***Module Handbook***

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| Module Title  | Reproductive Management and Artificial Insemination |
| Module Level, if available  | Undergraduate Study Program of Animal Science |
| Course Code | PEP60016 |
| Headings, if available | - |
| Course (MK) | Reproductive Management and Artificial Insemination |
| Semester | Odd/Even |
| Course Coordinator | Dr. Ir. Nurul Isnaini, MP |
| Teaching Team | 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
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| Language of instruction | Indonesian language |
| Linkages with the Curriculum | Study Program: Animal ScienceSpecialization: Animal ScienceType: Compulsory/~~Non-Compulsory~~ |
| Learning Methods and Duration | 1. *Lecture: 100 minutes/meeting (14 meetings)*
2. *Practicum: 50 minutes/meeting (14 meetings)*
3. *Structured Assignments/quiz/group presentation*
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| Student Study Load | 1. *Lecture: 100 minutes/meeting (14 meetings)*
2. *Practicum: 50 minutes/meeting (14 meetings)*
3. *Structured Assignments/quiz/group presentation*
4. *Attendance: 80% of the total attendance*
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| Credit Weight | 3 credits or 5.1 (ECTS) |
| Requirements for Passing the Course | * Attendance >80%
* The final score of all the components of the PBM evaluation >44

The final score component:* 30% Midterm Exam
* 30% Final Exam
* 20% Practicum
* 10% Structured Assignments
* 10% Quiz
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| Prerequisite Course | Animal Reproduction Science |
| Learning Outcomes | The expected learning outcomes are:1. Able to develop comprehensive insight and mindset according to the science and field of the animal industry (LO4).
2. Able to examine the implications of the development or implementation of science and technology that consider and apply humanities values in accordance with their expertise based on scientific principles, procedures, and ethics to produce excellent solutions and ideas (LO5).
3. Able to apply biological science, physiology, nutrition science, breeding science, animal raising management to comprehend the concept and implement it in the field of animal science (LO6).
4. Able to apply animal technology that is oriented towards improving production, efficiency, quality, and sustainability based on mastery of animal science including breeding, feed, processing of products, marketing management and organizing a sustainable animal production system, and applying entrepreneurial concepts (LO13).
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| Learning Content | After completing this course students are able to:1. Understand how to manage animals to achieve reproductive efficiency
2. Understand the basic theoretical and technical principles of cement storage and perform cement quality tests, dilution, cooling, and freezing
3. Understand AI techniques in various animals and evaluate the success of Artificial Insemination

The topics include:1. Introduction:
* The sciences that need to be learned to make it easier to study the course of Animal reproduction management
* Relationship between the course of Reproductive Management and Artificial Insemination with other sciences
* Scope of the course of Reproductive Management and Artificial Insemination and their relationship in improving reproductive efficiency
1. 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
2. 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
3. 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
1. 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
2. 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
3. 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)
4. 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)
5. 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
1. Pregnancy detection:
	* Advantages of early pregnancy detection
	* Palpation per rectally
	* Non-return rate (NRR)
2. 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
3. Estrus Detection and Synchronization:
	* Purpose of estrus detection
	* Estmrus detection methods (visual, hormonal, and tools)
	* Purpose of estrus synchronization
	* Benefits of Estrus Synchronization (AI, embryo transfer)
4. 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 deliverya
	+ Raising management during breastfeeding and pre-weaning
1. AI strategy for breeding
	* Intensification of Natural Mating in the animal industry
	* AI strategy for animal breeding and growinga
	* Population dynamics in goat and cow breeding businesses
	* Planning for goat and cow breeding businesses
	* Application of AI in waterfowl, land fowl, and birds
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| Test Terms and Forms | Examination requirements: A minimum of 80% attendance to attend the final examForms of examination:Multiple choices and Essay |
| Learning Media | Projector and screen, Zoom application, Google Classroom, e-book, WA Group |
| References | 1. Farm Animal Reproduction (Hafez and Hafez, 2000)
2. Pedoman Inseminasi Buatan (Trinil Susilawati, 2016)
3. Inseminasi Buatan menggunakan semen cair (Trinil Susilawati, 2018)
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