



Course Module
Departement of Animal Science
Faculty of Animal Science
Universitas Brawijaya

Module Name	Animal Reproduction Science
Module Level	Undergraduate Study Program of Animal Science
Code	PEP61007
Subtitle	-
Courses	Animal Reproduction Science
Semester (s)	3
Person responsible for the module	-
Lecturer	<ol style="list-style-type: none"> 1. Prof. Dr.Ir .Trinil Susilawati, MS, IPU, ASEAN Eng 2. Prof. Dr. Agr. Ir. Suyadi, MS, IPU, ASEAN Eng 3. Prof. Dr.Ir. Muhammad Nur Ihsan, MS 4. Prof. Dr.Ir. Woro busono, MS 5. Dr.Ir. Nurul Isnaini, MP 6. Dr.Ir. Sri Wahyuningsih, Msi 7. Dr.Achadiah Rachmawati, Spt,MP 8. Aulia Puspita Anugra Yekti, Spt,MP,Msc
Language	Bahasa Indonesia, English
Relation to curriculum	Study Program: Animal Science Specialization: Animal Science Type: Compulsory/ Non-Compulsory
Type of Teaching contact hours	Contact hours and class size separately for each teaching method: lecture, lesson, project, practical etc.
Workload	Courses : 90,67 hours/semester Practical : 1,70 hours/semester
Credit Weight	3 credits or 5.1 ECTS
Requirements for Passing the Course	-
Recommended prerequisites	
Requirements for Passing the Course	-
Prerequisite Courses	Biology, Anatomy, and Animal Physiology
Module objectives/intended learning outcomes	Learning Outcomes: <ol style="list-style-type: none"> 1. Proficient in biology, physiology, animal nutrition, breeding, farm management, and implementation in Animal Science (LO6) 2. Capability to perform an independent, standardized, measurable, effective, efficient and sustainable work (LO7)

	<p>3. Actively contributing in the learning process and discussion (LO10)</p> <p>Course Learning Outcomes</p> <ol style="list-style-type: none"> 1. efficiency 2. Understand puberty and the factors influencing it, semen production, spermatozoa travel, fertilization, and embryo development. 3. Understand about reproductive hormones and the endocrinology of the estrous cycle, pregnancy, and birth and lactation 4. Understand reproductive physiology in poultry and embryonic development in poultry 5. Understand reproductive disorders <p>Understand how to manage animals to achieve reproductive</p> <hr/> <p>Objectives: This course discusses puberty in male animals, changes in the physiology of spermatozoa inside the male and female reproductive tracts, natural fertilization, embryonic development, pregnancy, delivery, the role of hormones in pregnancy and delivery, also explaining the stages of estrous, pregnant animal, delivery, endocrinology during the estrous cycle, pregnancy, and partus.</p> <hr/> <p>Knowledge: The students understand how to manage animals in order to achieve reproductive efficiency,</p> <hr/> <p>Skills: cognitive- able to understand puberty and the factors that influence it, cement production, spermatozoa travel, fertilization and embryonic development, able to understand reproductive hormones and endocrinology of the estrous cycle, pregnancy, and delivery and lactation, able to understand reproductive hormones and endocrinology of the estrous cycle, pregnancy, and delivery and lactation. Phsycomotoric-Students are able to understand reproductive disorders</p> <hr/> <p>Competences: Able to manage animals in order to achieve reproductive efficiency</p>
Learning Content	<p>The topics include:</p> <ol style="list-style-type: none"> 1. Introduction <ul style="list-style-type: none"> ● The Relationship between Reproductive Science and other Sciences ● The role of animal science in a animal business 2. Puberty and cement production <ul style="list-style-type: none"> ● Definition and signs of puberty in male and female animals ● The process of puberty (Target Weight Theory) ● Factors affecting puberty ● Libido and the factors influencing it ● Factors affecting cement production (genetic, management, and environment)

