Module designation	Ruminant Nutrition
Semester(s) in which the module is taught	Odd semester
Person responsible for the module	Prof. Dr. Ir. Kustantinah, DEA., IPU.
Language	Bahasa and English
Relation to curriculum	Specialization's Elective
Teaching methods	Classical lecture, discussion, lab works.
Workload (incl. contact hours, self-study hours)	Total workload: 82 hours Contact hours: - Lecture: 12 hours - Academic activity: 14 hours - Practicum: 42 hours Private study: 14 hours
Credit points	1/1
Required and recommended prerequisites for joining the module	None
Module objectives/intended learning outcomes	Course Outcomes (CO): 1. Understand the basic concept of nutrients for ruminants. 2. Understand the definition and function of digestive tract on ruminants, including its development. 3. Understand the process of nutrient digestion in the digestive tract. 4. Understand the absorption of nutrients in ruminants and its influential factors. 5. Understand the metabolism of nutrients and metabolic disorder in ruminant. Expected Learning Outcomes: - Attitudes and Behaviors: 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. (CO1) 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. (CO1) 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. (CO1) 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. (CO1) - Mastery in Sciences: 1. Able to master the current animal science and its application theory. (CO1, CO2, CO3, CO4, CO5) 2. Able to master the livestock production science, animal nutrition and fed science, animal products technology, and

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the livestock social economics in relation to food security and environment. (CO2)
3. Able to master the design, management, and development of livestock research. (CO2)
- Special skills:
1. Able to make innovation in the animal husbandry based on the development of science and technology. (CO2)
2. Able to design interdisciplinary and multidisciplinary research in the animal husbandry. (CO3)
- General skills:
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. (CO1, CO2, CO3, CO4, CO5)
2. 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. (CO3, CO4, CO5)
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<tr><td>Content</td><td>This course is an advanced course of the Basic Animal Nutrition, as well as Animal Nutrition and Feed Science which are given at undergraduate level. The Ruminant Nutrition Course discusses the differences in physiological aspects and digestive anatomy, as well as provide understanding in nutrient metabolism for ruminants. After receiving knowledge, understanding, and skill related to basic aspects about digestive and nutrient metabolism, so it is provided continuation course which are Biochemistry and Animal nutrient physiology on doctoral level.</td></tr>
<tr><td>Exams and assessment formats</td><td>
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<tr><th>Assessment Components</th><th>Course Outcomes (CO)</th><th>Percentage (%)</th></tr>
<tr><td>1. Midterm exam (written test, take home exam, paper assignment)</td><td>CO1, CO2 & CO3</td><td>30</td></tr>
<tr><td>2. Final exam (written test, take home exam, paper assignment)</td><td>CO4 & CO5</td><td>30</td></tr>
<tr><td>3. Short quizzes</td><td>CO1, CO2 & CO3</td><td>10</td></tr>
<tr><td>4. Practicum</td><td>CO4 & CO5</td><td>30</td></tr>
<tr><td colspan="3">Grade and Score</td></tr>
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<tr><th>Grade</th><th>Score</th><th>Grade</th><th>Score</th></tr>
<tr><td>A</td><td>≥80</td><td>C+</td><td>45-49,9</td></tr>
<tr><td>A-</td><td>75-79,9</td><td>C</td><td>40-44,9</td></tr>
<tr><td>A/B</td><td>70-74,9</td><td>C-</td><td>35-39,9</td></tr>
<tr><td>B+</td><td>65-69,9</td><td>C/D</td><td>30-34,9</td></tr>
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	B	60-64,9	D+	25-29,9
	B-	55-59,9	D	20-24,9
	B/C	50-54,9	E	0-19,9
Study and examination requirements	The final grade in the module is composed of 30% performance on Midterm exam, 30% final exam, 10% quiz, 30% practicum. Students must have a final grade of 70% or higher to pass			
Reading list	- Orskov, E.R and M Ryle. 1990. Energy Nutrition in Ruminants. Elsevier Science Publisher. - Ørskov, E.R. 1992. Protein Nutrition in Ruminants. Academic Press INC, UK. - Ørskov, E.R. 2002. Trails and Trials in Livestock Research. IFRU, Macaulay, Aberdeen, UK. - Lassiter, J.W and Hardy M. Edwards, Jr. 1982. Animal Nutrition. Reston Publishing LTD, USA. - Mc Donald, P., Edwards, R.A., Greenhalgh, J.F.D., and Morgan, C.A. 2002. Animal nutrition. Sixth Ed. Prentice Hall, Pearson Education, Edinburgh Gate, Harlow, Essex CM20 2JE, UK. - Richard, O. K. and Church, D.C. 1998. Livestock feeds and feeding. 4th Ed. Prentice Hall, New Jersey, USA.			