

Course: Poultry and Non-Ruminant Nutrition

1. **Type** : Specialization's Elective
2. **Code** : PTN 6112
3. **Credit** : 2/0
4. **Semester** : Even
5. **Description** :

The Poultry and Non-ruminant Nutrition course is designed to equip students with competencies in scientific development in the fields of nutrition and feed science, digestive system, nutrient digestibility, absorption, inhibition of nutrient absorption, as well as nutrient requirements and roles in the poultry and non-ruminants. This course contains development of nutrition and animal feed, digestive tract and system, digestibility, absorption, and inhibition of nutrient absorption, metabolism, and nutrient requirements for basic living and production in the poultry and non-ruminants (rabbit, horse, and swine).

6. Course Outcomes (CO)

- CO 1 : Understand the aspects of nutrition, nutrients, the relationship between nutrients, and rules of intake in the poultry and non-ruminant animals.
- CO 2 : Understand the models of nutrient evaluation, digestive processes and nutrient metabolism to conduct research in the poultry nutrition and feed science.
- CO 3 : Understand the models of nutrient evaluation, digestive processes, and nutrient metabolism to conduct research in the non-ruminant nutrition and feed science.

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 feed 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 scientific progress on poultry nutrition: <ul style="list-style-type: none"> • Course introduction • Learning contract • Syllabus 	RBL; classical lecturer, SCL	Midterm	2 x 55 minutes	Prof. Dr. Ir. Zuprizal, DEA., IPU.

		<ul style="list-style-type: none"> Scientific progress on the field 				
2	CO 1	<p>Feed and water intake regulation on poultry</p>	RBL; classical lecturer, SCL	Midterm	2 x 55 minutes	Prof. Dr. Ir. Zuprizal, DEA., IPU.
3	CO 1	<p>Feed and water intake regulation:</p> <ul style="list-style-type: none"> Feeding rhythm and limiting factors Water intake regulation and rhythm Definition of system and digestion process Physiological and digestive system anatomy on poultry Nutrient digestion on poultry 	RBL; classical lecturer, SCL	Midterm	2 x 55 minutes	Prof. Dr. Ir. Zuprizal, DEA., IPU.
4	CO 2	<p>Metabolized energy on poultry:</p> <ul style="list-style-type: none"> Energy requirement on poultry Methods on metabolized energy measurement 	RBL; classical lecturer, SCL	Midterm	2 x 55 minutes	Prof. Dr. Ir. Zuprizal, DEA., IPU.

5	CO 2	Protein system on poultry feed <ul style="list-style-type: none"> • Protein evaluation • Amino acids • Amino acids metabolism 	RBL; classical lecturer, SCL	Midterm	2 x 55 minutes	Prof. Dr. Ir. Zuprizal, DEA., IPU.
6	CO 2	Water quality on poultry: physico-chemical of water as nutrient for livestock animal	RBL; classical lecturer, SCL	Midterm	2 x 55 minutes	Prof. Dr. Ir. Zuprizal, DEA., IPU.
7	CO 2	Feed additive for poultry: probiotic, antibiotic, phytobiotic, and prebiotic for poultry	RBL; classical lecturer, SCL	Midterm	2 x 55 minutes	Prof. Dr. Ir. Zuprizal, DEA., IPU.
Midterm Examination						
8	CO 1	Digestive system physiology on non-ruminant: digestive system, anatomy, and development on horse	RBL; classical lecturer, SCL	Final exam	2 x 55 minutes	Prof. Dr. Ir. Zuprizal, DEA., IPU.
9	CO 3	Digestive system physiology on non-ruminant: physiology and digestion on horse	RBL; classical lecturer, SCL	Final exam	2 x 55 minutes	Prof. Dr. Ir. Zuprizal, DEA., IPU.
10	CO 1	Digestive system physiology on non-ruminant: organ system and macro-nutrient digestion on rabbit	RBL; classical lecturer, SCL	Final exam	2 x 55 minutes	Ir. Nanung Danar Dono, S.Pt., M.P., Ph.D., IPM.

11	CO 1	Digestive system physiology on non-ruminant: organ system and macro-nutrient digestion on swine	RBL; classical lecturer, SCL	Final exam	2 x 55 minutes	Ir. Nanung Danar Dono, S.Pt., M.P., Ph.D., IPM.
12	CO 3	Digestive system physiology on non-ruminant: digestive system, absorption, and metabolism (energy)	RBL; classical lecturer, SCL	Final exam	2 x 55 minutes	
13	CO 3	Digestive system physiology on non-ruminant: digestive system, absorption, and metabolism (protein)	RBL; classical lecturer, SCL	Final exam	2 x 55 minutes	
14	CO 3	Digestive system physiology on non-ruminant: digestive system, absorption, and metabolism (vitamin and mineral)	RBL; classical lecturer, SCL	Final exam	2 x 55 minutes	
Final Examination						

9. Assessment

Component	CO	Percentage (%) for final grade	Minimum Satisfactory Level
Midterm	CO 1; CO 2	50	70
Final exam	CO 1; CO 3	50	70
Total		100	

10. Lecturer

¹ Prof. Dr. Ir. Zuprizal, DEA., IPU.

2. Ir. Nanung Danar Dono, S.Pt., M.P., Ph.D., IPM.

11. Reference

1. Larbier, M. and Leclercq, B. 1994. Nutrition and Feeding of Poultry. Nottingham University Press. UK.
2. McDonald, P., Edwards, R.A., Greenhalgh, J.F.D., and Morgan, C.A. 2002. Animal Nutrition. Sixth Edition. Pearson Education Limited. Edinburgh Gate. Harlow. UK.
3. Zuprizal, M. Larbier, and A.M. Chagneau. 1992. Effect of age and sex on true digestibility of amino acids of rapeseed and soybean meals in growing broilers. Poultry Science. 71:1486-1492.
4. Zuprizal, M. Larbier, A.M. Chagneau, and P.A. Geraert. 1993. Influence of ambient temperatur on true digestibility of protein and amino acids of rapeseed and soybean meals in broilers. Poultry Science. 72:289-295.