Module title:	Equine Reproduction	ECTS	3
Polish translation:	Rozród koni		
Course:	**Veterinary Medicine**		

Module language: English			Stage: JM-FVM		
Form of studies: ■ intramural ☐ extramural	Type of module: ☐ basic ☒ directional	☒ mandatory ☐ elective	Semester: 08		☐ winter semester ☒ summer semester
	Academic year:		**Intake 2021/2022**	Catalogue number:	**FVM-JMSS-V-08S-D16/3_20**

Module coordinator:	**dr hab. Bartosz Pawliński, prof. SGGW**
Teachers responsible for the module:	**Academic teachers of the Institute of Veteinary Medicine; Department of Large Animal Diseases and Clinic; PhD students in accordance to the internal legal acts; visiting professors; other specialists in the field of study**
Objectives of the module:	As part of the course, knowledge about the specifics of horse reproduction compared to other animal species will be provided. The aim of is to master theoretical knowledge and acquire practical skills related to horse reproduction. Students starting this subject should have knowledge of animal physiology and physopathology, anatomy, histology and embryology, biochemistry, pathology, pharmacology and immunology. **Topics of lectures:** 1. Hormonal patterns (hormones of the hypothalamus, gonadotropic hormones, neurotransmitters, steroid hormones, prostaglandins and posterior pituitary hormones). 2. Hormonal regulation of the cycle in the mare. 3. Physiology of pregnancy, fertilization, blastogenesis, implantation i.e. placenta and fetal development in the mare. 4. Pregnancy disorders. 5. Abortion in the mare - causes. 6. Parturition- physiology and pathology. 7. Principles of hormonal therapy and the usage of hormonal drugs for the treatment of the reproductive disorders. 8. The post-natal period I - physiology and pathology. 9. The post-natal period II - physiology and pathology. 10. Physiology and pathology of the neonate, i.e. postpartum development. 11. Fertility disorders in mares I. 12. Fertility disorders in mares II. 13. Fertility disorders in mares III. 14. The reproduction disorders- infectious causes. 15. The mammary glands inflammation in the mare - etiology, diagnosis and treatment. **Topics of laboratories:** 1. Morphological evaluation of the mare's reproductive organs. 2. The clinical examination technique of the mare's reproductive tract, i.e. rectal palpation, trans-vaginal examination, vaginoscopy. 3. Estrous cycle in horses. Estrus cycle phases detection and ovulation time determination. Pharmacological control of the ovarian cycle during and out of the season. 4. Pregnancy in mares. Clinical diagnosis of pregnancy in mares. Additional test for the pregnancy diagnosis in mares – laboratory methods. Twin pregnancy management. 5. Ultrasound diagnostic management in equine gynaecology and obstetrics. The presentation of mare's reproductive tract ultrasound examination and archival ultrasound images. 6. The mare's reproductive tract diseases - diagnosis and therapy. Additional diagnostic methods in management of the mare's reproductive tract: sampling for microbiological tests, uterine biopsy, uteroscopy. 7. Endometritis, endometrosis – etiology, diagnostic methods and treatment. 8. The mare's reproductive tract diseases - diagnosis and therapy. Ovarian function disorders. Different ovarian structures and its diagnosis. 9. Uncomplicated parturition progress, i.e. delivery phases, the fetus location in the uterus. General principles of the assisted foaling. 10. The difficult parturition and dystocia - clinical diagnosis and fundamental principles of the assisted parturition. 11. The cesarean section and fetotomy - indications and the technique. 12. The post-partum period disorders of the reproductive tract in mares -etiology, pathogenesis, diagnosis and treatment. Retained placenta. Uterine flushing, intrauterine infusions. Foal heat. 13. The mammary gland disorders – clinical and laboratory diagnostic methods, selected surgical procedures and treatment methods. Surgery types of the reproductive tract in mares. 14. Neonatal distress score in foals. The early neonatal period -physiology and the most common disorders. 15. Material labs summary and clinical case analysis. The content of the lectures supplements the content of the laboratory classes.
Teaching forms, number of hours:	a) Lectures; hours 15 b) Clinical classes; hours 10 c) Laboratory classes hours 20

