

Module title:	Use of hormones in cattle reproduction	ECTS	3
Polish translation:	Zastosowanie preparatów hormonalnych w rozrodzie bydła		
Course:	Veterinary Medicine		

Module language: English		Stage: JM-FVM	
Form of studies: ☒ intramural ☐ extramural	Type of module: ☐ basic ☐ mandatory ☒ directional ☒ elective	Semester: 11	☒ winter semester ☐ summer semester
Academic year:		Intake 2021/2022	Catalogue number:

Module coordinator:		Prof. Zdzislaw Gajewski Dr Sc.; Maria Sady PhD, DVM		
Teachers responsible for the module:		Academic teachers of Center for Translational Medicine (CMT), PhD students, visiting professors and other specialists in the field of study.		
Assumptions, Goals, and Course Description		The purpose of the course is to prepare students to understand the principles of diagnosis and treatment of hormonal disorders in cattle. Through practical field classes, students will develop the ability to analyze clinical cases, make diagnoses, and prescribe treatment using hormonal preparations for disorders of the reproductive system. Students will also develop the ability to select and apply hormonal programs for the synchronization of estrus and ovulation in cows and heifers.		
Teaching forms, number of hours:		a) Clinical exercises; hours 40; b) Lectures; hours 5;		
Teaching methods:		Monographic lectures with multimedia presentations. Practical exercises on farms and in dairy or beef cattle breeding facilities. Analysis of clinical cases and development of treatment plans. The organization of consultations will be determined by the course coordinator at the beginning of the semester. The detailed schedule will be determined by the course coordinator at the beginning of the semester.		
Formal prerequisites and initial requirements:		General knowledge of physiology and pathology of bovine reproduction, ability to examine cows <i>per rectum</i> . Passed subjects: Animal anatomy, Comparative anatomy, Animal physiology, Pathophysiology, Pharmacology, Clinical and laboratory diagnosis, Animal husbandry and breeding, Animal nutrition and feeding.		
Learning effects		Course outcomes:	Learning outcomes relative to the course outcomes	Impact on the course outcomes*
Knowledge:	1	Student knows and understands the mechanism, process and hormonal regulation of reproductive in cattle	A.W2, A.W3, A.W9, A.W10	3
	2	Student knows and understands the biology and principles of hormonal regulation of growth and development of follicles and oocytes in cattle	A.W2, A.W3, A.W4, A.W9, A.W10, A.W12	3
	3	Student knows and understands the influence of basic environmental and nutritional factors on reproduction in dairy cattle herds	A.W10, A.W11, B.W2, B.W9, B.W13, B.W20, B.W22	2
	4	Student knows and understands the use of hormonal oestrus or ovulation synchronisation programmes in cattle herds.	A.W2, A.W9, A.W12, A.W16, B.W3, B.W4, B.W5, B.W6, B.W12	2
	5	Student knows and understands the pathogenesis of the different types of anestrus in cattle and knows and understands the available treatments.	A.W2, A.W4, A.W9, A.W10, A.W11, A.W12, A.W16, B.W1, B.W2, B.W3, B.W5, B.W6, B.W12	3
	6	Student knows and understands the pathogenesis of uterine inflammation in cattle and knows and understands the available therapies.	A.W2, A.W4, A.W12, A.W16, B.W1, B.W2, B.W3, B.W4, B.W5, B.W6	2
Skills:	1	Student is able to assess the condition of the ovaries and the uterus using ultrasound examination.	A.U6, B.U1, B.U3, B.U7,	3
	2	Student can perform rectal examination and assess the condition of the uterus.	A.U6, B.U1, B.U3, B.U7	3

