Verification methods and ways of documenting the achieved learning outcomes.</p>	<p>Answers to questions at the beginning of all laboratory classes (an entrance test). Final written test exam of 50 closed and open questions. The minimum threshold of passing the test is 30 points - below this threshold, the grade 2.0 (unsatisfactory). Grade scale: 30-34 pts - 3.0 (satisfactory) 35-38 pts - 3.5 (satisfactory plus) 39-42 pts - 4.0 (good) 43-46 pts - 4.5 (good plus) 47-50 pts - 5.0 (very good)</p> <p>Independent performance of analyses and measurements of physiological parameters and biotechnical procedures: semen evaluation, performing morphological smears, semen preparation, insemination. Answers to questions at the beginning of all laboratory classes. Discussion and questions concerning the skills learned during practical classes, clarification of any problems.</p>
<p>ECTS credits</p>	<p>Contact hours: Lectures - number of hours - 15/0.5 ECTS credits Practical classes - number of hours – 30/1 ECTS credits Examination / retake exam - number of hours - 3/0.1 ECTS credits Total of contact hours - 49/1.6 ECTS credits.</p> <p>Non-contact hours: preparation to practical classes - 6/0.2 ECTS. preparation to examination - 6/0.2 ECTS. Total of non-contact hours / ECTS credits -12/0.4 ECTS.</p>
<p>The workload of activities that requires direct participation of an academic teacher</p>	<p>Attendance at lectures - 15 hrs / 0.5 ECTS credits Attendance at practical classes - 30 hrs / 1 ECTS credit Consultations Examination / retake exam - 3 hrs / 0.1 ECTS credits TOTAL of hours with direct teacher involvement 48 hrs / 1.6 ECTS credits.</p>
<p>Relation of module learning outcomes to course learning outcomes.</p>	<p>K1-A.W9+; B.W1++; B.W2+++; K2-A.W13+; A.W12++; K3- B.W5++; B.W12++; S1- B.U2++; B.U3++; B.U7++; B.U11++; B.U13++; S2- B.U2++; B.U3++; B.U7++; B.U11++; B.U13++; S3- B.U2++; B.U3++; B.U7++; B.U11++; B.U13++; C1-K1++; C2- K5+, K9+ C3- K8++</p>
<p>Elements and values affecting the final grade</p>	<p>Admission to the final exam: attendance at all classes or in accordance with the current study regulations + positive grades from all "entrance tests" + obtaining a passing grade for the required practical activities. Final grade: 100% final exam score.</p>