MODUL

HANDBOOK

Bachelor of Animal Husbandry
Faculty of Agriculture
Mulawarman University

Table of Contents

Modul Descriptions in First Year (Semester I)

1. Pancasila

<table>
<tr><td>Module name</td><td>Pancasila</td></tr>
<tr><td>Module level</td><td>Bachelor Programme</td></tr>
<tr><td>Code</td><td>MU000063W002</td></tr>
<tr><td>Subtitle, if applicable</td><td></td></tr>
<tr><td>Courses, if applicable</td><td>Reguler</td></tr>
<tr><td>Semester</td><td>I</td></tr>
<tr><td>Person responsible for the module</td><td></td></tr>
<tr><td>Lecturer</td><td></td></tr>
<tr><td>Language</td><td>Indonesian</td></tr>
<tr><td>Relation curriculum</td><td>Compulsory</td></tr>
<tr><td>Type of teaching, contact hours</td><td>Lecture, Lesson</td></tr>
<tr><td rowspan="2">Workload</td><td>Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)</td></tr>
<tr><td>Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester</td></tr>
<tr><td rowspan="2">Credit point</td><td>2 SKS (3.2 ECTS)</td></tr>
<tr><td>Details:
1 Credit = 170 min / week
1 Credit = 170 min x 14 week = 2720 min / semester
1 ECTS = 28 h / semester
1 Credit = 2720/ 60 / 28 = 1.6 ECTS
2 Credit = 1.6 x 2 = 3.2 ECTS</td></tr>
<tr><td>Recommed prerewuisites</td><td></td></tr>
<tr><td>Module Objectives/Intended Learning Outcomes</td><td>Students have to explain Pancasila as the basis of the state, national ideology, philosophical system, ethical system and basic values for the development of science.</td></tr>
<tr><td>Content</td><td>Ths course examines Pancasila in historical studies, as the basis of the state, national ideology, philosophical system, ethical system and basis for the development of science.</td></tr>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
<table>
<tr><th>No.</th><th>Objects of Assessment</th><th>Forms of Assessment</th><th>Quantity (%)</th></tr>
<tr><td>1</td><td>Affective</td><td>Participation</td><td>10</td></tr>
<tr><td>2</td><td>Task</td><td>Study group persentations Q&A</td><td>20</td></tr>
<tr><td>3</td><td>Mid semester test</td><td>Written test</td><td>30</td></tr>
</table>
</td></tr>
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	<table><tr><td>4</td><td>Final semester test</td><td>Written test</td><td>40</td></tr><tr><td colspan="3">Total</td><td>100</td></tr></table>
Media	Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)
Reading List	• Ali, Asa'ad Said. (2009). Negara Pancasila, Jalan Kemaslahatan Bersama. Jakarta: LP3S • Bahar, Saafroedin & Hudawati, Nanie (peny). (1998). Risalah Sidang BPUPKI dan PPKI. Jakarta. Sekretariat Negara RI. • Bourchier, David .(2007). Pancasila Versi Orde Baru dan Asal Muasal Negara Organis. Yogyakarta : Aditya Media dan PSP UGM. • Darmaputra, Eka .(1997). Pancasila antara Identitas dan Modernitas. Tinjauan Etis dan Budaya. Edisi ke-6. Jakarta: Gunung Agung • Darmodihardjo, Darji .(1981). Santiaji Pancasila. Surabaya: Pustaka Nasional • Huzaini, Adian. (2009). Pancasila bukan untuk Menindas Hak Konstitusional Umat Islam. Jakarta: Gema Insani Press. • Kemdiknas. (2010). Pendidikan Budaya dan Karakter Bangsa. Jakarta: Pusat Kurikulum, Balitbang, Kementerian Pendidikan Nasional • Kusuma, Ananda B. 2004. Lahirnya UUD 1945. Jakarta: Fakultas Hukum UI • Latif, Yudi.(2011). Negara Paripurna: Historiositas, Rasionalitas, Aktualitas Pancasila. Jakarta : GramediaPustaka Utama. • LPPKB.(2005). Pedoman Umum Implementasi Pancasila dalam kehidupan Bernegara. Jakarta: Cipta Prima Budaya. • Mubyarto .(Eds) (2004). Pancasila Dasar Negara, UGM dan Jati Diri Bangsa Indonesia . Yogyakarta: Pustep UGM • Panitia Lima. (1977). Uraian Pancasila . Jakarta: Penerbit Mutiara. • Pemerintah RI (2010). Desain Induk Pengembangan Karakter Bangsa 2010-2025. Jakarta : Pemerintah Republik Indonesia. • Pranarka, AMW. (1985). Sejarah Pemikiran Pancasila. Jakarta: CSIS. • PSP UGM & Yayasan Tifa.(Peny) (2008). Pancasila Dasar Negara, Kursus Presiden Soekarno Pancasila. Yogyakarta: Aditya Media. • Santoso, Listiono, dkk. (2003.) (de) konstruksi Ideologi Negara , Suatu Upaya Membaca Ulang Pancasila. Yogyakarta: ning Rat. • Santoso, Listiono, dkk. (2003.) Filsafat Ilmu Sosial, Ikhtiar Awal Pribumisasi Ilmu Ilmu Sosial. Yogyakarta: Gama Media • Silalahi.(2001). Dasar-Dasar Indonesia Merdeka Versi Para Pendiri Negara. Jakarta : Gramedia.

	• Soeprapto, Maria Fajar Indrati. (1998). Ilmu Perundang-undangan. Yogyakarta : Kanisius • Suryono, Hassan, 2016, Pancasila berbasis Riset Tinjauan aspek historis, yuridis dan filosofis, LPPMP UNS. • Suseno, Franz Magnis. (1999). Etika Politik, Prinsip-Prinsip Moral Dasar Kenegaraan Modern. Jakrta : Gramedia • Suwarno, PJ. (1993). Pancasila Budaya Bangsa Indonesia. Penelitian Pancasila dengan Pendekatan Historis, Filosofis dan Sosio Yuridis • Tilaar, HAR. (2007). Mengindonesia. Etnisitas dan Identitas Bangsa Indonesia. Jakarta: Rineka Cipta. • Tim Penerbit Lima (2006) Memaknai Kembali Pancasila. Yogyakarta: Penerbit Lima. • Tim. 2016. Pendidikan Kewarganegaraan. Dirjen Belmawa Kemenristekdikti. • Usman, Oetojo & Alfian (ed). (1991). Pancasila sebagai Ideologi. Jakarta : BP7 Pusat. • Winarno. (2017). Paradigma Baru Pendidikan Pancasila.Jakarta : Bumi Aksara.

2. Bahasa Indonesia/ Indonesian Language

Module name	Indonesian Language
Module level	Bachelor Programme
Code	MU000063W004
Subtitle, if applicable	
Courses, if applicable	Reguler
Semester	I
Person responsible for the module	
Lecturer	
Language	Indonesian
Relation curriculum	Compulsory
Type of teaching, contact hours	Lecture, Lesson
Workload	Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)
	Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester
Credit point	2 SKS (3.2 ECTS)
	Details: 1 Credit = 170 min / week 1 Credit = 170 min x 14 week = 2720 min / semester 1 ECTS = 28 h / semester

<table>
<tr><td></td><td>1 Credit = 2720/ 60 / 28 = 1.6 ECTS
2 Credit = 1.6 x 2 = 3.2 ECTS</td></tr>
<tr><td>Recommed prerequisites</td><td></td></tr>
<tr><td>Module Objectives/Intended Learning Outcomes</td><td>• Students are able to speak standard and non-standard Indonesian
• Students are able to write scientifically according to the rules
• Students are able to produce scientific work in standard systematical Indonesian language</td></tr>
<tr><td>Content</td><td>• Understanding The Basic of Indonesian Language
• Basic Standard of Indonesian Language
• Correct Spelling Rules (EYD) in Indonesian Language
• Adequate scientific reasoning process (inductives reasoning, deductives and fallacious reasoning)
• Understanding How to Arrange Paragraph Correctly (Understanding the use, types and conditions for formation and location of topic sentences)
• Selecting The Topic and The Title of A Writing
• Essay Framework – Forms An Organizational Pattern Framework
• Preparation of Scientific Writing (Paper/Thesis) with Correct Procedure
• Correction Scientific Writing
• Preparing Official Letters Properly and Correctly</td></tr>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
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<tr><th>No.</th><th>Objects of Assessment</th><th>Forms of Assessment</th><th>Quantity (%)</th></tr>
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<tr><td>Media Employed</td><td>Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)</td></tr>
<tr><td>Reading List</td><td>• Akhadiah, Sabarti, Maedar G. Arsjad , Sakura H. Ridwan. 1994. Pembinaan Kemampuan Menulis Bahasa Indonesia. Erlangga.</td></tr>
</table>

	• Arifin, E. Zaenal dan S. Amran Tasa. 1989. Cermat Berbahasa Indonesia untuk Perguruan Tinggi. PT Mediatama Sarana Perkasa. • Darmadi, K. 1996. Meningkatkan Kemampuan Menulis: Panduan untuk Mahasiswa dan Calon Mahasisw, Penerbit Andi. • Depdikbud. 1991. Surat-menyurat dalam Bahasa Indonesia, seri penyuluhan 2, Pusat Pembinaan dan Pengembangan Bahasa. • FP-UNS. 2021. Buku Pedoman Pembuatan Skripsi di masing-masing Fakultas, FP-UNS. • Hanafiah, A. H. 1998 Anda Ingin Jadi Pengarang?. Usaha Nasional. • Keraf, Gorys. 1980. Komposisi: Sebuah Pengantar Kemahiran Bahasa. Nusa Indah 34-51. • Moeliono, Anton. 1988. Komposisi: Sebuah Pengantar Kemahiran Bahasa. Balai Pustaka. • Pedoman Umum Ejaan Bahasa Indonesia yang Disempurnakan • Pedoman Umum Pembentukan Istilah • Razak, A. 1990. Kalimat Efektif, Struktur, Gaya, dan Variasi, PT Gramedia. • Suryawinata, Z. & I. Suyitno. 1991. Bahasa Indonesia untuk Ilmu Pengetahuan & Teknologi, YAS 39-73. • Widyamartaya, A. 1990. Seni Menuangkan Gagasan, Kanisius. Hlm. 7--76.

3. Pengantar Ilmu Peternakan/ Introduction To Animal Husbandry

Module name	Introduction To Animal Husbandry
Module level	Bachelor Programme
Code	190304602W003
Courses, if applicable	Reguler
Semester	I
Person responsible for the module	Ir. Julinda R. Manullang, M.P.
Lecturer	• Ir. Suhardi, S.Pt., M.P., Ph.D. • Dinar Anindyasari, S.Pt., M.Si. • Dr. Nurul Fajrih, S.Pt., M.Si. • Amalina Nur Wahyuningtyas, S.Pt., M.Si.
Language	Indonesian
Relation curriculum	Compulsory
Type of teaching, contact hours	Lecture, Lesson
Workload	Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)

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<tr><td></td><td>Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester</td></tr>
<tr><td>Credit point</td><td>2 SKS (3.2 ECTS)</td></tr>
<tr><td></td><td>Details:
1 Credit = 170 min / week
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<tr><td>Recommed prerequisites</td><td></td></tr>
<tr><td>Module Objectives/Intended Learning Outcomes</td><td><table>
<tr><td>Demonstrate an attitude of responsibility for work in his/her area of expertise independently, norms, and academic ethics.</td></tr>
<tr><td>Able to apply logical, critical, systematic, and innovative thinking in developing or implementing livestock science and technology.</td></tr>
<tr><td>Mastering livestock knowledge and technology, as well as basic livestock skills.</td></tr>
<tr><td>Able to apply basic science, as well as knowledge and technology in the field of animal husbandry based on local resources and wisdom.</td></tr>
<tr><td>Able to carry out planning, development, and innovation in the livestock sector.</td></tr>
</table></td></tr>
<tr><td>Content</td><td>The Introduction to Animal Science course equips students with basic knowledge about the scope of animal husbandry, livestock characteristics, animal anatomy and physiology, livestock genetics and breeding, reproductive cycle, digestive system, animal feed nutrition, diseases in livestock, ruminant farming, monogastric farming, livestock product processing, sustainable livestock systems, and future livestock resources and potential.</td></tr>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
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<tr><th>No.</th><th>Objects of Assessment</th><th>Forms of Assessment</th><th>Quantity (%)</th></tr>
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</table></td></tr>
<tr><td>Media Employed</td><td>Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)</td></tr>
<tr><td>Reading List</td><td>• Luthfi N, Anindyasari D, Ardiansyah, Yuliyanti DY, Suryani</td></tr>
</table>

	HF, Anjani FM, Safitri A, Prima A, Indana K, Khotimah YK, Arisandi D. 2024. Introduction to Animal Husbandry. Publisher PT. Sonpedia Publishing Indonesia. ISBN 978-623-514-085-8. • Saputra H, Daryanto A, Hendrawan DS. 2009. Agribusiness-Oriented Beef Cattle Development Strategy in Aceh Province. Journal of Management & Agribusiness. 6(2). • Susanti I, Daryanto A, Muladno M. 2012. Government Policy in Financing Cattle Breeding Business. Journal of Management & Agribusiness 9(3): 137-145.

