06 December 2018

Course: Environmental Physiology of Tropical Animals

1. **Type** **:** Specialization's Elective
2. **Code** **:** PTR 6503
3. **Credit** **:** 2/0
4. **Semester** **:** Odd
5. **Description** **:**

   The course of advanced environmental physiology of tropical animals learns on environment factors i.e physical environment, chemistry environment, biological and social environment which can influence the hometasis, status faali, productivity, reproductivity in tropical area and non-tropical area and also the dangerous pollutan and toxic that are existed in the environment.

6. **Course Outcomes (CO)**

   CO 1 : Able to explain the definition of animal environment science in the animal husbandry process

   CO 2 : Students are able to arrange the animal environment for reaching the optimum animal productivity

   CO 3 : Students are able to explain the adaptation process with various species.

   CO 4 : Students are able to explain the adaptation process in various animal species.

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 4			✓			✓		✓					✓				

*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 • Learning contract • Definition the science of physiology and animal behavior in tropic • Earth and global warming	Classical lecture; discussion	Quiz, assignment, discussion	2 x 50 minutes	Team

2	CO 1	External environment • Micro environment • Its effects on animal performance	Classical lecture; discussion	Quiz, assignment, discussion	2 x 50 minutes	Team
3	CO 2	Natural and non-natural adaptation • Bioclimatology • Climate effects toward animal	Classical lecture; discussion	Quiz, assignment, discussion	2 x 50 minutes	Team
4	CO 1 CO 2	Adaptability • Faali adaptation • Morphological adaptation • Anatomical adaptation • Behavioral adaptation	Classical lecture; discussion; presentation	Quiz, assignment, discussion	2 x 50 minutes	Team
5	CO 1	Homeostatic regulation • Thermoregulation • Body water regulation • Cardiovascular regulation	Classical lecture; discussion	Quiz, assignment, discussion	2 x 50 minutes	Team
6	CO 1 CO 2 CO 3	Adaptation mechanism towards specific condition/environment • Behavioral adaptation • Adaptation towards altitude • Adaptation towards hot climate • Adaptation toward low temperature	Classical lecture; discussion	Quiz, assignment, discussion	2 x 50 minutes	Team

7	CO 1 CO 2	Adaptability • Adaptability of sheep and goat • Adaptability of cattle and buffalo • Adaptability of other species	Classical lecture; discussion; presentation	Quiz, assignment, discussion	2 x 50 minutes	Team
Midterm Examination						
8	CO 1	Various pollutant and toxic compounds in environment • Pollutant and toxicant on water • Pollutant and toxicant on land and air	Classical lecture; discussion	Quiz, assignment, discussion	2 x 50 minutes	Team
9	CO 1 CO 2	Various pollutant and toxic compounds in feed • Type of pollutant and toxic compounds • Their effects on animal performance	Classical lecture; discussion	Quiz, assignment, discussion	2 x 50 minutes	Team
10	CO 1	Adaptability and environmental effects on poultry productivity	Classical lecture; discussion	Quiz, assignment, discussion	2 x 50 minutes	Team
11	CO 1	Adaptability and environmental effects on cattle productivity	Classical lecture; discussion	Quiz, assignment, discussion	2 x 50 minutes	Team
12	CO 1	Adaptability and environmental effects on buffalo productivity	Classical lecture; discussion; presentation	Quiz, assignment, discussion	2 x 50 minutes	Team
13	CO 1	Adaptability and environmental effects on goat productivity	Classical lecture; discussion; presentation	Quiz, assignment, discussion	2 x 50 minutes	Team

14	CO 1	Adaptability and environmental effects on sheep productivity	Classical lecture; discussion; presentation	Quiz, assignment, discussion	2 x 50 minutes	Team
Final Examination						

9. Assessment

Component	CO	Percentage (%) for final grade	Minimum Satisfactory Level
Midterm	CO 1; CO 2; CO 3	40	70
Quiz	CO 1	5	70
Presentation	CO 1; CO 2	5	70
Paper	CO 1	10	70
Final exam	CO 1; CO 2; CO 3	40	70
Total		100	

10. Lecturer

1. Dr. Ir. Sigit Bintara, S.Pt, M.Si., IPM.
2. Prof. Ir. Ismaya, M.Sc., Ph.D.
3. Ir. Diah Tri Widayati, S.Pt., MP., Ph.D., IPM.

11. Reference

1. Hafez, E.S.E. 1994. Adaptation of Domestic Animals.
2. Buck, W.B. 1990. Environmental Toxicology and Pollutants.
3. Suratmo, F.G. 1995. Analisis Mengenai Dampak Lingkungan.
4. Djajadiningrat, S.T. dan Amir, H.H. 1993. Penilaian Secara Cepat Sumber Sumber Pencemaran Air, Tanah, dan Udara.
5. Suhardi. 1991. Petunjuk Laboratorium Analisa Air dan Penanganan Limbah.

Sumber Informasi/Referensi Lain:

6. Majalah: Journal of Animal Science
7. Majalah: Journal of Poultry Science
8. Internet