3. Reproductive Endocrinology
 - Differences in hormones, neurohormonal and neurotransmitters
 - Hormone grouping based on material and function
 - The glands producing reproductive hormones and their functions
 - The hormones produced by the gonads
 - Work mechanism of hormones
 - The work mechanism of hormones and their target organs
 - Neuroendocrine
 - Neurotransmitters
4. Estrus Cycle
 - Folliculogenesis and luteolysis
 - Phases in the estrus cycle
 - Signs of estrus
 - Repeat Breeder and Long Cycle
5. Endocrinology during the estrous cycle
 - Ovary conditions and hormones during Pro-estrus
 - Ovary conditions and hormones during estrus
 - Ovary conditions and hormones during estrus
 - Ovary conditions and hormones during estrus
6. Endocrinology of pregnancy and delivery
 - Hormonal conditions during pregnancy
 - Hormonal changes during pregnancy
 - Hormonal changes before and during delivery (including Progesterone, Estrogen, PGF2 α , Oxytocin)
 - Delivery process
7. Spermatozoa transport and fertilization
 - Transport of spermatozoa to male reproductive organs (seminiferous tubules, epididymis, and ejaculate)
 - Transport of spermatozoa to female reproductive organs (cervix, uterus, oviduct)
 - Changes in spermatozoa function (before capacitation, capacitation, and acrosome reactions)
 - Ovulation events
 - Maturation and ovum transport
 - Fertilization process (fertilization stage)
8. Cleavage, determination, and differentiation
 - Sex Determination
 - The process of zygote cell division
 - Embryonic cell differentiation and early embryonic development
 - The implantation process
 - Factors influencing embryo passage to implantation
 - The process of forming body organs
9. Lactation and puerperium

	<ul style="list-style-type: none"> ● Lactation Process ● Lactation function for reproduction ● The process of returning the reproductive organs post-partum ● Prolactin hormone function on the formation of milk, oxytocin on milk letdown, and prolactin effects on an-estrus <p>10. Reproductive physiology in poultry</p> <ul style="list-style-type: none"> ● Hens' reproductive organs ● Roosters' reproductive organs ● The process of producing spermatozoa and egg cells <p>11. Embryonic development in poultry</p> <ul style="list-style-type: none"> ● Fertilization process in poultry ● Formation and development of embryos in poultry ● Factors affecting embryonic development <p>12. Reproductive disorders and failure</p> <ul style="list-style-type: none"> ● Syndromes of the estrous cycle (Silent heat, short cycle, Long Cycle, and Repeat Breeding) ● Subfertility and the factors influencing it ● Sterile and factors influencing it ● Reproductive diseases causing reproductive disorders and sterile <p>13. Reproductive efficiency</p> <ul style="list-style-type: none"> ● Factors affecting reproductive efficiency ● How to increase reproductive efficiency ● The effect of reproductive efficiency in the success of the animal business <p>14. Material Review</p> <ul style="list-style-type: none"> ● Reproductive Hormones ● Endocrinology of the estrus cycle, pregnancy, and delivery ● Reproductive disorders <p>Reproductive efficiency</p>
<p>Study and examination requirements and forms of examination</p>	<ul style="list-style-type: none"> - Attendance >80% - The final score of all the components of the PBM evaluation >44 <p>The final score component:</p> <ul style="list-style-type: none"> - 30% Midterm Exam - 30% Final Exam - 20% Practicum - 10% Structured Assignments - 10% Quiz <p>A : 80 < Final Score ≤ 100 B+ : 75 < Final Score ≤ 80 B : 69 < Final Score ≤ 75 C+ : 60 < Final Score ≤ 69</p>

	<p>C : 55 < Final Score ≤ 60</p> <p>D : 50 < Final Score ≤ 55</p> <p>D+ : 44 < Final Score ≤ 50</p>
Test Terms and Forms	<p>Examination requirements: A minimum of 80% attendance to attend the final exam</p> <p>Forms of examination: Multiple choices and Essay</p>
Learning Media	<p>Projector and screen, Zoom application, Google Classroom, e-book, WA Group, VLM 2 UB</p>
References	<ol style="list-style-type: none"> 1. Farm Animal Reproduction (Hafez and Hafez, 2008) 2. Fisiologi Reproduksi (Yekti et al, 2018) <p>Ilmu Reproduksi Ternak Dasar (Ihsan, 2010)</p>