4. Ilmu Lingkungan Ternak/ Livestock Environmental Science

Module name	Livestock Environmental Science
Module level	Bachelor Programme
Code	220305612W008
Subtitle, if applicable	
Courses, if applicable	Reguler
Semester	I (First)
Person responsible for the module	Prof. Dr. Ir. Taufan P. Daru, M.Si.
Lecturer	• Prof. Dr. Ir. Taufan P. Daru, M.Si. • Prof. Dr. Hamdi Mayulu, S.Pt., M.Si. • Fandini Meilia Anjani, S.Pt., M.Si. • Dani Nur Arifin, S.Si., M.Si.
Language	Billingual (Indonesian and English)
Relation curriculum	
Type of teaching, contact hours	Lecture, Lesson
Workload	Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)
	Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester
Credit point	2 SKS (3.2 ECTS)
	Details: 1 Credit = 170 min / week 1 Credit = 170 min x 14 week = 2720 min / semester 1 ECTS = 28 h / semester 1 Credit = 2720/ 60 / 28 = 1.6 ECTS 2 Credit = 1.6 x 2 = 3.2 ECTS
Recommed prerequisites	
Module Objectives/Intended Learning Outcomes	1. Students are able to explain the influence of the environment and the ideal form of environment for livestock by adapting to the type of the livestock

<table>
<tr><td></td><td>2. Students are able to explain the interaction between the environment and livestock businesses
3. Students are able to explain and identify environmental factors that can influence a livestock business
4. Students are able to provide examples of the effects on livestock activities and physiology as a result of the influence of environmental changes
5. Students are able to formulate ideal environmental arrangements based on livestock types.</td></tr>
<tr><td>Content</td><td>• Introduction to The Livestock Environment
• Ecology and Ecosystem
• Understanding The Environment
• Environmental Impact on Livestock Businesses
• The Impact of Livestock Businesses on The Environment
• Livestock Interaction with The Environment
• Intraction of Forage Plants with Temperatre on Feed Intake
• The Effects of Heat on Livestock
• Livestock Adaptation to The Environment
• Environment and Ruminant Productivity</td></tr>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
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<tr><th>No.</th><th>Objects of Assessment</th><th>Forms of Assessment</th><th>Quan</th></tr>
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<tr><td>Media Employed</td><td>Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)</td></tr>
<tr><td>Reading List</td><td>• Livestock and Environment (https://www.fao.org/4/i0680e/i0680e04.pdf)
• Ecosystem Ecology 1st Ed (https://shop.elsevier.com/books/ecosystem-ecology/jorgensen/978-0-444-53466- 8)
• A Textbook of Ecology (https://www.researchgate.net/publication/360297819_A_Textbook_Of_Ecology)
• Introduction to Environment and Natural Resources (https://www.anits.edu.in/online_tutorials/es/Unit%201.pdf)</td></tr>
</table>

	• Climate Change and Livestock Production: A Literature Review (https://www.mdpi.com/2073- 4433/13/1/140) • Environmental Effects of the Livestock Industry (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6518108/) • Impacts of climate change on the livestock food supply chain; a review of the evidence (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7938222/) • Climate Change and Livestock Production: A Literature Review (https://www.mdpi.com/2073- 4433/13/1/140) • Environmental impacts of livestock production (https://doi.org/10.1017/S1463981500040930) • The Environmental Impact of Animal Farming(https://www.animalaid.org.uk/wp-content/uploads/2022/06/The-environmental-impact-of-animal-farming-factsheet-web.pdf) • Livestock, livelihoods and the environment: understanding the trade-offs (https://www.sciencedirect.com/science/article/abs/pii/S1877343509000335) • Effects of feed intake and environmental temperature on chick growth and development (https://www.cambridge.org/core/journals/journal-of-agricultural-science/article/abs/effects-of-feed-intake- and-environmental-temperature-on-chick-growth-and-development/D469772A36D3DEB4A65E98B87AD0A93E) • Nutritional Physiology and Biochemistry of Dairy Cattle under the Influence of Heat Stress: Consequences and Opportunities (https://www.mdpi.com/2076-2615/10/5/793) • Resilience of Small Ruminants to Climate Change and Increased Environmental Temperature: A Review (https://www.mdpi.com/2076-2615/10/5/867) • Consequences of Increases in Ambient Temperature and Effect of Climate Type on Digestibility of Forages by Ruminants: A Meta-Analysis in Relation to Global Warming (https://www.mdpi.com/2076- 2615/11/1/172) • A review on dairy cattle farming: Is precision livestock farming the compromise for an environmental, economic and social sustainable production? (https://www.sciencedirect.com/science/article/abs/pii/S0959652620314566) • Environmental factors affecting daily water intake on cattle finished in feedlots (https://academic.oup.com/jas/article-abstract/89/1/245/4764266) • Factors Affecting Beef Cattle Performance and Profitability 1. Precision Farming : (https://www.sciencedirect.com/science/article/pii/S1080744615312201)

	• Adapting Sheep Production to Climate Change (https://link.springer.com/chapter/10.1007/978-981-10-4714-5_1)

5. Matematika Terapan/Applied Mathematics

Module name	Livestock Environmental Science
Module level	Bachelor Programme
Code	220305612W009
Subtitle, if applicable	
Courses, if applicable	Reguler
Semester	I
Person responsible for the module	Arif Ismanto, S.Pt., M.Sc.
Lecturer	• Dr. Muh. Ichsan Haris, S.Pt., MP. • Ardiansyah, S.Pt., M.Si. • Cori Qamara, S.Pt., M.Pt. • Dede Aprylasari, S.Pt., M.Pt.
Language	Billingual (Indonesian and English)
Relation curriculum	
Type of teaching, contact hours	Lecture, Lesson
Workload	Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)
	Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester
Credit point	2 SKS (3.2 ECTS)
	Details: 1 Credit = 170 min / week 1 Credit = 170 min x 14 week = 2720 min / semester 1 ECTS = 28 h / semester 1 Credit = 2720/ 60 / 28 = 1.6 ECTS 2 Credit = 1.6 x 2 = 3.2 ECTS
Recommed prerequisites	
Module Objectives/Intended Learning Outcomes	Demonstrate responsibility for work in his/her area of expertise independently Able to master basic concepts related to applied mathematics in general that are relevant to the field of animal husbandry Able to apply logical, critical, systematic, and innovative thinking in the context of the development or implementation of science and technology that pays attention to and applies humanities values in accordance with their field of expertise

<table>
<tr><td>Content</td><td>The Applied Mathematics course aims to conduct an assessment and provide an understanding of the role of mathematics through learning that is adjusted to the curriculum structure of the animal husbandry field. Mathematics learning consists of: equations and quadratic functions, matrices, rows and series of numbers, geometry, ranked and exponential numbers, fractions, logical reasoning, data presentation and distribution, data centralization, and simple regression correlation. The implementation of assessments is carried out during the learning process with attendance, affective, assignments, quizzes, and exam.</td></tr>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
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<tr><th>No.</th><th>Objects of Assessment</th><th>Forms of Assessment</th><th>Quantity (%)</th></tr>
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<tr><td>Media Employed</td><td>Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)</td></tr>
<tr><td>Reading List</td><td>• Easterling. 2003. Merchandising of Mathematic. New Yersey: Prentice Hall
• Martono. 2008. Linear Programming, Modules 1-9. Jakarta: Open University
• Budnick, Frank S. 1986. Applied Mathematics for business, economics, and the Social Sciences . SecondEdition. Singapore: McGraw-Hill Book</td></tr>
</table>

6. Ilmu Ternak Unggas/Poultry Science

Module name	POULTRY SCIENCE
Module level	Bachelor Programme
Code	220305633W005
Courses, if applicable	Reguler
Semester	I
Person responsible for the module	Ir. Julinda Manullang, S.Pt., M.Si.
Lecturer	Ir. Julinda Manullang, S.Pt., M.Si. Nurul Fajrih H., S.Pt., M.Si.

<table>
<tr><td></td><td>Amani Aldiyanti, S.Pt., M.Pt.
Akhmat Rizkuna, S.Pt., M.Si.</td></tr>
<tr><td>Language</td><td>Indonesian</td></tr>
<tr><td>Relation curriculum</td><td>Compulsory</td></tr>
<tr><td>Type of teaching, contact hours</td><td>Lecture, Lesson</td></tr>
<tr><td rowspan="2">Workload</td><td>Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)</td></tr>
<tr><td>Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester</td></tr>
<tr><td rowspan="2">Credit point</td><td>3 SKS (4.8 ECTS)</td></tr>
<tr><td>Details:
1 Credit = 170 min / week
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1 ECTS = 28 h / semester
1 Credit = 2720/ 60 / 28 = 1.6 ECTS
3 Credit = 1.6 x 3 = 4.8 ECTS</td></tr>
<tr><td>Recommed prerewuisites</td><td></td></tr>
<tr><td>Module Objectives/Intended Learning Outcomes</td><td>Students are expected to:
- Explain various basic concepts related to poultry science
- Understand national and global poultry development and history
- Analyze and apply the basics of poultry science
- Understand and explain poultry diseases
- Apply knowledge in post-harvest poultry product processing</td></tr>
<tr><td>Content</td><td>This course covers the origin and history of poultry, poultry anatomy and physiology, poultry breeding principles, hatchery science and technology, poultry housing and environment, poultry feeding, poultry diseases, and poultry product processing science and technology.</td></tr>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
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</table>

Media	Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)
Reading List	• Ensminger, M.E. (1992). Poultry Science (3rd ed.). Interstate Publisher. • Supriyatna, E. et al. (2005). Ilmu Dasar Ternak Unggas. Penebar Swadaya. • Rose, S.P. (1997). Principles of Poultry Science. CABI. • North, M.O. (1984). Commercial Chicken Production (2nd ed.). AVI Publishing. • NRC (1994). Nutrient Requirement of Poultry (4th Rev. Ed.). NAS. • Blakely, J. & Bade, D.H. (1994). The Science of Animal Husbandry. Gadjah Mada Univ. Press. • Crowford, R.D. (1993). Poultry Biology, in Poultry Breeding and Genetics. Elsevier. • Nugroho & I.G.K. Mayun. (1986). Beternak Burung Puyuh. Eka Offset. • Soeseno, A. (1990). Memelihara dan Beternak Burung Merpati. Penebar Swadaya. • Srigandono, B. (1986). Ilmu Unggas Air. Gadjah Mada Univ. Press. • Other relevant internet sources based on lecture topics.

