COURSE LEARNING PLAN

	UNIVERSITY OF BRAWIJAYA FACULTY OF ANIMAL SCIENCE DEPARTMENT OF ANIMAL SCIENCE UNDERGRADUATE STUDY PROGRAM OF ANIMAL SCIENCE LEARNING PLAN: NON-RUMINANT NUTRITION				
Course	**Code**	**Weight (credits)**	**Semester**	**Compilation Date**	
Non-Ruminant Nutrition	PEN60004	3 (2-1)	3	July 27, 2020	
Authorization	**Course Coordinator**		**Ka PS S1**	**Vice Dean 1**	
	Dr. Ir. Irfan H Djunaidi, M.Sc. IPM, ASEAN Eng		Dr. Herly Evanuarini, S. Pt. MP	Dr. Ir. M. Halim Natsir, S.Pt. MP. IPM. ASEAN Eng	

Learning Outcomes (LO)	**PLO**
	1. (LO 4) Able to develop comprehensive insight and mindset according to the science and field of the animal industry. 2. (LO 5) 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. 3. (LO 12) Able to design and conduct experiments, analyze and interpret data to make correct decisions in solving problems in the field of animal science, meet ethics, and have environmental insight.
	CLO
	After taking this course, the students are able to: 1. Understand and explain the digestive mechanism of non-ruminant animals (Poultry, Waterfowl, Quail, Rabbit, Pig, and Horse) 2. Understand and analyze the factors affecting the nutritional needs of non-ruminant animals 3. Understand and calculate the nutritional needs of non-ruminant animals 4. Understand and design non-ruminant animal feed formulations

Brief Course Description	This course discusses the digestive mechanisms of non-ruminant animals (Poultry, Waterfowl, Quail, Rabbit, Pig, and Horse, factors affecting the nutritional needs of non-ruminant animals, the food substance needs for non-ruminant animals, and non-ruminant animal feed formulations.
Topics	1. Digestive system for non-ruminant animals (Poultry, Waterfowl, Quail, Rabbit, Pig, and Horse) 2. Factors affecting food substance needs of non-ruminant animals 3. The food substance needs of non-ruminant animals 4. Feed formulation 5. Feed planning for non-ruminant animals
References	1. Church, D.C 1989. Digestive Physiology and Nutrition of Non-Ruminant Part 2. O and Books Corvallis Origin. USA. 2. Ensminger, M. E and C. G. Olientine Jr. 1978. Feed and Nutrition. 1st ed 3. NRC. 1977. Nutrition Requirement of Rabbit. 2nd rev ed. 4. NRC. 1994. Nutrition Requirement of Horses. 6th rev ed. 5. NRC. 1994. Nutrition Requirement of Poultry. 9th rev ed. 6. NRC. 2004. Nutrition Requirement of swine. 7h rev ed. 7. Scott, M. L., M.C, Nesheim and R.J.Young. 1982. Nutritions of The Chickens. Second Ed. M. L. Scott and Associates Ithaca. New York. 8. Sjofjan, O., M. H. Natsir and I.H. Djunaidi. 2019. Ilmu Nutrisi Ternak Non Ruminansia. UB Press. 9. Widodo, E.2018. Ilmu Nutrisi Unggas. UB Press 10. Wiseman J. 1984. Feeding of Non-Ruminant Livestock. Butterworths Toronto. Wilington.

Learning Media	Software	Hardware
	E-module Win Feed Program Video UB Feed Software	Textbooks

Teaching Team	1. Dr. Ir. Eko Widodo, M.Agr.Sc. M.Sc 2. Dr. Ir. Osfar Sjofjan, M.Sc. IPU. ASEAN Eng 3. Dr. Ir. Irfan H. Djunaidi, M.Sc. IPM. ASEAN Eng 4. Dr.Ir. M. Halim Natsir. S.Pt. MP. IPM. ASEAN Eng 5. Yuli Frita Nuningtyas.,S.Pt MP. M.Sc.

