06 December 2018

Course: Forage and Pasture Production

1. **Type** **:** Specialization's Elective
2. **Code** **:** PTN 6110
3. **Credit** **:** 1/1
4. **Semester** **:** Even
5. **Description** **:**

Tropical livestock production can be increased by raising the output per livestock and productivity in every unit area of land. The main influential factor in livestock productivity is quality and quantity of fee, although other factors such as disease, parasite, breed, etc. are also important. Herbivorous cattle/ruminants are mainly fed with forage, from either grasses or legumes. Grazing animals in the tropical area are more than half of total grazing animals in the world. Moreover, grazing animal has extensive functions in the farming system, usually by low inputs, except for dairy cattle. In some places, livestock and plants are strongly integrated, where the by-products of crops are uses as livestock feeds, but the consequence is – output are very low compare to the other places. The advancement of technology has enabled the development of forage/pasture in tropical land, from time to time. The result is, various high-quality feed, as a result of crossbreeding are easy to be found anywhere. The forage and pasture cultivation business are very profitable and sustainable for farmer. Clearly, this course talks about the definition of forage and pasture, management for are of forage and pasture, evaluation for quality and analysis on the availability of feed in pasture land, as well as modern technology in grass cultivation through plant tissues culture technique and its benefits in forage cultivation.

6. **Course Outcomes (CO)**

CO 1 : Master technique in forage and pasture cultivation, including all related aspects.

CO 2 : Students are capable in choosing the appropriate technique in grass and legumes cultivation according to tropical conditions.

CO 3 : Able to formulate and sole problems in grass and legumes cultivation.

7. **The Alignment Between CO and ELO**

CO*	ELO**																	
	A				B			C				D					
	1	2	3	4	1	2	3	1	2	3	4	1	2	3	4	5	6
CO 1					✓				✓								
CO 2							✓	✓									
CO 3														✓			

*CO refers to point 6.

**Expected Learning Outcomes (ELO) are written below,

A. Attitudes and Behaviors

The graduates are able to behave well, correctly, and culturally as the result of internalization and actualization of values and norms, which is reflected in a spiritual and social life through learning process, experience, research, and/or community development in the animal husbandry.

1	Piety to God and be able to show religious attitude and maintain the humanity values in carrying the task, which is based on religion, moral, and ethics.
2	Be proud and love the homeland show nationalism, and contribute to the improvement of the life quality in the community, nation and country, and the advancement of civilization according to Pancasila.
3	Showing the social sensitivity and attention to the community and environment by respecting the culture diversity, view, religious, beliefs, and other people's opinion, and also obey the rules.
4	Be accountable in carrying the professional practice that includes ability to accept accountability towards decision and professional action. It shall be according to the scope of the practice under their responsibility and laws.
B. Mastery in Sciences Master the theory of the current science in the animal husbandry and its application.	
1	Able to master the current animal science and its application theory.
2	Able to master the livestock production science, animal nutrition and fed science, animal products technology, and the livestock social economics in relation to food security and environment.
3	Able to master the design, management, and development of livestock research.
C. Special Skills The graduates are able to develop science, technology, and arts in the animal husbandry through interdisciplinary/multidisciplinary innovative and tested research.	
1	Able to make innovation in the animal husbandry based on the development of science and technology.
2	Able to design interdisciplinary and multidisciplinary research in the animal husbandry.
3	Able to formulate and solve problems in the national development especially in terms of animal husbandry.
4	Able to solve problems and anticipate issues in the development of animal science and industry.
D. General Skills The graduates are able to manage resources by utilizing science, technology, and arts to solve problems in the animal husbandry with current science and also conduct research with accountability and full responsibility.	
1	Able to develop logical, critical, systematic, and creative thought through scientific research, creation of design in the science and technology, which pays attention and applies humanity values according to their expertise. The graduates are able to arrange scientific concept and the study result based on the principles, procedures, and scientific ethics.
2	Able to identify the science that becomes their research object and position it to a research map by using information technology in the context of science development and expertise implementation developed through interdisciplinary or multidisciplinary approaches.
3	Able to make a decision in the context of solving problems in the development of science and technology, which pays attention and applies humanity values based on analysis study or experiment towards information and data.
4	Able to communicate the result of reasoning and scientific research in form of thesis and scientific writing responsibly based on academic ethics in the accredited national journal.
5	Able to maintain the academic integrity generally and avoid the plagiarism practice.
6	Able to communicate spoken and written English effectively by using the information technology for the development of animal science and its implementation.

8. Course Content

Week	CO	Topic/Subtopic	Learning Activity	Assessment Tools	Allocated Time	Lecturer

1	CO 1	Introduction and definition of forage	Classical lecture	Midterm	1 x 50 minutes	Nafiatul Umami
2	CO 1	Definition of forages, type, and potency	Classical lecture	Midterm	1 x 50 minutes	Nafiatul Umami
3	CO 2	Plant physiological factors affecting grass production	Flip class; homework	Presentation, midterm	1 x 50 minutes	Bambang suhartanto
4	CO 2	Definition of pasture land and its prospect	Flip class, homework	Presentation, and midterm	1 x 50 minutes	Bambnag suhartanto
5	CO 2	Techniques on PP evaluation	Classical lecture	Presentation and midterm	1 x 50 minutes	Bambang suhartanto
6	CO 2	Agronomical factors on forage production	Flip class	Midterm	1 x 50 minutes	Bambang Suwignyo
7	CO 1; CO 2	Breeding techniques: soil management	Flip class	Midterm; presentation	1 x 50 minutes	Bambang suwignyo
Midterm Examination						
8	CO 1; CO 2	Breeding techniques	Flip class; project report on the technological innovation used in forage production	Final exam, presentation	1 x 50 minutes	Nafiatul Umami
9	CO 1; CO 2	Techniques on tissue culture	Classical lecture	Final exam; presentation	1 x 50 minutes	Nafiatul Umami
10	CO 1; CO 2; CO 3	Techniques on tissue culture	Flip class	Presentation	1 x 50 minutes	Nafiatul Umami
11	CO 1; CO 2; CO 3	Project presentation	Presentation		1 x 50 minutes	bambang suhartanto Bambang suwignyo

						Nafiatul Umami
12	CO 1; CO 2; CO 3	Project presentation	Presentation		1 x 50 minutes	bambang suhartanto Bambang suwignyo nafiatul Umami
13	CO 1; CO 2; CO 3	Project presentation	Presentation		1 x 50 minutes	Bambang suwignyo Nafiatul Umami bambang suhartanto
14	CO 1; CO 2; CO 3	Project presentation	Presentation		1 x 50 minutes	Bambang suwignyo Nafiatul Umami bambang suhartanto
Final Examination						

9. Practicum

Week	Activity	Methods	Total Hours
1	Sampling techniques	Soil preparation	2 x 50
2		Seedling, planting, management	2 x 50
3	Monoculture system	Soil preparation	2 x 50
4		Seedling, planting, management	2 x 50
5	Nodule observation	Nodule activity	2 x 50

10. Assessment

Component	CO	Percentage (%) for final grade	Minimum Satisfactory Level
Midterm	CO 1; CO 2	20	70
Quiz	CO 2	5	70
Presentation	CO 1; 2; 3	10	70
Paper	CO 1; 2; 3	10	70
Final Exam	CO 1; 2; 3	20	70
Practicum	CO 1; 2; 3	35	70

Total	100	

11. Lecturer

1. Ir. Nafiatul Umami, S.Pt., MP., Ph.D.
2. Dr. Ir. Bambang Suhartanto, DEA.
3. Bambang Suwignyo, S.Pt., MP., Ph.D.

12. Reference