	3	Student is able to select and apply an appropriate hormonal preparation for a given moment of the cycle or observed pathology.	B.U2, B.U3, B.U6, B.U10, B.U13	3
	4	Student can catheterise the cervix for the administration of therapeutic intrauterine preparations.	B.U10, B.U13	2
Competences:	1	Student has the willingness to work in a team and the ability to co-operate with animal owners and the State Veterinary Inspection Service.	K.S9, K.S11	2
	2	Student is able to communicate with animal owners and convey information in an understandable way .	K.S1, K.S2, K.S5	3
	3	Student demonstrates initiative and skills in practical activities related to the performance and implementation of synchronisation methods and hormonal therapy in bovine reproduction.	K.S1, K.S2, K.s4, K.S5, K.S8	3
	4	Student has the willingness to update his knowledge and to act in accordance with the principles of the veterinary deontology and the principles of animal welfare.	K.S2,K.S4, K.S8	3
	5	Student has the competence to critically evaluate his/her knowledge and to use scientific sources and the willingness to supplement it and to share his/her knowledge and competences with others .	KS.4, KS.6, KS.7 KS.8, KS.9, KS.12	3
Objectives of the module required to obtain learning effects:		<u>Lectures:</u> Basics of bovine reproductive endocrinology; principles of action and applications of hormones in reproductive management in cattle herds. Environmental and nutritional causes of reproductive disorders. <u>Clinical exercises:</u> Relationships between the clinical condition of the uterus and ovaries. Reproductive management methods based on animal monitoring systems. Analysis of data on the effectiveness of individual hormonal programs, taking into account the impact of the human factor on their effectiveness. Improving skills in assessing the reproductive system of cattle during rectal examination, using palpation and ultrasonography, as well as during vaginal examination. Recognition of reproductive cycle disorders and uterine and ovarian pathologies. Selection of the optimal treatment or estrus/ovulation synchronization method in cows and heifers based on the analysis of clinical and laboratory test results. Formulation of recommendations for the farmer.		
Assessment methods:		Project, student's activity during classes In case of unforeseen, unusual circumstances mandatory remote teaching and remote assessment methods might be adopted.		
Detail description of assessment methods; Formal documentation of learning outcome:		The condition of obtaining credit is the student's attendance at classes and submission of a project task. Evaluation of the project task based on the compliance of the content with the given subject, correct inference, formulating rational solutions, discussion and answers to questions. Evaluation of the degree of student preparation and activity in class. In the case of top-down suspension of the realization of classes at the University and the necessity of remote/hybrid teaching, other methods of verification of the realized learning outcomes are allowed in a manner adequate to the situation. Record into the eHMS system and documentation contained in the 'Course File' (i.e. student assessment cards, attendance lists, students' essays).		
Elements impelling final grade:		A student who does not attend classes and/or does not submit a project assignment does not pass the course. The final course grade is influenced by the following elements: - evaluation of the completion of the project task, - evaluation of the student's activity in classes.		
Teaching base:		Lecture and exercise rooms of CMT and FVM; cattle farms and herds, animal breeding centers.		
Mandatory and supportive materials : 1. Cockcroft P. Bovine Medicine. 2015. John Wiley and Sons. 2. Ginther O.J. Ultrasonic imaging and animal reproduction. 1995. Library of University of Wisconsin. 3. Gordon I. Reproductive Technologies in Farm Animals. 2017. CABI 4. Green M. Dairy Herd Health. 2012. CABI Publishing. 5. Hafez B. Reproduction in farm animals. 2020. Lippincott Williams and Wilkins. 6. Horsfall T. Flint Ch.L. Milch Cows and Dairy Farming: comprising the breeds, breeding, and management in health and disease, of dairy. 2017. Hansebooks 7. Hulsen J.H.J.L., Lam T., Felius M. Stewart S. Udder Health: a practical guide to first-rate udder health. 2008. Roodbont Publishers B.V. 8. Peek S.F., Divers T.J. Diseases of dairy cattle. 2016. Elsevier. 9. Thomas. H. S. The Cattle Health Handbook. 2009. Storey Publishing, LLC. Relevant scientific publications in the field of course, including those recommended by the module coordinator.				
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ANNOTATIONS Protective clothing and individual disposable equipment in accordance with accepted bio-assurance principles are mandatory in clinical classes.				

* 3 – complete and detailed, 2 – moderate, 1 – basic.

Quantitative summary of the module:

Estimated number of work hours per student (contact and self-study) essential to achieve presumed learning outcomes of the module - base for quantifying ECTS:	90 h
Total ECTS points, accumulated by students during contact learning:	2 ECTS