7. Pangan dan Gizi Hasil ternak/ Food and Nutrition of Livestock Products

Module name	Food and Nutrition of Livestock Products
Module level	Bachelor Programme
Code	220305642W002
Subtitle, if applicable	
Courses, if applicable	Reguler
Semester	I
Person responsible for the module	Dr. Muh. Ichsan Haris, S.Pt., M.P.
Lecturer	1. Dr. Muh. Ichsan Haris, S.Pt., M.P. 2. Arif Ismanto, S.Pt., M.Sc. 3. Ari Wibowo, S.Pt., M.Si., Ph.D. 4. Amalina Nur Wahyuningtyas, S.Pt., M.Si.
Language	Billingual (Indonesian and English)
Relation curriculum	
Type of teaching, contact hours	Lecture, Lesson

<table>
<tr><td rowspan="2">Workload</td><td>Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)</td></tr>
<tr><td>Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester</td></tr>
<tr><td rowspan="2">Credit point</td><td>2 SKS (3.2 ECTS)</td></tr>
<tr><td>Details:
1 Credit = 170 min / week
1 Credit = 170 min x 14 week = 2720 min / semester
1 ECTS = 28 h / semester
1 Credit = 2720/ 60 / 28 = 1.6 ECTS
2 Credit = 1.6 x 2 = 3.2 ECTS</td></tr>
<tr><td>Recommed prerequisites</td><td></td></tr>
<tr><td>Module Objectives/Intended Learning Outcomes</td><td>• Able to demonstrate a responsible attitude in the livestock sector independently.
• Able to assess the implications of developing or implementing livestock science and technology using humanities in accordance with their expertise.
• Mastering livestock knowledge and technology, as well as basic livestock skills.
• Able to apply basic science, as well as livestock knowledge and technology based on local resources and wisdom.
• Able to plan, develop, and innovate in the livestock sector.</td></tr>
<tr><td>Content</td><td>• Scope of food and nutrition in livestock products
• Nutrient classification (macro and micronutrients)
• Anti-nutrient classification
• Water nutrient analysis (nutritional fundamentals)
• Carbohydrates (classification and structure)
• Functions and roles of carbohydrates
• Types and terms of carbohydrates in meat
• Classification of carbohydrates in milk and eggs
• Protein nutrients (structure, types, and functions)
• Amino acids, enzymes, and hormones
• Fat/lipid nutrients (classification and structure)
• Fat derivatives (fatty acids, carotenoids, sterols, and steroids)
• Analysis of livestock products (nutritional classification and nutritional value of meat, milk, and eggs, as well as by-products)
• Evaluation of processed livestock products (nutritional value and nutritional changes in processed meat-milk-egg products (dagsutel)</td></tr>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
<table>
<tr><th>No.</th><th>Objects of Assessment</th><th>Forms of Assessment</th><th>Quantity (%)</th></tr>
</table></td></tr>
</table>

	1	Affective	Participation	10	
	2	Task	Study group persentations Q&A	20	
	3	Mid semester test	Written test	30	
	4	Final semester test	Written test	40	
	Total			100	
Media Employed	Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)				
Reading List	• Lawrie, R. A., & Ledward, D. A. 2006. Lawrie's Meat Science. 7th Edition. Woodhead Publishing. • Fennema, O. R. 2008. Food Chemistry. 4th Edition. CRC Press. • Toldrá, F. 2017. Lawrie's Meat Science: A Comprehensive Review of the Latest Research. Woodhead Publishing. • Hui, Y. H. 2012. Handbook of Meat and Meat Processing. 2nd Edition. CRC Press. • Bender, A. E. 2014. Meat and Meat Products in Human Nutrition in Developing Countries. FAO Food and Nutrition Paper. • Kerry, J. P., & Ledward, D. A. 2009. Improving the Sensory and Nutritional Quality of Fresh Meat. Woodhead Publishing.				

8. Keamanan Pangan Hasil Ternak/ Food Security of Livestock Products

Module name	Food Security of Livestock Products
Module level	Bachelor Programme
Code	
Subtitle, if applicable	
Courses, if applicable	Reguler
Semester	I
Person responsible for the module	Arif Ismanto, S.Pt., M.Sc.
Lecturer	1. Arif Ismanto, S.Pt., M.Sc. 2. Ari Wibowo, S.Pt., M.Si., Ph.D. 3. Amalina Nur Wahyuningtyas, S.Pt., M.Si. 4. Andi Nurmasytha, S.Pt., M.Si.
Language	Billingual (Indonesian and English)
Relation curriculum	
Type of teaching, contact hours	Lecture, Lesson
Workload	Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)

	Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester
Credit point	2 SKS (3.2 ECTS)
	Details: 1 Credit = 170 min / week 1 Credit = 170 min x 14 week = 2720 min / semester 1 ECTS = 28 h / semester 1 Credit = 2720/ 60 / 28 = 1.6 ECTS 2 Credit = 1.6 x 2 = 3.2 ECTS
Recommed prerequisites	
Module Objectives/Intended Learning Outcomes	1. shows a responsible attitude towards work in their field of expertise independently. 2. Internalizes the spirit of independence, struggle, and entrepreneurship. 3. Able to demonstrate independent, quality, and measurable performance. 4. Capable of making appropriate decisions in the context of problem-solving in their field of expertise based on the analysis of information and data. 5. Able to be responsible for achieving group work outcomes and supervising and evaluating the completion of tasks assigned to workers under their responsibility.
Content	• Introduction to food security • The concept of food security • Food security and its dangers to food • Food security and its dangers as well as health risks • Factors affecting food security • Systems and programs for food security in the production chain • Systems and programs for food security in the production chain • Types of hazards in livestock products and the risks of food insecurity from livestock products and preventive measures. • Types of hazards in eggs and the risks of food insecurity from livestock products and preventive measures. • Systematic management of food security • Overview of a worldclass food safety programme • Building the foundations of a world-class food safety management programme: essential steps and practices • Formalised prerequisite programmes in practice • Food security retail products from livestock • Regulations and food security issues
Study and Examination Requirements and Forms of Examination	Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)

No.	Objects of Assessment	Forms of Assessment	Quantity (%)

	1	Affective	Participation	10
	2	Task	Study group persentations Q&A	20
	3	Mid semester test	Written test	30
	4	Final semester test	Written test	40
	Total			100
Media Employed	Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)			
Reading List	• Lawrie, R. A., & Ledward, D. A. 2006. Lawrie's Meat Science. 7th Edition. Woodhead Publishing. • Fennema, O. R. 2008. Food Chemistry. 4th Edition. CRC Press. • Toldrá, F. 2017. Lawrie's Meat Science: A Comprehensive Review of the Latest Research. Woodhead Publishing. • Hui, Y. H. 2012. Handbook of Meat and Meat Processing. 2nd Edition. CRC Press. • Bender, A. E. 2014. Meat and Meat Products in Human Nutrition in Developing Countries. FAO Food and Nutrition Paper. • Kerry, J. P., & Ledward, D. A. 2009. Improving the Sensory and Nutritional Quality of Fresh Meat. Woodhead Publishing.			

9. Manajemen Pastura/ Forage Crop Science

Module name	Forage Crop Science
Module level	Bachelor Program
Code	220305623W008
Subtitle, if applicable	
Courses, if applicable	Reguler
Semester	I
Person responsible for the module	Prof. Dr. Ir. Taufan P. Daru, M.Si.
Lecturer	• Prof. Dr. Ir. Taufan P Daru, MP • Apdila Safitri, S.Pt. M.Si. • Ardiansyah, S.Pt. M.Si.
Language	Bilingual (Indonesian and English)
Relation curriculum	
Type of teaching, contact hours	Lecture, Lesson
Workload	2720 minutes / semester (2 credits theory + 1 credit practicum = 4.8 ECTS)
	Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester
Credit point	3 SKS (4.8 ECTS)

<table>
<tr><td></td><td>1 Credit = 170 min / week
1 Credit = 170 min × 14 weeks = 2,720 min / semester
1 ECTS = 28 hours / semester
1 Credit = 2,720 ÷ 60 ÷ 28 = 1.6 ECTS
3 Credits = 1.6 × 3 = 4.8 ECTS</td></tr>
<tr><td>Recommed prerequisites</td><td></td></tr>
<tr><td>Module Objectives/Intended Learning Outcomes</td><td>• Explain the concept and utilization of various types of forage crops.
• Differentiate various types of forage crops based on their morphology.
• Describe the relationship between climate, soil, water, and energy cycles on forage crop growth and production.
• Cultivate forage crops and control pests and diseases.
• Preserve forage crops.
• Explain the latest technological developments in the forage crop sector.</td></tr>
<tr><td>Content</td><td>• Types of forage plants
• Morphology of Grasses and Legumes
• Environmental factors affecting growth
• Physiology of forage plants
• Nitrogen assimilation
• Forage crop cultivation techniques
• Plant preservation technology</td></tr>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
<table>
<tr><td>No.</td><td>Objects of Assessment</td><td>Forms of Assessment</td><td>Quantity (%)</td></tr>
<tr><td>1</td><td>Affective</td><td>Participation</td><td>10</td></tr>
<tr><td>2</td><td>Task</td><td>Study group persentations Q&A</td><td>20</td></tr>
<tr><td>3</td><td>Practical</td><td>Practical and Draft</td><td>10</td></tr>
<tr><td>3</td><td>Mid semester test</td><td>Written test</td><td>20</td></tr>
<tr><td>4</td><td>Final semester test</td><td>Written test</td><td>40</td></tr>
<tr><td colspan="3">Total</td><td>100</td></tr>
</table></td></tr>
<tr><td>Media Employed</td><td>Laptop/Mobile/Zoom Meeting for online lecture/Mulawarman Online Learning System (MOLS), LCD, White Board, and Forage Plant Collection Garden</td></tr>
<tr><td>Reading List</td><td>• Arifin. 1989. Dasar Klimatologi Pertanian. Fakultas Pertanian Universitas Brawijaya, Malang.
• Arsyad. 1994. Konservasi Tanah dan Air. IPB Press, Bogor.</td></tr>
</table>

	• Euroconsult. 1999. Agriculture Compendium, For Rural Development in the Tropics and Sub Tropics. Elsevier, Amsterdam. • FAO and IIRR. 1995. Resources Management for Upland Areas in Southeast Asia. Silang-Cavite, Philippines. • Jumin, H.B. 1994. Dasar Agronomi. Raja Grafindo Persada, Jakarta. • Jumin, H.B. 2002. Agroekologi, Suatu Pendekatan Fisiologis. Raja Grafindo Persada, Jakarta. • Sri Setyati Harjadi. 2003. Dasar-dasar Agronomi. Gramedia, Jakarta. • Suhardjono.1994. Kebutuhan Air Tanaman. Institut Teknologi Nasional, Malang. • Suwardjo. 1989. Pelestarian lahan. Balitbang Pertanian. Puslitbang Tanaman Pangan, Bogor. • Tabbal. 1999. Upland Crop Irrigation. Paper for Irrigation Water Management. IRRI Los banos, Philippines. • Tania June. 2004. Ekofisiologi Tanaman. Materi Pelatihan Agroklimatologi. FMIPA IPB, Bogor. • Yustika Baharsyah. 2004. Hubungan Cuaca dan Tanaman. Materi Pelatihan Agroklimatologi. FMIPA IPB, Bogor. • Yustika Baharsyah. 2004. Peranan Klimatologi Dalam Pembangunan Pertanian. Materi Pelatihan Agroklimatologi. FMIPA IPB, Bogor • Miller and Donahue. 1990. Soils. An Introduction to Soil and Plants Growth. Prentice Hall, New Jersey USA. • Murty and Takeuchi. 1996. Land and Water Development for Agriculture in the Asia Pacific. Science Publisher Inc, Lebanon, New Hampshire USA. • Rismunandar. 1999. Air, Fungsi dan Kegunaannya bagi Pertanian. Sinar Baru, Bandung. • Rozari. 1993. Pengelolaan tata Air dan Pemanfaatannya. Perhimpi-Balitbang Pertanian, Jakarta. • Salisburry and Rose. 1992. Plant Physiology. Wodsworth Publishing Company, Belmont-California USA. • Schwab, et al. 1997. Soil Physics. John Willey and Sons, Singapore. • Schwab, et al. 1997. Soil and Water Conservation. John Willey and Sons, Singapore.

