Course syllabus
Second Semester Academic Year 2025

1. Faculty of Veterinary Technology **Department:** Veterinary Nursing
2. Course code: 01603243 **Course title:** Assisted Reproductive Technologies and Artificial Insemination

Course credit: 2 (1-3-3)
Prerequisite: None
Sec 230 (Lecture), 230 (Laboratory)
Date/Time/Location Lecture: Thursday 13.30 – 14.30
Room 1-403 Veterinary technology teaching and laboratory Building
Laboratory: Thursday 14.30 – 17.30
Room 1-801 Veterinary technology teaching and laboratory Building

3. Instructors

1.	Asst.Prof.Dr.Duangkamol	Lewchalermwong (DL)	Course coordinator
2.	Asst.Prof.Dr.Danai	Sangthong (DS)	Co-Instructor
3.	Assc.Prof.Dr.Saritvich	Panyaboriban (SP)	Co-Instructor
4.	Assc.Prof.Dr.Metha	Chanda (MC)	Co-Instructor
5.	Asst.Prof.Dr.Anawat	Sangmalee (AS)	Co-Instructor
6.	Miss Nattakarn	Naimon (NN)	Teaching Scientist
7.	Mr.Komsan	Satchasathaporn (KS)	Teaching Scientist

4. Academic advising and consultation

Asst.Prof.Dr.Duangkamol Lewchalermwong
Room 733, Veterinary technology teaching and laboratory Building
Office hours: Monday-Friday 8.30 – 16.30 (appointment required)
Tel. 0-2579-8573-5 ext 616026 E-mail: cvtdmp@ku.ac.th

5. Course objectives

5.1 To understand the principles of genetic inheritance based on Mendelian genetics and population genetics.
5.2 To understand the procedures for equipment preparation for semen collection, semen quality evaluation, semen preservation, and artificial insemination using various techniques.
5.3 To understand the regulatory mechanisms of the reproductive system, and to apply this knowledge to enhance animal production efficiency, including the use of reproductive technologies.
5.4 To understand the fundamental principles of artificial insemination and assisted reproductive technologies in different animal species.

6. Mapping of CLOs with Sub-PLOs

No.	Course learning outcomes: CLOs	Related Sub- PLOs (100%)

		1	2	3	4	5
1	Explain the basic principles and benefits of artificial insemination in animals (50%)	1				
2	Disringuish artificial insemination techniques across different animal species (20%)	0.3				
3	Explain genetic inheritance based on Mendelian genetics and population genetics (10%)	0.1				
4	Follow guide equipment for semen collection, evaluate semen quality, and preserve semen quality (15%)					0.5
5	Categorize assisted reproductive techniques used in various animal species (5%)	0.1				

Remark: Program learning outcome: PLOs and SubPLOs

PLO1 Graduates capable performing veterinary nursing practices through the integration of professional nursing knowledge and clinical analytical reasoning

SubPLO1. Apply the fundamental principles, concepts, and processes of veterinary nursing and related animal health sciences.

SubPLO2. Perform veterinary nursing procedures with technical accuracy and safety.

SubPLO3. Perform veterinary nursing practices with ethical standards, responsibility, communication, and collaborative teamwork in accordance with relevant laws.

PLO2 Graduate perform duties in animal nutrition, rehabilitation, disease control and prevention

SubPLO4. Apply the principles of animal nutrition, immunology, and epidemiology to manage disease prevention, zoonoses control, and post-nursing care protocols.

PLO3 Graduate use and maintain veterinary nursing equipment and tools correctly according to academic principles

SubPLO5. Handle veterinary drugs, instruments, equipment, and medical supplies safely and accurately.

7. Course Description

Mendelian inheritance, population genetics, principles of artificial insemination in animals, estrus detection, semen collection, evaluation and preservation, and their applications in animal breeding and genetic improvement.

8. Teaching and learning strategies

Lectures, laboratory/practical sessions, cooperative learning, group discussions, independent study, collaborative group work, and report submission.

9. Teaching materials

Computer projector, lecture handouts, slide presentations

10. Assessment and Evaluation; Multiple choice, Fill in the blank test

10.1 Exam (80%)	
1) Midterm Exam (40%)	
Lecture	30%
Laboratory	10%
2) Final Exam (40%)	
Lecture	30%
Laboratory	10%
10.2 Assignment report/Responsibility/Group participant	10%
10.3 Class participation and behavior	10%
Total	100%

11. Achievement indicator

90% of students passed the course.

12. Course Evaluation

The grading criteria are in accordance with the University's academic regulations. Grades are determined using either the criterion-referenced or norm-referenced evaluation method. In the case of criterion-referenced grading, the following standard is applied:

Score 100-80	Grade A	Score 64-60	Grade C
Score 79-75	Grade B+	Score 59-55	Grade D+
Score 74-70	Grade B	Score 54-50	Grade D
Score 69-65	Grade C+	< Score 50	Grade F

13. Teaching textbooks and references

1. Veterinary obstetrics and genital diseases, S.J. Roberts, Arthor Woodstock, Vermont, 1986.
2. Current therapy in large animal theriogenology, Youngquist, W.B. Saunders Company, 1997.
3. Reproduction in cattle, 2nd edition, A.R. Peter and P.J.H. Ball, Blackwell science, 1994.
4. Controlled reproduction in sheep and goat, 2nd edition, Ian Gordon, Cab international, 1997.
5. Manual of equine reproduction, 2nd edition, Mobsby, 2003.
6. The horse disease & clinical management, C.N. Kobluk, T.R. Ames and R.J.Geor. Philadelphia. WB Saunders company, 1995.
7. Equine medicine, surgery and reproduction. T. Mair, S. Love, J. Schunmaccher and E. Watson, Philadelphia. WB Saunders company, 1998.
8. Applied animal reproduction, 6th edition, H. Joe Bearden, John W. Fuquay and Scott T. Willard. Pearson education, 2004.
9. Reproduction in mammals:1-4. 2nd edition. C.R. Austin and R.V. Short. Cambridge university. 1982.
10. Lecture's handout