Prerequisite Courses	Introduction to Animal Nutrition and Forage (DNTBMT) Forage Science and Technology (IPTEKBMT)				
Week	Sub-CLO	Indicator	Learning Materials / Topics	Learning Methods	Criteria & Form of Assessment
(1)	(2)	(3)	(4)	(5)	(6)
1	Understand Lesson Plan (RPS), the potential of non-ruminant animals as a provider of animal protein and the trend of non-ruminant animal population in Indonesia	Able to explain about Lesson Plan (RPS), the potential of non-ruminant animals as a provider of animal protein and the trend of non-ruminant animal population in Indonesia	Introduction: Lesson Plan (RPS), Potential of Non-ruminant Animals as Providers of Animal Protein and the trend of non-ruminant animal population in Indonesia	1. Lectures 2. Discussions	
2	Understand the digestive system of non-ruminant animals (Poultry, Waterfowl, Rabbit, Pig, and Horse)	Able to explain the digestive system of non-ruminant animals (Poultry, Waterfowl, Rabbit, Pig, and Horse)	Digestive system of non-ruminant animals (Poultry, Waterfowl, Rabbit, Pig, and Horse)	1. Lectures 2. Discussions	
3	Understand the factors of nutritional needs of broilers	Able to explain the nutritional needs of broilers	Factors of nutritional needs for broilers	1. Lectures 2. Discussions	
4	Understand the factors of nutritional needs for laying fowls	Able to explain the nutritional needs of laying fowls	Factors of nutritional needs for laying fowls	1. Lectures 2. Discussions	

5	Understand the factors of nutritional needs for waterfowl and quail	Able to explain the nutritional needs of waterfowl and quail	Factors of nutritional needs of waterfowl and quail	1. Lectures 2. Discussions 3. Structured Assignments	
6	Understand the factors of nutritional needs for rabbits	Able to explain the nutritional needs of rabbits	Factors of nutritional needs of rabbits	1. Lectures 2. Discussions 3. Quizzes	
7	Understand the factors of nutritional needs for pigs	Able to explain the nutritional needs of pigs	Factors of nutritional needs of pigs	1. Lectures 2. Discussions	
8					
9	Understand the factors of nutritional needs for horses	Able to explain the nutritional needs of horses	Factors of nutritional needs of horses	1. Lectures 2. Discussions	
10	Understand non-ruminant animal feed formulations (Poultry, Waterfowl, Quail, Rabbit, Pig, and Horse)	Able to design non-ruminant animal feed formulations (Poultry, Waterfowl, Quail, Rabbit, Pig, and Horse)	Non-ruminant animal feed formulations (poultry, waterfowl, quail, rabbit, pig, and horse)	1. Lectures 2. Discussions	
11	Understand the needs of poultry feed	Able to design the needs of poultry feed	Design the needs of poultry feed	1. Lectures 2. Discussions	
12	Understand the need for waterfowl and quail feed	Able to design the needs of waterfowl and quail feed	Design the needs of waterfowl and quail feed	1. Lectures 2. Discussions	

13	Understand the need for pig feed	Able to design the needs of pig feed	Design the needs of pig feed	1. Lectures 2. Discussions 3. Structured Assignments	
14	Understand the need for rabbit feed	Able to design the needs of rabbit feed	Design the needs of rabbit feed	1. Lectures 2. Discussions 3. Quizzes	
15	Understand the need for horse feed	Able to design the needs of horse feed	Design the needs of horse feed	1. Lectures 2. Discussions	
16	**FINAL EXAM (UAS)**				

ASSESSMENT RUBRIC

	UNIVERSITY OF BRAWIJAYA FACULTY OF ANIMAL SCIENCE DEPARTMENT OF ANIMAL SCIENCE UNDERGRADUATE STUDY PROGRAM OF ANIMAL SCIENCE
Course	Non-Ruminant Nutrition

