



Course Module
Department of Animal Science
Faculty of Animal Science
Universitas Brawijaya

Module name	Advance Ruminant Nutrition
Module Level	Undergraduate Study Program of Animal Science
Code	PEN60007
Subtitle	-
Courses	Advance Ruminant Nutrition
Semester(s)	6
Person responsible for the module	Prof. Dr. Ir. Kusmartono
Lecturer	<ol style="list-style-type: none"> 1. Prof. Dr. Ir. Siti Chuzaemi, MS., IPU., ASEAN Eng 2. Prof. Dr. Ir. Hendrawan Soetanto, M. Rur. Sc 3. Prof. Dr. Ir. Kusmartono 4. Prof. Dr. Ir. Hartutik, S.Pt., MP., IPU., ASEAN Eng 5. Dr. Ir. Mashudi, M.Agr.Sc., IPM, ASEAN Eng 6. Dr. Ir. Marjuki, M.Sc 7. Asri Nurul Huda, S.Pt., MP., M.Sc 8. Poespitasari Hazanah Ndaru, S.Pt., MP.
Language	Combination (Indonesian language and English)
Relation to Curriculum	Study Program: Animal Science Specialization: Animal Science Type: Compulsory /Non-Compulsory
Type of Teaching, Contact Hours	<ol style="list-style-type: none"> 1. Lecture/Meeting/Tutorial/Structural assignment: 100 minutes/week/semester 2. Independent Study: 50 minutes/week/semester 3. Practicum: 100 minutes/week/semester
Workload	Lecture : 2 credits or 90.67 hours/semester; Practical : 1 credits or 42.50 hours/semester
Credit points	3 credits (Lecture : 3.40 ECTS and Practical : 1.70 ECTS = Total 5.10 ECTS)
Requirements According to the Examination Regulations	-
Recommended Prerequisite	Ruminant Nutrition (PEN60003)
Module Objectives / Intended Learning Outcomes	Learning Outcomes: <ol style="list-style-type: none"> 1. Contributing to the escalation and development of quality of life locally and globally (LO 2) 2. Capability to develop knowledge and comprehensive mindset based on Animal science and industry (LO 4) 3. Capability to perform an independent, standardized, measurable, effective, efficient and sustainable work (LO 7)
	Objectives: The Advance Ruminant Nutrition course explain about hot to calculate and meet the nutritional needs of ruminant animals by considering the following factors:



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	<ul style="list-style-type: none"> - Types of animals (sheep, goats, beef cattle, and dairy cows) - Physiological status (newborn ruminants, post-weaning, virgin, pregnant, dry, and breastfeeding) - Raising purposes (breeding, fattening, working)
	<p>Knowledge:</p> <p>Able to understand how to calculate and meet the nutritional needs of ruminant animals by considering the following factors:</p> <ul style="list-style-type: none"> - Types of animals (sheep, goats, beef cattle, and dairy cows) - Physiological status (newborn ruminants, post-weaning, virgin, pregnant, dry, and breastfeeding) - Raising purposes (breeding, fattening, working)
	<p>Skills</p> <p>Cognitive</p> <p>Able to understand the principle of calculating the nutritional needs of ruminant animals by considering the following factors:</p> <ul style="list-style-type: none"> - Types of animals (sheep, goats, beef cattle, and dairy cows) - Physiological status (newborn ruminants, post-weaning, virgin, pregnant, dry, and breastfeeding) - Raising purposes (breeding, fattening, working) <p>Phsycomotoric</p> <p>Able to calculate and meet the nutritional needs of ruminant animals by considering the following factors:</p> <ul style="list-style-type: none"> - Types of animals (sheep, goats, beef cattle, and dairy cows) - Physiological status (newborn ruminants, post-weaning, virgin, pregnant, dry, and breastfeeding) - Raising purposes (breeding, fattening, working)
	<p>Competences</p> <p>Able to implement the concept of feed budgeting in managing the potential of feed resources to ensure the fulfillment of nutritional needs throughout the year and achieving the production target of ruminant animals based on their raising purposes</p>
Content	<ol style="list-style-type: none"> 1. Methods for determining the nutritional needs of ruminant animals. 2. Introduction to feeding systems accompanied by examples.



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	<ol style="list-style-type: none"> 3. Steps to calculate nutrient needs (energy, protein, and fiber content) and fulfillment of nutritional needs for sheep 4. Steps to calculate nutritional needs (energy, protein, and fiber content) and fulfillment of nutritional needs for goats 5. Steps to calculate nutritional needs (energy, protein, and fiber content) and fulfillment of nutritional needs for beef cattle 6. Steps to calculate nutritional needs (energy, protein, and fiber content) and fulfill nutritional needs for dairy cattle 7. Steps to calculate nutritional needs (energy, protein, and fiber content) and fulfillment of nutritional needs for working animals 8. Development of the concept of Feed Budgetting in allocating feed resources 9. Feed supply and demand model 10. Feeding strategy for defined production targets 11. Simple cost and benefits calculation
<p>Study and Examination Requirements and Forms of Examination</p>	<ul style="list-style-type: none"> – Examination requirements: A minimum of 80% attendance to attend the final exam – The forms of the test: Multiple Choice/Essay/Group <p>The Final Score Component:</p> <ul style="list-style-type: none"> – 30% Midterm Exam, – 30% Final Exam, – 30% Practicum, – 5% Structured Assignments – 5 % Quiz <p>A : 80 < Final Score ≤ 100 B+ : 75 < Final Score ≤ 80 B : 69 < Final Score ≤ 75 C+ : 60 < Final Score ≤ 69 C : 55 < Final Score ≤ 60 D : 50 < Final Score ≤ 55 D+ : 44 < Final Score ≤ 50 E : 0 < Final Score ≤ 44</p>
<p>Media Employed</p>	<p>Projector and screen, Zoom application, Google Classroom, e-book, WhatsApp Group</p>
<p>Reading List</p>	<p>Main</p>



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1. National Research Council. 2007. Nutrient Requirements of Small Ruminants: Sheep, Goats, Cervids, and New World Camelids. Washington, DC: The National Academies Press.
<https://doi.org/10.17226/11654>.
2. National Research Council. 2001. Nutrient Requirements of Dairy Cattle: Seventh Revised Edition, 2001. Washington, DC: The National Academies Press.
<https://doi.org/10.17226/9825>.
3. National Research Council. 2016. Nutrient Requirements of Beef Cattle: Eighth Revised Edition. Washington, DC: The National Academies Press.

Supporting

4. Ministry of Agriculture, Fisheries and Food & Great Britain. Department of Agriculture and Fisheries for Scotland & Northern Ireland. Dept. of Agriculture (1975). Energy allowances and feeding systems for ruminants. H.M.S.O, London.
5. Preston T R and Leng R A 1987 Matching Ruminant Production Systems with Available Resources in the Tropics and Subtropics. PENAMBUL Books Ltd: Armidale NSW, Australia.
6. INRA feeding system for ruminants. 2018. France.
7. Haresign, W., and Cole, D.J. (Editors). 1990. Recent Advances in Animal Nutrition. Butterworth.