10. Dasar Teknologi Hasil Ternak/ Basic Livestock Technology

Module name	Basic Livestock Technology
Module level	Bachelor Programme
Code	190304603W015
Subtitle, if applicable	
Courses, if applicable	Reguler
Semester	I (First)

Person responsible for the module	Arif Ismanto, S.Pt., M.Sc.
Lecturer	1. Arif Ismanto, S.Pt., M.Sc. 2. Ari Wibowo, S.Pt., M.Si., Ph.D. 3. Dr. Muh. Ichsan Haris, S.Pt., M.P. 4. Amalina Nur Wahyuningtyas, S.Pt., M.Si.
Language	Billingual (Indonesian and English)
Relation curriculum	
Type of teaching, contact hours	Lecture, Lesson
Workload	Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)
	Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester
Credit point	3 SKS (3.2 ECTS)
	Details: 1 Credit = 170 min / week 1 Credit = 170 min x 14 week = 2720 min / semester 1 ECTS = 28 h / semester 1 Credit = 2720/ 60 / 28 = 1.6 ECTS 2 Credit = 1.6 x 2 = 3.2 ECTS
Recommed prerequisites	
Module Objectives/Intended Learning Outcomes	• Demonstrate a sense of responsibility for work in their field of expertise, independently, adhering to academic norms and ethics. • Able to apply logical, critical, systematic, and innovative thinking in developing or implementing livestock technology. • Master livestock knowledge and technology, as well as basic livestock technology skills. • Able to apply basic science, as well as livestock knowledge and technology based on local resources and wisdom. • Able to plan and innovate in the field of livestock technology.
Content	• Introduction and Terms in Animal Husbandry Technology • Muscle Cell Growth and Development • Slaughter • Meat Composition and Nutritional Value • Fresh Eggs and Egg Quality Testing • Egg Products • Definition and Chemical Composition of Milk (Fat, Fat Oxidation, Milk Protein) • Lactose, Vitamins, and Minerals • Dairy Products (Pasteurization, Sterilization, Powdered Milk, Yogurt) • Dairy Products (Cheese, Ice Cream, Sweetened Condensed Milk, Butter) • Skin (Skin Histology) and Basics of Skin Preservation

<table>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
<table>
<tr><th>No.</th><th>Objects of Assessment</th><th>Forms of Assessment</th><th>Quantity (%)</th></tr>
<tr><td>1</td><td>Affective</td><td>Participation</td><td>10</td></tr>
<tr><td>2</td><td>Task</td><td>Study group persentations Q&A</td><td>20</td></tr>
<tr><td>3</td><td>Mid semester test</td><td>Written test</td><td>30</td></tr>
<tr><td>4</td><td>Final semester test</td><td>Written test</td><td>40</td></tr>
<tr><td colspan="3">Total</td><td>100</td></tr>
</table></td></tr>
<tr><td>Media Employed</td><td>Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)</td></tr>
<tr><td>Reading List</td><td>
Muhammad Irfan Said. 2018. Histology and Basic Science of Livestock Leather Preservation. Yogyakarta: Deepublish. ISBN 978-602-475-501-0.
Rumondor DBJ, Tamasoleng M. 2020. Science of Livestock Product Processing. Manado: Unsrat Press. ISBN 978-623-7968-12-2.
Susilo A, Rosyidi D, Jaya F, Apriliyani MW. 2019. Basic Teaching Materials for Livestock Product Technology. Malang: UB Press. ISBN 978-602-432-698-2.
Wahyuningtyas AN, Taufik E, Soenarno MS, Sulfiar AET, Atmoko BA, Nugrogo T. 2023. Comparison of Physicochemical, Microbiological, and Organoleptic Characteristics of Dali, Dangke, and Fresh Cheese from Goat Milk. Journal of Animal and Veterinary Science. 28(4): 227-236.
Wulandari Z. 2004. Physicochemical and Total Microbial Properties of Salted Duck Eggs Resulting from Different Salting Techniques and Storage Lengths. Media Peternakan. 27(2).
Wulandari Z, Taufik E, Syarif M. 2017. Study of the Quality of Pasteurized Milk Products Resulting from the Application of a Cooling Chain. Journal of Animal Production Science and Technology. 5(3): 94-100.
</td></tr>
</table>

Modul Descriptions in First Year (Semester II)

1. Bahasa Inggris/ English (English Academic Purpose)

Module name	English (English Academic Purpose)
Module level	Bachelor Programme
Code	220305623W004
Courses, if applicable	Reguler
Semester	II

<table>
<tr><td>Person responsible for the module</td><td>Ari Wibowo, S.Pt., M.Si., Ph.D.</td></tr>
<tr><td>Lecturer</td><td>• Ir. Suhardi, S.Pt., MP., Ph.D.
• Cori Qamara, S.Pt., M.Pt.
• Novemia Fatmarischa, S.Pt., M.Si</td></tr>
<tr><td>Language</td><td>Indonesian</td></tr>
<tr><td>Relation curriculum</td><td>Compulsory</td></tr>
<tr><td>Type of teaching, contact hours</td><td>Lecture, Lesson</td></tr>
<tr><td rowspan="2">Workload</td><td>Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)</td></tr>
<tr><td>Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester</td></tr>
<tr><td rowspan="2">Credit point</td><td>3 SKS (4.8 ECTS)</td></tr>
<tr><td>Details:
1 Credit = 170 min / week
1 Credit = 170 min x 14 week = 2720 min / semester
1 ECTS = 28 h / semester
1 Credit = 2720/ 60 / 28 = 1.6 ECTS
3 Credit = 1.6 x 3 = 4.8 ECTS</td></tr>
<tr><td>Recommed prerewuisites</td><td></td></tr>
<tr><td>Module Objectives/Intended Learning Outcomes</td><td>To become acquainted with key vocabulary commonly used in animal sciences and apply it effectively in scientific writing and oral communication.
To recognize the most frequent grammatical structures in academic English, enhancing reading comprehension and scientific writing skills.
To familiarize oneself with English writing styles prevalent in animal science literature and use them accurately in scientific writing.
To become acquainted with key vocabulary commonly used in animal sciences and apply it effectively in scientific writing and oral communication.</td></tr>
<tr><td>Content</td><td>This course is structured as a series of lessons that encompass writing, reading, speaking, and listening skills, focusing on a range of topics such as Biology, Animal Anatomy, Biochemistry, Physiology, Nutrition, Genetics, Breeding, Reproduction and socio-economics</td></tr>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
<table>
<tr><th>No.</th><th>Objects of Assessment</th><th>Forms of Assessment</th><th>Quantity (%)</th></tr>
<tr><td>1</td><td>Affective</td><td>Participation</td><td>10</td></tr>
<tr><td>2</td><td>Task</td><td>Study group persentations Q&A</td><td>20</td></tr>
<tr><td>3</td><td>Mid semester test</td><td>Written test</td><td>30</td></tr>
</table></td></tr>
</table>

	4	Final semester test	Written test	40
	Total			100
Media	Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)			
Reading List	• Flick, U. (2018). *An Introduction to Qualitative Research*. SAGE Publications. • Hofmann, A. H. (2013). *Scientific Writing and Communication: Papers, Proposals, and Presentations*. Oxford University Press.			

2. Anatomi dan Fisiologi Ternak/ Anatomy and Physiology of Livestock

Module name	Anatomy and Physiology of Livestock	
Module level	Bachelor Programme	
Code	220305623W005	
Courses, if applicable	Reguler	
Semester	II	
Person responsible for the module	Dr. Anhar Faisal Fanani, S.Pt., M.Si.	
Lecturer	• Nurliani Erni, S.Pt., M.Si. • Novemia Fatmarisha, S.Pt., M.Si. • Amalina Nur Wahyuningtyas, S.Pt., M.Si.	
Language	Indonesian	
Relation curriculum	Compulsory	
Type of teaching, contact hours	Lecture, Lesson	
Workload	Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)	
	Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester	
Credit point	3 SKS (4.8 ECTS)	
	Details: 1 Credit = 170 min / week 1 Credit = 170 min x 14 week = 2720 min / semester 1 ECTS = 28 h / semester 1 Credit = 2720/ 60 / 28 = 1.6 ECTS 3 Credit = 1.6 x 3 = 4.8 ECTS	
Recommed prerewuisites		
Module Objectives/Intended Learning Outcomes		Contributing to improving the quality of life in society, nation, state, love for the homeland, nationalism, culture, views, religion, obedience to the law and the advancement of civilization based on Pancasila and having social sensitivity and concern for society and the environment.

<table>
<tr><td></td><td></td><td>Able to study the implications of the development or implementation of science and technology that pays attention to and applies humanities values in accordance with their expertise based on scientific rules, procedures and ethics in order to produce solutions, ideas, designs or art criticism, compile scientific descriptions of the study results in the form of thesis or final project reports, and upload them on the university website.</td><td></td></tr>
<tr><td></td><td></td><td>Mastering science and technology, applying science and technology, following the development of science and technology, basic skills in animal husbandry, and providing solutions to problems in the field of animal husbandry.</td><td></td></tr>
<tr><td></td><td></td><td>Able to develop livestock resources based on the wisdom of local poultry livestock.</td><td></td></tr>
<tr><td>Content</td><td colspan="3">The Anatomy of Animal Physiology course discusses anatomical structure (shape, location, and relationship of organs) and physiological function (work processes of organs and body systems) in ruminant, non-ruminant and poultry livestock. The material includes the analysis of major organ systems such as skeletal and muscular systems, nervous and endocrine systems, immune system, digestive system, respiratory system, reproductive system, excretory system, circulation, integument systems and thermoregulatory systems, as well as their applications in increasing livestock productivity (milk, meat, eggs).</td></tr>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td colspan="3">Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
<table>
<tr><th>No.</th><th>Objects of Assessment</th><th>Forms of Assessment</th><th>Quantity (%)</th></tr>
<tr><td>1</td><td>Affective</td><td>Participation</td><td>10</td></tr>
<tr><td>2</td><td>Task</td><td>Study group persentations Q&A</td><td>20</td></tr>
<tr><td>3</td><td>Mid semester test</td><td>Written test</td><td>30</td></tr>
<tr><td>4</td><td>Final semester test</td><td>Written test</td><td>40</td></tr>
<tr><td colspan="3">Total</td><td>100</td></tr>
</table></td></tr>
<tr><td>Media</td><td colspan="3">Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)</td></tr>
<tr><td>Reading List</td><td colspan="3">

Frandson, R. D., et al. (2009). Anatomy and Physiology of Farm Animals. 7th ed. Wiley-Blackwell.
Swenson, M. J. (2014). Dukes' Physiology of Domestic Animals. 12th ed. Cornell University Press.
Ensminger, M. E. (2015). Animal Science: Biology, Care, and Production. Prentice Hall.