Score Level	CLO and PLO	Conversion	PLO Score
PLO 4: Able to develop comprehensive insight and mindset according to the science and field of the animal industry CLO 1: Understand and can explain the digestive mechanisms of non-ruminant animals (Poultry, Waterfowl, Quail, Rabbit, Pig, and Horse)			
Very Good (4)	Have **comprehensive** abilities in mentioning and explaining the digestion mechanism of non-ruminant animals (Poultry, Waterfowl, Quail, Rabbit, Pig, and Horse)	80-100	
Good (3)	Have **good** abilities in mentioning and explaining the digestive mechanism of non-ruminant animals (Poultry, Waterfowl, Quail, Rabbit, Pig, and Horse.	70-79,9	
Moderate (2)	Have **moderate** abilities in mentioning and explaining the digestion mechanism of non-ruminant livestock (Poultry, Waterfowl, Quail, Rabbit, Pig and Horse)	60-69,9	
Poor (1)	Have **poor** abilities in mentioning and explaining the digestion mechanism of non-ruminant livestock (Poultry, Waterfowl, Quail, Rabbit, Pig and Horse)	<60	
Score Level	CLO and PLO	Conversion	PLO Score
PLO 4: Able to develop comprehensive insight and mindset according to the science and field of the animal industry PLO 5: 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 CLO 2: Understand and be able to analyze the factors affecting the nutritional needs of non-ruminant animals			

Very Good (4)	Have **comprehensive** abilities in analyzing the factors influencing the feed substance needs of non-ruminant animals	80-100	
Good (3)	Have **good** abilities in analyzing the factors influencing the feed substance needs of non-ruminant animals	70-79,9	
Moderate (2)	Have **moderate** abilities in analyzing the factors influencing the feed substance needs of non-ruminant animals	60-69,9	
Poor (1)	Have **poor** abilities in analyzing the factors influencing the feed substance needs of non-ruminant animals	<60	
Score Level	CLO and PLO	Conversion	PLO Score
PLO 5: 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 PLO 12: Able to design and conduct experiments, analyze and interpret data to make correct decisions in solving problems in the field of animal science, meet ethics, and have environmental insight CLO 3: Understand and calculate the nutritional needs for non-ruminant animals			
Very Good (4)	Have **comprehensive** abilities in calculating the nutritional needs of non-ruminant animals	80-100	
Good (3)	Have **good** abilities in calculating the nutritional needs of non-ruminant animals	70-79,9	
Moderate (2)	Have **moderate** abilities in calculating the nutritional needs of non-ruminant animals	60-69,9	
Poor (1)	Have **poor** abilities in calculating the nutritional needs of non-ruminant animals	<60	
Score Level	CLO and PLO	Conversion	PLO Score

PLO 12: Able to design and conduct experiments, analyze and interpret data to make correct decisions in solving problems in the field of animal science, meet ethics, and have environmental insight CLO 4: Understand and design non-ruminant animal feed formulations		
Very Good (4)	Have **comprehensive** abilities in designing non-ruminant animal feed formulations	80-100	
Good (3)	Have **good** abilities in designing non-ruminant animal feed formulations	70-79,9	
Moderate (2)	Have **moderate** abilities in designing non-ruminant animal feed formulations	60-69,9	
Poor (1)	Have **poor** abilities in designing non-ruminant animal feed formulations	<60	

Formula to Calculate PLO Score: $\dfrac{Level\ Skor}{\sum level\ skor} \times \dfrac{\sum CLO}{\sum PLO} \left| \dfrac{Level\ Skor}{\sum level\ skor} \times \dfrac{\sum CLO}{\sum PLO} \right.$

CLO Score Calculation

Assessed components	Component Weights	CLO Weight on the Score			
		CLO 1	CLO 2	CLO 3	CLO 4
Practicum	0.2		0.4	0.3	0.3
Midterm Exam	0.35	0.3	0.7		
Final Exam	0.35			0.7	0.3
Structured Assignment	0.05	0.25	0.25	0.25	0.25
Quiz	0.05	0.25	0.25	0.25	0.25

PLO Score Calculation

CLO	CLO Score	CLO Weight	PLO		
			PLO 4	PLO 5	PLO 12
CLO 1			1.0		
CLO 2			0.3	0.7	
CLO 3				0.5	0.5
CLO 4					1.0

