



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

Module Name	Reproduction and Artificial Insemination Management
Module Level	Undergraduate Study Program of Animal Science
Code	PEP60016
Subtitle	-
Courses	Reproduction and Artificial Insemination Management
Semester (s)	4
Person responsible for the module	Dr. Ir. Nurul Isnaini, MP
Lecturer	<ol style="list-style-type: none"> <li>1. Prof. Dr.Ir.Trinil Susilawati,MS, IPU, ASEAN Eng</li> <li>2. Prof. Dr. Agr. Ir. Suyadi, MS, IPU, ASEAN Eng</li> <li>3. Prof. Dr.Ir. Muhammad Nur Ihsan,MS</li> <li>4. Prof. Dr.Ir. Woro busono,MS</li> <li>5. Dr.Ir. Nurul Isnaini,MP</li> <li>6. Dr.Ir. Sri Wahyuningsih,MSi</li> <li>7. Dr.Achadiah Rachmawati,Spt,MP</li> <li>8. Aulia Puspita Anugra Yekti,Spt,MP,Msc</li> </ol>
Language	Bahasa Indonesia, English
Relation to curriculum	Study Program: Animal Science Specialization: Animal Science Type: <del>Compulsory/Non-Compulsory</del>
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 according to the examination regulations	-
Recommended prerequisites	-
Requirements for Passing the Course	-
Prerequisite Course	Animal Reproduction Science
Learning Outcomes	Learning Outcomes: <ol style="list-style-type: none"> <li>1. Capability to develop knowledge and comprehensive mindset based on Animal science and industry (LO4).</li> <li>2. Capability to analyse the development and implementation of technology through humanities, ethical and scientific value as to provide appropriate solutions and ideas (LO5).</li> <li>3. Proficient in biology, physiology, animal nutrition, breeding, farm management, and implementation in Animal Science (LO6).</li> </ol>

	<p>4. Capability to implement technology in Animal Science to increase productivity, efficiency, quality and sustainability based on breeding, nutrition, processing, management as well as to organize an entrepreneurship concept and a sustainable production system (LO13).</p> <p>Course Learning Outcomes: After completing this course students are able to:</p> <ol style="list-style-type: none"> <li>1. Understand how to manage animals to achieve reproductive efficiency</li> <li>2. Understand the basic theoretical and technical principles of semen storage and perform semen quality tests, dilution, cooling, and freezing</li> <li>3. Understand AI techniques in various animals and evaluate the success of Artificial Insemination</li> </ol>
	<p>Objectives: This course discusses reproductive management in the field of animal science to increase reproductive efficiency and improve animal genetic quality. The discussions include management of accelerated puberty, mating management, management of male and female selection as donors and recipients, management of liquid and frozen semen production, management of artificial insemination in people's farms and the animal industry, management of recording results of marriage and IB, management of evaluation of successful marriages. In this course, students are also required to carry out laboratory practices to achieve competence in semen quality testing, the dilution process and the thawing of cow semen</p>
	<p>Knowledge: Able to how to manage animals to achieve reproductive efficiency</p>
	<p>Skills: cognitive- Students are understand Relationship between the course of Reproductive Management and Artificial Insemination with other sciences, Reproductive Management and Artificial Insemination and their relationship in improving reproductive efficiency. Physicomotoric-Students are able to basic theoretical and technical principles of semen storage and perform semen quality tests, dilution, cooling, and freezing.</p>
	<p>Competences: Able to implmentation AI techniques in various animals and evaluate the success of Artificial Insemination</p>
<p>Learning Content</p>	<p>The topics include:</p> <ol style="list-style-type: none"> <li>1. Introduction: <ul style="list-style-type: none"> <li>● The sciences that need to be learned to make it easier to study the course of Animal reproduction management</li> <li>● Relationship between the course of Reproductive Management and Artificial Insemination with other sciences</li> <li>● Scope of the course of Reproductive Management and Artificial Insemination and their relationship in improving reproductive efficiency</li> </ul> </li> </ol>