</td></tr>
</table>

	• Dridi, S. (2020). *Heat stress and poultry welfare: Physiological and metabolic responses*. *Poultry Science*, 99(1), 378–389

3. Mikrobiologi Umum/ General Microbiology

Module name	General Microbiology
Module level	Bachelor Programme
Code	220305623W007
Courses, if applicable	Reguler
Semester	II
Person responsible for the module	Dr. Nurul Fajrih H, S.Pt., M.Si.
Lecturer	• Amalina Nur Wahyuningtyas, S.Pt., M.Si. • Amani Aldiyanti, S.Pt., M.Pt. • Dani Nur Arifin, S.Si., M.Si.
Language	Indonesian
Relation curriculum	Compulsory
Type of teaching, contact hours	Lecture, Lesson
Workload	Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)
	Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester
Credit point	3 SKS (4.8 ECTS)
	Details: 1 Credit = 170 min / week 1 Credit = 170 min x 14 week = 2720 min / semester 1 ECTS = 28 h / semester 1 Credit = 2720/ 60 / 28 = 1.6 ECTS 3 Credit = 1.6 x 3 = 4.8 ECTS
Recommed prerewuisites	
Module Objectives/Intended Learning Outcomes	Able to improve the quality of community life based on Pancasila and have social sensitivity and concern for the community and the environment for the advancement of knowledge and technology of livestock. Able to examine the implications of the development or implementation of animal science and technology that applies humanities in accordance with their expertise. Mastering livestock knowledge and technology, as well as basic livestock skills. Able to apply basic science, as well as knowledge and technology in the field of animal husbandry based on local resources and wisdom.
Content	The General Microbiology course is a branch of biological science that studies microorganisms, including bacteria, viruses, fungi, and protozoa. This course covers topics such as the morphology and physiology of microorganism growth, microbial genetics, bacterial metabolism, host

<table>
<tr><td></td><td>hub – parasite (microbes), control of microorganisms, enterobacteria, Gram Negative non-enterobect bacteria, non-spore Gram Positive bacteria, fungi base, and pathogenic fungi. In addition, students will also learn basic laboratory techniques, such as microbial isolation, identification, and control.</td></tr>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
<table>
<tr><td>No.</td><td>Objects of Assessment</td><td>Forms of Assessment</td><td>Quantity (%)</td></tr>
<tr><td>1</td><td>Affective</td><td>Participation</td><td>10</td></tr>
<tr><td>2</td><td>Task</td><td>Study group persentations Q&A</td><td>20</td></tr>
<tr><td>3</td><td>Mid semester test</td><td>Written test</td><td>30</td></tr>
<tr><td>4</td><td>Final semester test</td><td>Written test</td><td>40</td></tr>
<tr><td colspan="3">Total</td><td>100</td></tr>
</table></td></tr>
<tr><td>Media</td><td>Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)</td></tr>
<tr><td>Reading List</td><td>

Black, J. G., & Black, L. J. 2018. Microbiology: Principles and Explorations (10th ed.). Wiley.
Atlas, R. M. 1997. Principles of Microbiology (2nd ed.). McGraw-Hill.
Pelczar, M. J., Chan, E. C. S., & Krieg, N. R. 2005. Microbiology: Concepts and Applications. McGraw-Hill.
Willey, J. M., Sherwood, L. M., & Woolverton, C. J. 2019. Prescott's Principles of Microbiology (2nd ed.). McGraw-Hill.
Madigan, M. T., Bender, K. S., Buckley, D. H., Sattley, W. M., & Stahl, D. A. 2020. Brock Biology of Microorganisms (16th ed.). Pearson.

</td></tr>
</table>

4. Ilmu Nutrisi Ternak/ Animal Nutrition Science

Module name	Animal Nutrition Science
Module level	Bachelor Programme
Code	190304603W014
Courses, if applicable	Reguler
Semester	II
Person responsible for the module	Prof. Dr.Ir.Taufan Purwokusumaning Daru,MP
Lecturer	• Ir. Julinda R.Manullang, MP • Service Simanjuntak,S.Pt.,M.Si, • Apdila Safitri,S.Pt.,M.Si
Language	Indonesian
Relation curriculum	Compulsory

<table>
<tr><td>Type of teaching, contact hours</td><td>Lecture, Lesson</td></tr>
<tr><td rowspan="2">Workload</td><td>Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)</td></tr>
<tr><td>Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester</td></tr>
<tr><td rowspan="2">Credit point</td><td>2 SKS (3.2 ECTS)</td></tr>
<tr><td>Details:
1 Credit = 170 min / week
1 Credit = 170 min x 14 week = 2720 min / semester
1 ECTS = 28 h / semester
1 Credit = 2720/ 60 / 28 = 1.6 ECTS
2 Credit = 1.6 x 2 = 3.2 ECTS</td></tr>
<tr><td>Recommed prerewuisites</td><td></td></tr>
<tr><td>Module Objectives/Intended Learning Outcomes</td><td>Students are able to grasp the basic concepts of livestock nutrition science which includes nutrition
and the nutritional standards required by livestock.</td></tr>
<tr><td>Content</td><td>The material given in this course includes the basic concepts of nutrition science and terms in feed nutrition, proximate and soest distribution of feed nutrients, functions of water, proteins, vitamins, minerals, and carbohydrates in the body of livestock</td></tr>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
<table>
<tr><th>No.</th><th>Objects of Assessment</th><th>Forms of Assessment</th><th>Quantity (%)</th></tr>
<tr><td>1</td><td>Affective</td><td>Participation</td><td>10</td></tr>
<tr><td>2</td><td>Task</td><td>Study group persentations Q&A</td><td>20</td></tr>
<tr><td>3</td><td>Mid semester test</td><td>Written test</td><td>30</td></tr>
<tr><td>4</td><td>Final semester test</td><td>Written test</td><td>40</td></tr>
<tr><td colspan="3">Total</td><td>100</td></tr>
</table></td></tr>
<tr><td>Media</td><td>Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)</td></tr>
<tr><td>Reading List</td><td>-</td></tr>
</table>

5. Dasar Manajemen Agribisnis dan Kewirausahaan/Fundamentals of Agribusiness Management and Entrepreneurship

Module name	Fundamentals of Agribusiness Management and Entrepreneurship
Module level	Bachelor Programme
Code	220305622W002
Courses, if applicable	Reguler
Semester	II

Person responsible for the module	Prof. Dr. Hamdi Mayulu, S.Pt., M.Si.
Lecturer	• Dinar Anindyasari, S.Pt., M.Si. • Dede Aprylasari, S.Pt., M.Pt. • Cori Qamara, S.Pt., M.Pt. • I Putu Gede Didik Widiarta, S.Pt., M.Pt.
Language	Billingual (Indonesian and English)
Relation curriculum	
Type of teaching, contact hours	Lecture, Lesson
Workload	Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)
	Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester
Credit point	2 SKS (3.2 ECTS)
	Details: 1 Credit = 170 min / week 1 Credit = 170 min x 14 week = 2720 min / semester 1 ECTS = 28 h / semester 1 Credit = 2720/ 60 / 28 = 1.6 ECTS 2 Credit = 1.6 x 2 = 3.2 ECTS
Recommed prerequisites	
Module Objectives/Intended Learning Outcomes	• Able to understand and explain the concepts and objectives of feasibility studies and project evaluation in the context of animal husbandry, as well as their role in agribusiness project management. • Able to analyze project feasibility from various aspects, including financial, market, and technical analysis, to assess the success of livestock projects. • Able to develop and plan business strategies and livestock project development based on feasibility evaluation results and project risk analysis. • Able to evaluate livestock projects using various evaluation methods, such as Net Present Value (NPV) and Internal Rate of Return (IRR), and provide responsible and sustainable project development recommendations. • Able to identify, manage, and mitigate risks associated with livestock projects, as well as conduct monitoring and evaluation to ensure successful project implementation.
Content	• Management Concepts and the Role of Managers in Agribusiness • Managers and the External Environment of Agribusiness Organizations • Planning in Agribusiness Management • Organizing and Organizational Structure in Agribusiness • Coordination and Span of Control Management in Agribusiness • Authority, Delegation, and Decentralization in Agribusiness Organizations

<table>
<tr><td></td><td>

Decision-Making in Agribusiness Management
Compiling and Managing Human Resources in Agribusiness
Motivation and Performance Improvement in Agribusiness
Communication in Agribusiness Organizations and Enterprises
Leadership in Agribusiness Management and Entrepreneurship
Conflict Management in Agribusiness Organizations and Enterprises
Supervision and Evaluation Strategies in Agribusiness Management
Integration of Agribusiness Management and Entrepreneurship in Business Development

</td></tr>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
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<tr><th>No.</th><th>Objects of Assessment</th><th>Forms of Assessment</th><th>Quantity (%)</th></tr>
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<tr><td colspan="3">Total</td><td>100</td></tr>
</table>
</td></tr>
<tr><td>Media EmILOyed</td><td>Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)</td></tr>
<tr><td>Reading List</td><td>

Van den Ban, A.W., & Hawkins, H.S. (2006). Penyuluhan Pertanian. Penerbit Kanisius. Yogyakarta.
Rogers, E.M. (2003). Diffusion of Innovations (5th ed.). Free Press. New York.
Ibrahim, S.M., & Sutrisno. (2018). Pengantar Penyuluhan Pertanian: Teori dan Praktik. Penerbit Alfabeta. ISBN 978-602-4223-45-2.
Zulfikar Zahri & Agus M. Indrawati. (2021). Komunikasi Pembangunan Peternakan: Teori, Praktik, dan Evaluasi. Penerbit Gama Press. ISBN 978-602-4321-76-3.
Sulaiman, R. & Hall, A. (2002). Beyond Technology Dissemination: Can Indian Agricultural Extension Reinvent Itself? NCAP Policy Brief No. 16.
Direktorat Jenderal Peternakan. (2005). Kebijakan Penyuluhan Peternakan di Indonesia. http://www.ditjenpeternakan.go.id.
Mubyarto, 2000. Penyuluhan Pertanian: Suatu Perspektif Sosial Ekonomi. Penerbit Kanisius. Yogyakarta.

</td></tr>
</table>

	• Meiranto, D. dan Yani, S., 2016. Komunikasi Efektif dalam Penyuluhan Peternakan. Penerbit Gadjah Mada University Press. Yogyakarta. • Budi W., 2010. Penyuluhan Pertanian dan Pemberdayaan Petani. Fakultas Ekonomi, Universitas Sebelas Maret. Surakarta. • Rohmawati, M. dan Akbar, H., 2012. Model Penyuluhan dan Penyebaran Teknologi Peternakan di Pedesaan. Jurnal Ilmiah Peternakan, 8(4): 189-205. • Sutanto, P., 2008. Sistem Informasi Penyuluhan Peternakan. Penerbit Lembaga Penerbitan Fakultas Pertanian UNS. Surakarta. • Kotler, P., 2010. Manajemen Pemasaran dalam Konteks Pembangunan Pertanian. Penerbit Erlangga. Jakart. • Muhammad, A., 2003. Penyuluhan Pertanian dalam Pembangunan Pedesaan. Penerbit Sinar Grafika. Jakarta. • Widodo, H. dan Rina, A., 2014. Penyuluhan Peternakan: Teori dan Aplikasi di Lapangan. Penerbit Andi. Yogyakarta. • Gustiawan, S., 2015. Pengembangan Penyuluhan Peternakan melalui Media Komunikasi. Universitas Pendidikan Indonesia. Bandung.