Basic Format for the Lecture Portfolio

![University of Brawijaya logo]	**UNIVERSITY OF BRAWIJAYA** **FACULTY OF ANIMAL SCIENCE** **STUDY PROGRAM OF ANIMAL SCIENCE**

Course: Non-Ruminant Nutrition	Code: PEN60004	RMK:	Semester: 3

Lecturers	1. Dr. Ir. Eko Widodo, M.Agr.Sc. M.Sc 2. Dr. Ir. Osfar Sjofjan, M.Sc. IPU. ASEAN Eng 3. Dr. Ir. Irfan H. Djunaidi, M.Sc. IPM. ASEAN Eng 4. Dr.Ir. M. Halim Natsir. S.Pt. MP. IPM. ASEAN Eng 5. Yuli Frita Nuningtyas.,S.Pt MP. M.Sc.

Introduction (Describe the necessary explanation about this course, the experiences that have been done) This course discusses the digestive mechanisms of non-ruminant animals (Poultry, Waterfowl, Quail, Rabbit, Pig, and Horse), factors affecting the need for non-ruminant animal feed substances, the need for non-ruminant animal food substances, and non-ruminant animal feed formulations.		
1	**Objectives** (Describe general and specific course objectives)	

	After completing this course, students are able to:
	  1. Understand and explain the digestive mechanism of non-ruminant animals (Poultry, Waterfowl, Quail, Rabbit, Pig, and Horse)
	  2. Understand and analyze the factors affecting the nutritional needs of non-ruminant animals
	  3. Understand and calculate the nutritional needs for non-ruminant animals
	  4. Understand and design non-ruminant animal feed formulations	

2	**Learning Strategies** (describe the strategy used to achieve the course objective - CLO)	
	The learning strategies carried out in lectures include student center learning and teacher center learning	
3	**Lecture Management** (describe the lecture management: lectures, tutorials, practicum, assignments, major assignments, etc.)	

	1) *Lecture: 100 minutes/meeting (14 meetings)* 2) *Practicum of 150 minutes/meeting (14 meetings)* 3) *Structured assignments/quizzes/group presentation* 4) *Attendance: 80% of total attendance*
4	**Lecture Contents** (explain its suitability with the applicable curriculum)
	The topics of this course consist of: 1. Digestive system for non-ruminant animals (Poultry, Waterfowl, Quail, Rabbit, Pig, and Horse) 2. Factors affecting the needs for non-ruminant animal food substance 3. The Need for Non-Ruminant Animal Food Substance 4. Feed formulation 5. Feed planning for non-ruminant animals
5	**Lecture Participants** (provide an overview of the lecture participants)
	The lecture participants are 3rd-semester students who have passed Introduction to Animal Nutrition and Animal Forage ingredients
6	**Attendance Percentage** (% lecturer attendance; % student attendance)
	% of lecturer attendance: 100% % of student attendance: 80%
7	**Evaluation System** (explain the homework, quizzes, group assignments, practicum, etc.)
	The evaluation system is carried out through quizzes, structured assignments, practicum, Midterm Exam, and Final Exam
8	**Class Observation** (explain important and interesting things that were encountered during the lecture)
9	**Learning Outcomes** (explain the achievement of the objectives that have been set, also include the learning achievements that can be explained)
	The expected learning outcomes are: 1. (CP 4) Able to develop comprehensive insight and mindset according to the science and field of the animal industry. 2. (CP 5) 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. 3. (CP12) Able to design and conduct experiments, analyze and interpret data to make correct decisions in solving problems in the field of animal science, meet ethics, and have environmental insight.

10	
11	**Score Distribution** (provide the score distribution following the learning achievements of this course)
	Midterm Exam*: 30%*
	Final Exam:*30 %*
	Pass the Practicum Test:30 %
	Structured assignment/quizzes:10%
12	**Conclusion**
13	**Improvement Recommendations**
	Appendices:
	1. 2. Etc.