14. Course Contents

Week	Date/Time	Topic	Instructor	Lesson Learning Outcomes (LLOs)	CLOs	Teaching & Learning Activities	Assessment
1	27 Nov 2025 13:30–14:30	Introduction to the course; Breeding soundness examination (5%)	DL	Explain principles, procedures, and benefits of breeding soundness examination	CLO1	Lecture	MCQ exam
	14:30–17:30	Breeding soundness examination	DL & team	Record essential data for breeding soundness evaluation	CLO1	Practical	MCQ exam
2	4 Dec 2025 13:30–14:30	Estrus detection (5%)	DL	Explain principles, procedures, and benefits of estrus detection	CLO1, CLO4	Lecture	MCQ exam
	14:30–17:30	Estrus detection	DL & team	Prepare equipment, collect samples, perform uterine cytology staining	CLO1, CLO4	Practical	MCQ exam
3	11 Dec 2025 13:30–14:30	Semen collection (5%)	DL	Explain principles, procedures, and benefits of semen collection	CLO1, CLO2, CLO4	Lecture	MCQ exam
	14:30–17:30	Semen collection	DL & team	Prepare equipment for semen collection	CLO2, CLO4	Practical	MCQ exam
4	18 Dec 2025 13:30–14:30	Semen evaluation (5%)	DL	Explain principles, procedures, and benefits of semen evaluation	CLO1, CLO2, CLO4	Lecture	MCQ exam
	14:30–17:30	Semen evaluation	DL & team	Prepare equipment and perform semen quality evaluation	CLO2, CLO4	Practical, Team-based learning	MCQ exam
5	25 Dec 2025 13:30–14:30	Semen preservation (5%)	DL	Explain principles, procedures, types, and benefits of semen preservation	CLO1, CLO2, CLO4	Lecture	MCQ exam
	14:30–17:30	Semen preservation	DL & team	Prepare equipment for semen preservation	CLO2, CLO4	Practical	MCQ exam
6	1 Jan 2026	**New Year Holiday**	-	-	-	-	-

Week	Date/Time	Topic	Instructor	Lesson Learning Outcomes (LLOs)	CLOs	Teaching & Learning Activities	Assessment
7	8 Jan 2026 13:30–14:30	AI in small ruminants (5%)	SP	Explain principles and benefits of AI in small ruminants	CLO1, CLO2, CLO4	Lecture	MCQ exam
	14:30–17:30	AI in small ruminants	SP & team	Prepare equipment for AI in small ruminants	CLO1, CLO2, CLO4	Practical	-
	10–18 Jan 2026 **Midterm Examination** (Lecture 30%, Practical 10%)						
8	22 Jan 2026 13:30–14:30	AI in cattle (4%)	AS	Explain principles and benefits of AI in cattle	CLO1, CLO2, CLO4	Lecture	MCQ exam
	14:30–17:30	AI in cattle	AS & team	Prepare equipment for AI in cattle	CLO1, CLO2, CLO4	Practical	MCQ exam
9	29 Jan 2026 13:30–14:30	AI in horses (4%)	MC	Explain principles and benefits of AI in horses	CLO1, CLO2, CLO4	Lecture	MCQ exam
	14:30–17:30	AI in horses	MC & team	Prepare equipment for AI in horses	CLO1, CLO2, CLO4	Practical	MCQ exam
	30 Jan – 7 Feb 2026 **Kaset Fair Holiday**						
10	12 Feb 2026 13:30–14:30	Mendelian heredity & population genetics (5%)	DS	Explain genetic and population genetics principles	CLO1, CLO3	Lecture	MCQ exam
	14:30–17:30	Mendelian heredity & population genetics	DS & team	Practice genetic crossing experiments	CLO1, CLO3	Practical	MCQ exam
11	19 Feb 2026 13:30–14:30	Animal breeding & genetic improvement (5%)	DS	Explain principles of animal breeding	CLO1, CLO3	Lecture	MCQ exam
	14:30–17:30	Animal breeding & genetic improvement	DS & team	Practical training	CLO1, CLO3	Practical	MCQ exam
12	26 Feb 2026	AI in dogs and cats (4%)	DL	Explain principles and benefits of AI in dogs and cats	CLO1, CLO2, CLO4	Lecture	MCQ exam

Week	Date/Time	Topic	Instructor	Lesson Learning Outcomes (LLOs)	CLOs	Teaching & Learning Activities	Assessment
	13:30–14:30						
	14:30–17:30	AI in dogs and cats	DL & team	Prepare equipment for AI in small animals	CLO1, CLO2, CLO4	Practical	MCQ exam
13	5 Mar 2026 13:30–14:30	AI in pigs (4%)	DL	Explain principles and benefits of AI in pigs	CLO1, CLO2, CLO4	Lecture	MCQ exam
	14:30–17:30	AI in pigs	DL & team	Practice and prepare AI equipment in pigs	CLO1, CLO2, CLO4	Practical	MCQ exam
14	12 Mar 2026 13:30–14:30	Assisted reproductive biotechnology (4%)	DL	Explain principles and benefits of ART	CLO1, CLO5	Lecture	MCQ exam
	14:30–17:30	Assisted reproductive biotechnology	DL & team	Practice semen and oocyte collection for ART	CLO2, CLO5	Practical	MCQ exam
	16–27 Mar 2026 **Final Examination** (Lecture 30%, Practical 10%)						

(Asst.Prof.Dr.Duangkamol Lewchalermwong)
16 June 2025