Modul Descriptions in Second Year (Semester III)

1. Ilmu Kesehatan Ternak/ Animal Health Sciences

Module name	POULTRY SCIENCE
Module level	Bachelor Programme
Code	220305633W007
Courses, if applicable	Reguler
Semester	III
Person responsible for the module	drh. Khoiru Indana, M.Si
Lecturer	• Ari Wibowo, S.Pt., M.Si., Ph.D • Novemia Fatmarisha, S.Pt., M.Si • Karenina Dwi Yulianti, S.Pt., M.Si.
Language	Indonesian
Relation curriculum	Compulsory
Type of teaching, contact hours	Lecture, Lesson
Workload	Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)
	Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester
Credit point	3 SKS (4.8 ECTS)
	Details: 1 Credit = 170 min / week 1 Credit = 170 min x 14 week = 2720 min / semester

<table>
<tr><td></td><td>1 ECTS = 28 h / semester
1 Credit = 2720/ 60 / 28 = 1.6 ECTS
3 Credit = 1.6 x 3 = 4.8 ECTS</td></tr>
<tr><td>Recommed prerewuisites</td><td></td></tr>
<tr><td>Module Objectives/Intended Learning Outcomes</td><td>
<table>
<tr><td>Contribute to improving the quality of life society, nation, state, and the progress of civilization based on Pancasila.</td></tr>
<tr><td>Demonstrate an attitude of responsibility for work in their field of expertise independently, academic norms and ethics.</td></tr>
<tr><td>Able to examine the implications of the development or implementation of science and technology that pays attention to and applies humanities values in accordance with their expertise based on scientific rules, procedures and ethics in the ranks
Produce solutions, ideas, designs or art criticism, compile scientific descriptions of their studies in the form of a thesis or final project report, and upload them on the university's website.</td></tr>
<tr><td>Mastering science and technology, applying science and technology, following the development of science and technology, basic skills in animal husbandry, and providing solutions to problems in the field of animal husbandry.</td></tr>
</table>
</td></tr>
<tr><td>Content</td><td>Livestock health science courses are carried out which discuss livestock health, both in poultry and mammalian livestock (slaughtered and dairy livestock, small and large). Various perspectives are discussed in this course: disease vectors, clinical symptoms of disease, pathogenesis, and disease control, both by way of disease diagnosis, disease prevention, through biosecurity efforts, and disease treatment both with chemical and traditional medicines.</td></tr>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
<table>
<tr><th>No.</th><th>Objects of Assessment</th><th>Forms of Assessment</th><th>Quantity (%)</th></tr>
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<tr><td>4</td><td>Final semester test</td><td>Written test</td><td>40</td></tr>
<tr><td colspan="3">Total</td><td>100</td></tr>
</table>
</td></tr>
</table>

Media	Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)
Reading List	• Allen Andrew, 2002. Diagnostic Mikrobiology. Eleventh Edition. Mosby, Inc. • Hariadi M, Soehardjo H, Budi U, Rimayanti, Indah N. R, Hermin R. 2011. Neighborhood Science in Livestock. Publisher : AUP, 2009. • Kusnoto, Setiawan K, Sri M . S. 2015. Textbook of Helminin Disease Science, Veterinary Medicine. Publisher : Zifatama, 2015. • Lucia T.S, Nunuk D, Endang S, Mufasirin. 2012. Veterinary Protozoology Textbook. Publisher : AUP, 2012. • Pelczar, Jr., Michael J., and E. C. S. Chan. 2007. Fundamentals of Microbiology. Jakarta: University of Indonesia Press. • Rantam, Fedik A, Ferdiansyah, Puirwati. 2003. Immunological Methods. 979-8990-92-7. Publisher : AUP, 2003. • Rantam, Fedik A. 2005. Virology. 979-3557-32-X. Aup Publishers, 2005. • Rochiman S, Agus S, M Yunus. 2014. Veterinary Arthropod Science Textbook. Publisher : AUP, 2014 • Subronto, Ida Tjahajati. 2001. Animal Disease Science II, First Edition. Yogyakarta: Gadjah Mada University Press. • Tyanisngsih W, Emi R, Suryani S, Sri C, Hasutji E. N. 2010. Disease Science Textbook

2. Reproduksi Ternak/Animal Reproduction

Module name	Animal Reproduction
Module level	Bachelor Programme
Code	220305642W005
Subtitle, if applicable	
Courses, if applicable	Reguler
Semester	III
Person responsible for the module	drh. Khoiru Indana, M.Si
Lecturer	drh. Khoiru Indana, M.Si Anhar Faisal Fanani, S.Pt., M.Si Kirana Dara Dinanti Adiputra, S.Pt., M.Si Nurliani Erni, S.Pt., M.Si
Language	Indonesian
Relation curriculum	Compulsory / Program Specific Course
Type of teaching, contact hours	Lecture, Lesson
Workload	Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)

<table>
<tr><td></td><td>Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester</td></tr>
<tr><td rowspan="2">Credit point</td><td>2 SKS (3.2 ECTS)</td></tr>
<tr><td>Details:
1 Credit = 170 min / week
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1 ECTS = 28 h / semester
1 Credit = 2720/ 60 / 28 = 1.6 ECTS
2 Credit = 1.6 x 2 = 3.2 ECTS</td></tr>
<tr><td>Recommed prerewuisites</td><td>Basic Genetics / General Biology</td></tr>
<tr><td>Module Objectives/Intended Learning Outcomes</td><td>Students are able to:

1. Explain the basic principles of animal reproduction.
2. Describe the structure and function of male and female reproductive organs.
3. Explain reproductive processes including gametogenesis, fertilization, pregnancy, and parturition.
4. Identify reproductive hormones and their roles.
5. Describe reproductive cycles and stages.
6. Explain causes and types of reproductive failures.</td></tr>
<tr><td>Content</td><td>• Definition, role, and history of animal reproduction science
• Male reproductive anatomy and physiology
• Female reproductive anatomy and physiology
• Gametogenesis and influencing factors
• Embryogenesis
• Maternal and offspring behavior
• Reproductive hormones and their mechanisms
• Early organogenesis and development
• Pregnancy cycles and parturition
• Postpartum period (puerperium)
• Early and late reproductive failure causes</td></tr>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
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<tr><th>No.</th><th>Objects of Assessment</th><th>Forms of Assessment</th><th>Quantity (%)</th></tr>
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<tr><td>2</td><td>Task</td><td>Study group persentations Q&A</td><td>20</td></tr>
<tr><td>3</td><td>Mid semester test</td><td>Written test</td><td>30</td></tr>
<tr><td>4</td><td>Final semester test</td><td>Written test</td><td>40</td></tr>
</table></td></tr>
</table>

	Total: 100
Media	Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)
Reading List	• Hafez, E. S. E. & Hafez, B. (2000). *Reproduction in Farm Animals*, 7th Ed. Lippincott Williams & Wilkins. • Bearden, J. H. & Fuquay, J. W. (1997). *Applied Animal Reproduction*, 4th Ed. Prentice Hall. • Ganong, W. F. (2002). *Fisiologi Kedokteran*. EGC, Jakarta. • Franson, R. D. (1993). *Anatomi dan Fisiologi Ternak*. Gadjah Mada University Press. • Partodihadjo, S. (1987). *Ilmu Reproduksi Hewan*. Mutiara Sumber Widya. • Salisbury, G. W. & Vandemark. (1984). *Fisiologi Reproduksi dan Inseminasi Buatan pada Sapi*. Gadjah Mada University Press. • Yendraliza. (2008). *Ilmu Reproduksi Ternak*. • Williams, R. K. H. L. K. & Wright, F. M. (2008). *Principles of Animal Breeding and Genetics*. Wiley-Blackwell. • Warriss, J. D. (2014). *Modern Livestock and Poultry Production*. Delmar Cengage Learning. • Various online resources and journals on animal reproduction.

3. Ilmu Tilik Ternak/Livestock Evaluation

Module name	Livestock Evaluation
Module level	Bachelor Programme
Code	220305633W001
Courses, if applicable	Reguler
Semester	III
Person responsible for the module	Ir. Suhardi, S.Pt., M.P., Ph.D.
Lecturer	• Dr. Anhar Faisal Fanani, S.Pt., M.Si. • Dr. Muh. Ichsan Haris, S.Pt., M.P. • Karenina Dwi Yulianti, S.Pt., M.Si. • Novemia Fatmarischa, S.Pt., M.Si
Language	Indonesian
Relation curriculum	Compulsory
Type of teaching, contact hours	Lecture, Lesson
Workload	Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)
	Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester
Credit point	3 SKS (4.8 ECTS)

<table>
<tr><td></td><td>Details:
1 Credit = 170 min / week
1 Credit = 170 min x 14 week = 2720 min / semester
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<tr><td>Recommed prerewuisites</td><td></td></tr>
<tr><td>Module Objectives/Intended Learning Outcomes</td><td>
<table>
<tr><td>Contribute to improving the quality of life community, nation, State and progress of civilization based on Pancasila.</td></tr>
<tr><td>Demonstrate an attitude of responsibility for work in their field of expertise independently, academic norms and ethics.</td></tr>
<tr><td>Able to examine the implications of the development or implementation of science and technology that pays attention to and applies humanities values in accordance with their expertise based on scientific rules, procedures and ethics in the ranks
Produce solutions, ideas, designs or art criticism, compile scientific descriptions of their studies in the form of a thesis or final project report, and upload them on the university's website.</td></tr>
<tr><td>Mastering science and technology, applying science and technology, following the development of science and technology, basic skills in animal husbandry, and providing solutions to problems in the field of animal husbandry.</td></tr>
</table>
</td></tr>
<tr><td>Content</td><td>This course studies and explains the introduction of livestock types, assessment of health conditions, body parts and sizes, methods of determining age and body condition, estimation of body weight and composition, estimation of fertility and sterilization, livestock productivity, and definition, benefits and functions of judging.</td></tr>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
<table>
<tr><th>No.</th><th>Objects of Assessment</th><th>Forms of Assessment</th><th>Quantity (%)</th></tr>
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Media	Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)
Reading List	• Astiti, N.M.A.G.R. 2018. Introduction to Animal Husbandry. Warmadewa University Press. Bali. • Tomaszewska, M.W., Sutama, K., Putu, G., Chaniago, T. 1991. Reproduction, Behavior and Livestock Production in Indonesia. PT. Gramedia Pustaka Utama. Jakarta. • Santoso, U. 2005. Cattle Maintenance Management. Self-Sustaining Spreader. Jakarta. • Yuwanto, T. 2005. Poultry Base. Kanisius. Yogyakarta. • Hutu, I & Onan, G. W. 2019. Animal Production-Practical Exercises. Agroprint. Timisoara.

Modul Descriptions in Second Year (Semester IV)

1. Metodologi Penelitian/ Research Methods

Module name	Research Methods
Module level	Bachelor Programme
Code	220305643W004
Subtitle, if applicable	
Courses, if applicable	Reguler
Semester	IV
Person responsible for the module	Prof. Dr. Ir. Hamdi Mayulu, S.Pt., M.Si., IPU.
Lecturer	• Dr. Muh. Ichsan Haris, S.Pt., M.P. • Cori Qamara, S.Pt., M.Pt.
Language	Indonesian
Relation curriculum	Compulsory
Type of teaching, contact hours	Lecture, Lesson
Workload	Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)
	Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester
Credit point	3 SKS (4.8 ECTS)
	Details: 1 Credit = 170 min / week 1 Credit = 170 min x 14 week = 2720 min / semester 1 ECTS = 28 h / semester 1 Credit = 2720/ 60 / 28 = 1.6 ECTS 3 Credit = 1.6 x 3 = 4.8 ECTS
Recommed prerewuisites	
Module Objectives/Intended Learning Outcomes	Mastery of Animal Science and Technology

<table>
<tr><td></td><td><table><tr><td>Management and Leadership Skills</td></tr><tr><td>Adaptation and Lifelong Learning</td></tr></table></td></tr>
<tr><td>Content</td><td>The Research Methodology course aims to equip students with the ability to design, manage, and implement research in the field of animal husbandry with the right scientific approach. Students will learn various aspects of research management including planning, data collection, data analysis, and reporting of research results. This course will also develop students' leadership and management skills in managing research teams and adapting to changing technologies and industry needs. The relevance of this course is very high with real conditions where good research management skills are indispensable to produce quality research high that is relevant to the needs of industry and society.</td></tr>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
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<tr><td>No.</td><td>Objects of Assessment</td><td>Forms of Assessment</td><td>Quantity (%)</td></tr>
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<tr><td>Media</td><td>Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)</td></tr>
<tr><td>Reading List</td><td>Flick, U. (2018). An Introduction to Qualitative Research. SAGE Publications.
Hofmann, A. H. (2013). Scientific Writing and Communication: Papers, Proposals, and Presentations. Oxford University Press.
Creswell, J. W. (2014). Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. SAGE Publications.</td></tr>
</table>

2. Ilmu Pemuliaan Ternak/ Animal Breeding Science

Module name	Animal Breeding Science
Module level	Bachelor Programme
Code	220305642W005
Subtitle, if applicable	
Courses, if applicable	Reguler
Semester	IV
Person responsible for the module	Ir. Suhardi, S.Pt., MP., Ph.D