2. Artificial Insemination in animals
  - Definition of artificial insemination
  - Advantages and disadvantages of artificial insemination
  - The history of the development of AI in the world and Indonesia
  - Institutions and human resources related to and contributing to the success of Artificial Insemination
3. Male selection management and mating management:
  - Selection of males to produce spermatozoa and characteristics of good males
  - Raising management of males
  - Selection of a parent to be used as a recipient
  - Mating system in extensive and intensive raising
  - Natural and Artificial Mating Management
4. Storage management and quality testing of cement:
  - Equipment needed for storage and quality testing of cement
  - Cement collection techniques for various livestock and animals
  - Routine quality testing of cement and for studies/research both macroscopic and microscopic including motility, viability, abnormalities.
  - SNI for frozen cement
5. Cement dilution:
  - Facilities and infrastructure required for cooling and freezing cement
  - Diluent and cryoprotectant requirements
  - Composition of various cement diluent in various animals (mammals and poultry)
  - Diluent manufacturing techniques
6. Cement Cooling and Freezing Techniques
  - Basic principles of cooling and freezing
  - Cement cooling and freezing techniques
  - Manufacture of liquid cement
  - Evaluation of the success of making liquid cement and frozen cement
  - Indonesian National Standard (SNI) for the quality of frozen and liquid cement for animals
7. AI technique in various animals:
  - AI technique on various animals
  - AI management using liquid and frozen cement.
  - AI management in cattle, goat, sheep, buffalo, pig, and horse farms (smallholder and industrial farms)

8. Factors affecting the success of AI:

- Quality of liquid/frozen cement (frozen cement maintenance management)
- Female physiology (feed, disease, endocrine)
- Farmer (maintenance system, lust detection, providing information to inseminators)
- Inseminator (Thawing system, the Accuracy of Deposition, timeliness of AI)

9. Artificial Insemination in Poultry (Chickens, Ducks, Birds):

- Cement storage for poultry
- Quality testing of cement in poultry
- Dilution of cement
- AI technique in poultry
- Evaluation of the success of AI in poultry

10. Pregnancy detection:

- Advantages of early pregnancy detection
- Palpation per rectally
- Non-return rate (NRR)

11. Evaluation of AI success and reproduction recording:

- Record of mating results
- Evaluation of the results of mating and pregnancy
- Non-Return Rate
- Conception Rate
- Service per conception
- Calving interval
- Calving Rate/Calf crop
- Weaning Rate

12. Estrus Detection and Synchronization:

- Purpose of estrus detection
- Estrus detection methods (visual, hormonal, and tools)
- Purpose of estrus synchronization
- Benefits of Estrus Synchronization (AI, embryo transfer)

13. Raising management and AI application strategy:

Raising management on;

- Newborn child care
- Off-weaning to speed up puberty
- Approaching mating to increase the success of AI
- Raising management from pregnancy to delivery
- Raising management during breastfeeding and pre-weaning

14. AI strategy for breeding

	<ul style="list-style-type: none"> <li>• Intensification of Natural Mating in the animal industry</li> <li>• AI strategy for animal breeding and growinga</li> <li>• Population dynamics in goat and cow breeding businesses</li> <li>• Planning for goat and cow breeding businesses</li> <li>• Application of AI in waterfowl, land fowl, and birds</li> </ul>
Study and examination requirements and forms of examination	<ul style="list-style-type: none"> <li>- Attendance &gt;80%</li> <li>- The final score of all the components of the PBM evaluation &gt;44</li> </ul> <p>The final score component:</p> <ul style="list-style-type: none"> <li>- 30% Midterm Exam</li> <li>- 30% Final Exam</li> <li>- 20% Practicl work</li> <li>- 10% Structured Assignments</li> <li>- 10% Quiz</li> </ul> <p>A : 80 &lt; Final Score ≤ 100  B+ : 75 &lt; Final Score ≤ 80  B : 69 &lt; Final Score ≤ 75  C+ : 60 &lt; Final Score ≤ 69  C : 55 &lt; Final Score ≤ 60  D : 50 &lt; Final Score ≤ 55  D+ : 44 &lt; 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	Projector and screen, Zoom application, Google Classroom, e-book, WA Group
References	<ol style="list-style-type: none"> <li>1. Farm Animal Reproduction (Hafez and Hafez, 2000)</li> <li>2. Pedoman Inseminasi Buatan (Trinil Susilawati, 2016)</li> <li>3. Inseminasi Buatan menggunakan semen cair (Trinil Susilawati, 2018)</li> </ol>