Teaching methods:		The course is conducted in the form of lectures and labs. Lectures in the form of original multimedia presentations, including practical and clinical aspects, exercises using patients of the Department of Large Animal Diseases Clinic as well as biological material and phantoms, as well as multimedia presentations, clinical case presentations, discussions. During the course, students participate in therapeutic procedures, gynecological and obstetric operations, and other procedures. Detailed schedule will be defined by the coordinator of the course at the beginning of semester. Detailed organization of consultations will be defined by the coordinator of the course at the beginning of semester.		
Formal prerequisites and initial requirements:		Animal Anatomy, Topographic Anatomy, Animal Physiology, Histology and Embryology, Pathophysiology, Clinical and Laboratory Diagnostics, Veterinary Pharmacology, Microbiology, Pathomorphology 3		
Learning effects		Course outcomes:	Learning outcomes relative to the course outcomes	Impact on the course outcomes*
Knowledge:	1	knows and understands the mechanisms of normal reproductive processes and major hormonal regulations in the field of horse reproduction,	B.W.1, B.W.2, B.W.3	3
	2	knows the basics of diagnosis and treatment of equine reproductive system diseases	B.W.4, B.W.5	3
	3	knows the rules and techniques for handling, incapacitating animals and examining in a safe way for the examining and tested animal	B.W.4, B.W.5 B.W.6, B.W.9, B.W. 11	3
	4	knows and understands the principles of pregnancy, delivery and the postpartum period	B.W.4, B.W.5, B.W.6, B.W.9, B.W.11	2
Skills:	1	carry out a veterinary-medical interview to obtain information about a patient or group of animals, about his or their living environment	B.U.1, B.U.2	3
	2	conduct a general and detailed clinical examination of the reproductive system	B.U.2, B.U.3, B.U.4 B.U.5	2
	3	apply additional methods for the diagnosis of reproductive system diseases	B.U.6 B.U.7	3
	4	assess the condition of the reproductive system in the perinatal period and determine the appropriate therapeutic management	B.U.1, B.U.2, B.U.3, B.U.4, B.U.11, B.U.13	2
	5	characterize the effects of hormones that control reproductive function	B.U.2, B.U.3, B.U.4 B.U.5,	3
	6	select and use pharmacological and surgical methods of treatment of diseases of the reproductive system of mares	B.U.4, B.U.5, B.U.6, B.U.13	3
Competences:	1	to work in a team	K.S.1, K.S.2, K.S.3,	2
	2	for communication with the animal carer and owner	K.S.1, K.S.2, K.S.3,K.S.6	2
	3	for planning and conducting treatment of reproductive organs diseases	K.S.4, K.S.5, K.S.6, K.S.7	3
	4	to update knowledge and act in accordance with the principles of professional ethics	K.S.1, K.S.2, K.S.3, K.S.4, K.S.7, K.S.8	3
	5	for a critical assessment of knowledge and the use of scientific sources to supplement it	K.S.4 K.S.7, K.S.8	2
	6	to share knowledge and competences with others	K.S.9, K.S.10, K.S.11	2
Objectives of the module required to obtain learning effects:		Program includes lectures and practical exercises in equine reproduction. During the course students gain knowledge and practical abilities in propaedeutics and reproduction physiology, equine obstetrics, gynaecology, mammary gland diseases and herd health programs.		
Assessment methods:		Partial tests, written exam In case of unforeseen, unusual circumstances mandatory remote teaching and remote assessment methods might be adopted.		
Detail description of assessment methods;		Partial tests - written tests containing 3 open questions, for each maximum 2 points. Scoring on each of tests: 6 points - 5.5 points - grade 5.0;		

Formal documentation of learning outcome:	5 points - grade 4.5; 4.5 points - grade 4.0; 4 points - grade 3.5; 3.5 points - rating 3.0; 3 points and less - 2.0. Number of partial tests - 2; dates I and II take place in the same form. The final grade of the labs is the arithmetic average of grades from I and II test. The final grade of the labs is issued according to The following scale: < 3,0 – grade 2,0 3,0 – 3,25 – grade 3,0 3,26 – 3,75 – grade 3,5 3,76 – 4,25 – grade 4,0 4,26 – 4,50 – grade 4,5 4,51 – 5,0 – grade 5,0 To take the exam you must have completed partial tests Written exam covering all content of subject education, 40 test questions, for 1 point each. The score on the exam is: 40-36 points. - grade 5.0; 35-32 points - grade 4.5; 31-28 points - grade 4.0; 27-26 points - grade 3.5; 25-24 points - grade 3.0; 23 points and less - grade 2.0. No extra assessment methods are anticipated. In case of unforeseen, unusual circumstances mandatory remote teaching and remote assessment methods might be adopted. eHMS entry. Records collected in the course portfolio i.e. individual records of student results, presence lists, database of oral and written questions, written assessments of the students.
Elements impelling final grade:	To pass the course you must have no more than 20% of absences or in accordance with current study regulations. The final grade is attended by: passing exercises with 0.4 weights of this grade and an exam grade of 0.6 weights final grade, each of which must be a positive grade (i.e. 3.0 or more). Scale (weighted average of exercise and exam grades): <3.0 - grade 2.0 3.0 - 3.25 - grade 3.0 3.26 - 3.75 - grade 3.5 3.76 - 4.25 - grade 4.0 4.26 - 4.50 - grade 4.5 4.51 - 5.0 - grade 5.0
Teaching base:	The premises, laboratory, classroom, ambulatory of the Department of Large Animal Diseases Warsaw University of Life Sciences SGGW, and horses stud

Mandatory and supportive materials:

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 Reproduction and Obstetrics. D.E. Noakes, T.J. Parkinson, G.C.W. England 9th ed. Sauders, Elsevier, 2009.

4. Equine Reproduction. Angus O. McKinnon, Edward L. Squires, Wendy E. Vaala, Dickson D. Varner, Second Edition, Wiley-Blackwell, 2011.

5. Manual of Equine Reproduction. Tery L. Blanchard, Dickson D. Varner, James Schumacher, Charles C. Love, Steven P. Brinsko, Sherri L. Rigby, Second Edition, Mosby, 2003

6. Color atlas of Diseases and Disorders of the foal. Siobhan B. McAuliff, Nathan Slovis, Saudners, 2008

7. Equine Reproductive Procedures, John Dascanio, Patric McCue, Wiley Blackwell, 2014

Supplementary literature:

1. Manual of Equine Neonatal Medicine, John E. Madigan, Fourth Edition, 2013

2. Foal Formulary and Field Protocol Guide, Patrick M. McCue, Elsbeth Swain O'Fallon, Gabriele A.

Relevant scientific publications, including those of the module coordinator.

ANNOTATIONS

For reasons of occupational health and safety at the Clinic, the participants should wear medical long pants and sweatshirts or aprons with short sleeves (up to the elbow) and have with them: a surgical mask and cap, changed footwear - flat footwear soles covering the foot, you can also have shoe covers.

* 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:	**75 h**
Total ECTS points, accumulated by students during contact learning:	**3 ECTS**