<table>
<tr><td>Lecturer</td><td>Ir. Suhardi, S.Pt., MP., Ph.D
Kirana Dara Dinanti Adiputra, S.Pt., M.Si
Nurliani Erni, S.Pt., M.Si
Novemia Fatmarischa, S.Pt., M.Si</td></tr>
<tr><td>Language</td><td>Indonesian</td></tr>
<tr><td>Relation curriculum</td><td>Compulsory</td></tr>
<tr><td>Type of teaching, contact hours</td><td>Lecture, Lesson</td></tr>
<tr><td rowspan="2">Workload</td><td>Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)</td></tr>
<tr><td>Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester</td></tr>
<tr><td rowspan="2">Credit point</td><td>2 SKS (3.2 ECTS)</td></tr>
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1 Credit = 2720/ 60 / 28 = 1.6 ECTS
2 Credit = 1.6 x 2 = 3.2 ECTS</td></tr>
<tr><td>Recommed prerewuisites</td><td>Basic Genetics / General Biology</td></tr>
<tr><td>Module Objectives/Intended Learning Outcomes</td><td>Students are able to:
1. Understand the principles of genetics and animal breeding
2. Analyze qualitative and quantitative traits for genetic improvement
3. Apply selection and mating systems to improve livestock genetics
4. Evaluate genetic parameters including heritability and genetic correlation
5. Interpret breeding values and implement biotechnology applications in animal breeding</td></tr>
<tr><td>Content</td><td>• Role and history of animal breeding
• Basic genetics and inheritance in livestock
• Qualitative and quantitative traits
• Genetic parameters: heritability and repeatability
• Selection methods and breeding value estimation
• Mating systems and genetic engineering
• Biotechnology in genetic improvement</td></tr>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
<table>
<tr><th>No.</th><th>Objects of Assessment</th><th>Forms of Assessment</th><th>Quantity (%)</th></tr>
<tr><td>1</td><td>Affective</td><td>Participation</td><td>10</td></tr>
<tr><td>2</td><td>Task</td><td>Study group persentations Q&A</td><td>20</td></tr>
<tr><td>3</td><td>Mid semester test</td><td>Written test</td><td>30</td></tr>
</table></td></tr>
</table>

	4	Final semester test	Written test	40
	Total			100
Media	Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)			
Reading List	• Bourdon, R.M. 2000. *Understanding Animal Breeding*, 2nd ed. Colorado State University • Noor, Ronny. R. 2008. *Genetika Ternak*. Penebar Swadaya • Martodjo, H. 1990. *Peningkatan Mutu Genetika Ternak*. IPB Press • Williams, R. K. H. L. K. & Wright, F. M. 2008. *Principles of Animal Breeding and Genetics*. Wiley-Blackwell • Warriss, J. D. 2014. *Modern Livestock and Poultry Production*. Delmar Cengage Learning			

3. Ilmu Tanaman Pakan/ Feed Plant Science

Module name	Feed Plant Science
Module level	Bachelor Programme
Code	190304603W023
Courses, if applicable	Reguler
Semester	IV
Person responsible for the module	Prof. Dr.Ir. Taufan Purwokusumaning Daru, MP.
Lecturer	• Penny Pujowati, SP., M.Si. • Apdila Safitri, S.Pt., M.Si.
Language	Indonesian
Relation curriculum	Compulsory
Type of teaching, contact hours	Lecture, Lesson
Workload	Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)
	Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester
Credit point	3 SKS (4.8 ECTS)
	Details: 1 Credit = 170 min / week 1 Credit = 170 min x 14 week = 2720 min / semester 1 ECTS = 28 h / semester 1 Credit = 2720/ 60 / 28 = 1.6 ECTS 3 Credit = 1.6 x 3 = 4.8 ECTS
Recommed prerewuisites	
Module Objectives/Intended Learning Outcomes	Students are able to analyze the conception and scope of feed plants and Factors that affect it
Content	The material provided in this course includes the definition of feed crops, classification of feed crops, their characteristics and use in livestock and factors that affect the growth of feed crops

Study and Examination Requirements and Forms of Examination	Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)

No.	Objects of Assessment	Forms of Assessment	Quantity (%)
1	Affective	Participation	10
2	Task	Study group persentations Q&A	20
3	Mid semester test	Written test	30
4	Final semester test	Written test	40
Total			100

Media	Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)
Reading List	-

Modul Descriptions in Third Year (Semester V)

1. Ilmu Ternak Perah/Dairy Science

Module name	POULTRY SCIENCE
Module level	Bachelor Programme
Code	220305633W005
Courses, if applicable	Reguler
Semester	V
Person responsible for the module	Ir. Julinda Manullang, S.Pt., M.Si.
Lecturer	Ir. Julinda Manullang, S.Pt., M.Si. Nurul Fajrih H., S.Pt., M.Si. Amani Aldiyanti, S.Pt., M.Pt. Akhmat Rizkuna, S.Pt., M.Si.
Language	Indonesian
Relation curriculum	Compulsory
Type of teaching, contact hours	Lecture, Lesson
Workload	Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)
	Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester
Credit point	3 SKS (4.8 ECTS)
	Details: 1 Credit = 170 min / week 1 Credit = 170 min x 14 week = 2720 min / semester 1 ECTS = 28 h / semester 1 Credit = 2720/ 60 / 28 = 1.6 ECTS

<table>
<tr><td></td><td>3 Credit = 1.6 x 3 = 4.8 ECTS</td></tr>
<tr><td>Recommed prerewuisites</td><td></td></tr>
<tr><td>Module Objectives/Intended Learning Outcomes</td><td>After completing this course, it is hoped that students can explain the character of dairy cattle and aspects of their maintenance management</td></tr>
<tr><td>Content</td><td>This course covers taxonomy and dairy livestock nations from tropical and subtropical regions. The development of the anatomy and physiological functions of the digestive tract (digestive tract) and the mammary glands of dairy cattle, from the beginning of formation to the production of milk, milk biosynthesis. Understanding the importance of nutrients for dairy cattle to produce milk optimally, ration preparation and feeding techniques. Care of calves, veals, dry adult cows and lactation. Explanation of the working principle of the milking machine, the milking process manually (hand milking) and by machine (machine milking). Construction and layout (lay out) of cages and other buildings in the dairy farming business, as well as their equipment and recording carried out in the dairy farming business.</td></tr>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
<table>
<tr><th>No.</th><th>Objects of Assessment</th><th>Forms of Assessment</th><th>Quantity (%)</th></tr>
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<tr><td colspan="3">Total</td><td>100</td></tr>
</table></td></tr>
<tr><td>Media</td><td>Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)</td></tr>
<tr><td>Reading List</td><td>-</td></tr>
</table>

Modul Descriptions in Third Year (Semester VI)

1. Genetika Dasar/ Basic Genetics

Module name	Basic Genetics
Module level	Bachelor Programme
Code	220305622W003
Courses, if applicable	Reguler
Semester	VI

<table>
<tr><td>Person responsible for the module</td><td>Anhar Faisal Fanani, S.Pt., M.Si.</td></tr>
<tr><td>Lecturer</td><td>• Novemia Fatmarisha, S.Pt., M.Si.
• Dani Nur Arifin, S.Si., M.Si.
• Amalina Nur Wahyuningtyas, S.Pt., M.Si.</td></tr>
<tr><td>Language</td><td>Indonesian</td></tr>
<tr><td>Relation curriculum</td><td>Compulsory</td></tr>
<tr><td>Type of teaching, contact hours</td><td>Lecture, Lesson</td></tr>
<tr><td>Workload</td><td>Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)</td></tr>
<tr><td></td><td>Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester</td></tr>
<tr><td>Credit point</td><td>2 SKS (3.2 ECTS)</td></tr>
<tr><td></td><td>Details:
1 Credit = 170 min / week
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1 ECTS = 28 h / semester
1 Credit = 2720/ 60 / 28 = 1.6 ECTS
2 Credit = 1.6 x 2 = 3.2 ECTS</td></tr>
<tr><td>Recommed prerewuisites</td><td></td></tr>
<tr><td>Module Objectives/Intended Learning Outcomes</td><td><table>
<tr><td>Upholding human values in carrying out duties based on religion, morals, and ethics</td></tr>
<tr><td>Mastering science and technology and basic skills of animal husbandry</td></tr>
<tr><td>Able to demonstrate independent, quality, and measurable performance</td></tr>
<tr><td>Able to plan the development of livestock in a humid tropical rainforest environment</td></tr>
<tr><td>Upholding human values in carrying out duties based on religion, morals, and ethics</td></tr>
</table></td></tr>
<tr><td>Content</td><td>This course examines and discusses a science that studies things about genes starting from the chemical makeup of genes, the role of genes in determining the traits or performance of an individual and how to decline individual traits determined by the genes themselves. If we study, then all individual traits ranging from amoeba, bacteria, viruses, plants, animals, to humans are determined by the genes present in these creatures. These traits will appear with the support of an environment that is suitable or in accordance with the expectations of the creature in question. A trait will arise or be exhibited by the individual according to the genetic potential that determines the trait if they get a suitable environment.</td></tr>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
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	2	Task	Study group persentations Q&A	20	
	3	Mid semester test	Written test	30	
	4	Final semester test	Written test	40	
	Total			100	
Media	Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)				
Reading List	• Campbell & Reeu, 1991. Biology. Pearson Education Inc. Publishing • Cell Signalling. Edition: 3. John Hancock . 2010. • E.J. Gardner. Principles of Genetis. 7th ed. New York : John Wiley, 1984. • John W. Kimball, 1991. Biology. Erlangga Publisher, Bandung • Molecular Biology of Cancer. F.Macdonald, C.H.J.Ford & A.G.Casson, Second Edition. Garland Science/BIOS Scientific Publishers, London dan New York, 2004. • Molecular Genetics of Plant Development. Edition: 1. Stephen H. Howell. 1998. • Plant Cell Death Processes. Larry D. Noodén, Elsevier Academic Press, California. 2004. • U. Goodenough. Genetics 2nd ed. Philadelphia: Saunders College, 1978.				

2. Biokimia/Biochemistry

Module name	Biochemistry
Module level	Bachelor Programme
Code	220305623W005
Courses, if applicable	Reguler
Semester	VI
Person responsible for the module	Drh. Khoiru Indana, SKH, M.Si.
Lecturer	• Fandini Meilia Anjani, S.Pt., M.Si. • Ari Andi Nurmasytha AS., S.Pt., M.Si. • Dani Nur Arifin, S.Si., M.Si.
Language	Indonesian
Relation curriculum	Compulsory
Type of teaching, contact hours	Lecture, Lesson
Workload	Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)
	Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester
Credit point	3 SKS (4.8 ECTS)

<table>
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1 ECTS = 28 h / semester
1 Credit = 2720/ 60 / 28 = 1.6 ECTS
3 Credit = 1.6 x 3 = 4.8 ECTS</td></tr>
<tr><td>Recommed prerewuisites</td><td></td></tr>
<tr><td>Module Objectives/Intended Learning Outcomes</td><td>Able to explain the basic concepts of biochemistry which include the structure, function, and role of biomolecules.
Able to analyze metabolic pathways and the role of enzymes, vitamins, and hormones in the body of livestock.
Able to perform basic biochemical tests and interpret the results scientifically.</td></tr>
<tr><td>Content</td><td>This course discusses basic concepts and biochemical applications in livestock biological systems, including the structure and function of biomolecules, carbohydrate, lipid, protein, and nucleic acid metabolism, as well as enzymes, vitamins, and hormones. Students will understand the biochemical reactions that occur in the body of livestock and their implications for livestock nutrition and health.</td></tr>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
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</table></td></tr>
<tr><td>Media</td><td>Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)</td></tr>
<tr><td>Reading List</td><td>Simaremare, D. D., Silaban, R., Nurfajriani, Simorangkir, M. and Sitorus, M. 2023. Biochemistry Metabolism. Uwais is inspired by Indonesia. Ponorogo.</td></tr>
</table>

3. Statistik dan Rancangan Percobaan/Statistics and Experimental Design

Module name	Statistics and Experimental Design
Module level	Bachelor Programme
Code	220305643W003
Subtitle, if applicable	
Courses, if applicable	Reguler

Semester	VI
Person responsible for the module	Prof. Dr. Ir. Taufan P. Daru, MP.
Lecturer	• Ardiansyah, S.Pt., M.Si. • Cori Qamara, S.Pt., M.Pt. • Dr. Nurul Fajrih, S.Pt., M.Si.
Language	Indonesian
Relation curriculum	Compulsory
Type of teaching, contact hours	Lecture, Lesson
Workload	Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)
	Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester
Credit point	3 SKS (4.8 ECTS)
	Details: 1 Credit = 170 min / week 1 Credit = 170 min x 14 week = 2720 min / semester 1 ECTS = 28 h / semester 1 Credit = 2720/ 60 / 28 = 1.6 ECTS 3 Credit = 1.6 x 3 = 4.8 ECTS
Recommed prerewuisites	
Module Objectives/Intended Learning Outcomes	Understand the basic concepts of descriptive and inferential statistics to analyze data in the field of animal husbandry. Able to apply statistical methods to answer problems in the field of animal husbandry scientifically. Demonstrate honesty and integrity in the collection, analysis, and interpretation of statistical data.
Content	The Statistics course aims to equip students with basic understanding and quantitative data analysis skills that are relevant to the field of animal husbandry. The material presented includes basic concepts of descriptive and inferential statistics, probability, hypothesis testing, correlation analysis, regression, variance analysis (ANOVA), and non-parametric statistical methods. The Experimental Design course aims to provide knowledge and skills in designing and analyzing scientific experiments in the field of animal husbandry. Students will learn the basic principles of experimental design (randomization, replication, and control), different types of designs such as Complete Random Design (RAL), Group Random Design (RAK), factorial design, and split-plot, as well as post hoc testing.
Study and Examination Requirements and Forms of Examination	Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)

	<table><tr><td>No.</td><td>Objects of Assessment</td><td>Forms of Assessment</td><td>Quantity (%)</td></tr><tr><td>1</td><td>Affective</td><td>Participation</td><td>10</td></tr><tr><td>2</td><td>Task</td><td>Study group persentations Q&A</td><td>20</td></tr><tr><td>3</td><td>Mid semester test</td><td>Written test</td><td>30</td></tr><tr><td>4</td><td>Final semester test</td><td>Written test</td><td>40</td></tr><tr><td colspan="3">Total</td><td>100</td></tr></table>
Media	Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)
Reading List	• Montgomery, D. C. (2019). Design and Analysis of Experiments (10th ed.). Wiley. • Gomez, K. A., & Gomez, A. A. (1984). Statistical Procedures for Agricultural Research (2nd ed.). John Wiley & Sons. • Wahid, A. (2020). Basics of Experimental Design for Livestock Research. Graha Ilmu.

4. Pemasaran dan Tataniaga Ternak/ Livestock Marketing And Trading System

Module name	Livestock Marketing And Trading System
Module level	Bachelor Programme
Code	220305642W007
Courses, if applicable	Reguler
Semester	VI
Person responsible for the module	Dinar Anindyasari, S.Pt., M.Si.
Lecturer	• Dinar Anindyasari, S.Pt., M.Si. • Dede Aprylasari, S.Pt., M.Pt. • I Putu Gede Didik Widiarta, S.Pt., M.Pt. • Cori Qamara, S.Pt., M.Pt.
Language	Billingual (Indonesian and English)
Relation curriculum	
Type of teaching, contact hours	Lecture, Lesson
Workload	Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)
	Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester
Credit point	2 SKS (3.2 ECTS)
	Details: 1 Credit = 170 min / week 1 Credit = 170 min x 14 week = 2720 min / semester 1 ECTS = 28 h / semester

<table>
<tr><td></td><td>1 Credit = 2720/ 60 / 28 = 1.6 ECTS
2 Credit = 1.6 x 2 = 3.2 ECTS</td></tr>
<tr><td>Recommed prerequisites</td><td></td></tr>
<tr><td>Module Objectives/Intended Learning Outcomes</td><td>• Define and explain the concepts, scope, and significance of livestock marketing and trading systems.
• Plan and evaluate marketing strategies, including market segmentation, targeting, positioning, and strategic tools such as BCG Matrix, Ansoff Matrix, and Product Life Cycle.
• Analyze marketing environments and consumer behavior to build customer satisfaction and loyalty.
• Understand and organize marketing institutions, trading chains, and supply chain management in livestock production.
• Calculate pricing, costs, and trading margins within livestock marketing systems.
• Identify and evaluate policy issues, challenges, and potential improvements in livestock marketing and trading systems.
• Apply marketing and trading concepts to real-world livestock agribusiness cases to improve efficiency and sustainability.</td></tr>
<tr><td>Content</td><td>• Marketing Management
• Marketing strategy
• Marketing system
• Building customer satisfaction and loyalty
• Consumer markets and consumer behavior
• STP (Strategy, Targeting, and Positioning)
• Trading System
• Characteristics of livestock production
• Functions of trade administration
• Livestock and livestock products trading institution
• Supply Chain Management
• Problems in the system</td></tr>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
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<tr><td colspan="3">Total</td><td>100</td></tr>
</table></td></tr>
</table>

Media Employed	Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)
Reading List	• Agribusiness Marketing Concept: An Economic and Management Approach. 2017. Indonesian Agribusiness Journal, 5 (2): 151-172. Ratna Winandi Asmarantaka, Juniar Atmakusuma, Yanti N Muflikh, and Nia Rosiana • Marketing Concepts and Strategies. 2019. Muhammad Yusuf Saleh, and Miah Said. Authorized Media Publisher. ISBN 978-602-6928-65-8. • Marketing Strategy Concept, Theory and Implementation. Cicin Yulianti, Fitri, Anisa Dwi Utami, Ratna Mega Sari, Hepi Risenasari, Ratna Sogian Siwang, Husnul Khotimah, Nia Rosiana Arifayani, and Rachman Muis Hasibuan. • Directorate General of Animal Husbandry, 2003. *Animal Husbandry Development Policy* . http://www.bangnak.ditjennak.go.id . • Downey, WV and Erickson, SP, 1989. *Agribusiness Management* . Erlangga Publisher. Jakarta. • Ferichani, M., 2001. *Practical Guidelines for Livestock Trading* . Faculty of Agriculture, UNS. Surakarta. • Ilham, N., 2003. *Analysis of Supply and Demand for Superior Livestock Commodities* . http://www.pustakabogor.net/caser2/hasil09.htm . • Kartasapoetra, G., 1986. *Marketing of Agricultural and Industrial Products* . Published by PT. Binaaksara. Jakarta. • Kotler, P., 1993. *Marketing Management.* FE-UI Publishing Institute. Jakarta. • Mulyono, A. and A. Einstein, 1988. *Introduction to Livestock Commerce* . D3 Program PTUP-Faculty of Animal Husbandry Unsoed. Purwokerto. • Soekartawi, 1990. *The Economics of Livestock Production.* Rajawali Press. Jakarta. • Directorate of Livestock Farming and Product Processing, 1997. *Feasibility Analysis of Livestock Farming* . Directorate General of Animal Husbandry, Ministry of Agriculture. Jakarta. • Swasta, B., and Sukotjo, I., 2000. *Introduction to Modern Business* . Third Edition. Liberty Publishers. Yogyakarta.

5. Studi Kelayakan dan Evaluasi Proyek/ Feasibility Study and Project Evaluation

Module name	Feasibility Study and Project Evaluation
Module level	Bachelor Programme
Code	220305643W009
Subtitle, if applicable	
Courses, if applicable	Reguler
Semester	VI
Person responsible for the module	Prof. Dr. Hamdi Mayulu, S.Pt., M.Si.

Lecturer	• Prof. Dr. Hamdi Mayulu, S.Pt., M.Si. • Dinar Anindyasari, S.Pt., M.Si. • Dede Aprylasari, S.Pt., M.Pt.
Language	Billingual (Indonesian and English)
Relation curriculum	
Type of teaching, contact hours	Lecture, Lesson
Workload	Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)
	Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester
Credit point	2 SKS (3.2 ECTS)
	Details: 1 Credit = 170 min / week 1 Credit = 170 min x 14 week = 2720 min / semester 1 ECTS = 28 h / semester 1 Credit = 2720/ 60 / 28 = 1.6 ECTS 2 Credit = 1.6 x 2 = 3.2 ECTS
Recommed prerequisites	
Module Objectives/Intended Learning Outcomes	• Able to understand and explain the concepts and objectives of feasibility studies and project evaluation in the context of animal husbandry, as well as their role in agribusiness project management. • Able to analyze project feasibility from various aspects, including financial, market, and technical analysis, to assess the success of livestock projects. • Able to develop and plan business strategies and livestock project development based on feasibility evaluation results and project risk analysis. • Able to evaluate livestock projects using various evaluation methods, such as Net Present Value (NPV) and Internal Rate of Return (IRR), and provide responsible and sustainable project development recommendations. • Able to identify, manage, and mitigate risks associated with livestock projects, as well as conduct monitoring and evaluation to ensure successful project implementation.
Content	• Definition and Objectives of Feasibility Study and Project Evaluation • Scope of Feasibility Study and Project Evaluation in Livestock Farming • Project Feasibility Analysis: Concepts and Types of Analysis • Project Financial Analysis: Cash Flow and Financial Ratios • Project Market Analysis: Demand and Supply • Project Technical Analysis: Technical and Operational Feasibility • Project Evaluation: Financial and Non-Financial Aspects

<table>
<tr><td></td><td>

Project Evaluation Methods: Net Present Value (NPV) and Internal Rate of Return (IRR)
Case Study on Project Evaluation in Livestock Farming
Project Development Planning: Planning and Implementation
Project Risk Management: Risk Identification and Mitigation
Project Monitoring and Evaluation: Processes and Techniques
Ethics and Responsibility in Project Management
Project Presentation and Development Recommendations

</td></tr>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
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<tr><td>Media Employed</td><td>Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)</td></tr>
<tr><td>Reading List</td><td>

Jumarni, A., & Siti Azizah, A. (2019). Studi Kelayakan dan Evaluasi Proyek dalam Agribisnis. Penerbit Andi. Yogyakarta.
Timmons, J.A., & Spinelli, S. (2009). New Venture Creation: Entrepreneurship for the 21st Century. McGraw-Hill. New York.
Sudaryanto, D., & Iskandar, M. (2017). Perencanaan dan Evaluasi Proyek Agribisnis: Teori dan Aplikasi. Penerbit Alfabeta. Bandung.
Feil, B., & Suryana, Y. (2015). Evaluasi Proyek: Teori dan Praktek dalam Pengelolaan Agribisnis dan Peternakan. Gadjah Mada University Press. Yogyakarta.
Chandra, T., & Arief, M. (2020). Analisis Keuangan dalam Studi Kelayakan Proyek Agribisnis. Penerbit Salemba Empat. Jakarta.
Agus, D., & Herlina, L. (2018). Analisis Pasar dan Proyek Agribisnis. Universitas Padjadjaran Press. Bandung.
Kotler, P., & Keller, K.L. (2016). Marketing Management (15th ed.). Pearson. New Jersey.
Kurniawati, F., & Widodo, S. (2014). Manajemen Proyek Agribisnis: Konsep dan Implementasi. Penerbit Pustaka Utama. Jakarta.
Dinas Peternakan Provinsi Jawa Barat. (2016). Evaluasi Proyek Peternakan: Studi Kasus dan Aplikasi di Indonesia. http://www.dinaspeternakan.jabarprov.go.id.

</td></tr>
</table>

	• Prasetyo, A., & Purbaya, B. (2017). *Pengelolaan Risiko dalam Proyek Agribisnis: Teori dan Aplikasi di Peternakan*. Penerbit Universitas Negeri Yogyakarta. • Sulaiman, R., & Hall, A. (2002). *Beyond Technology Dissemination: Can Indian Agricultural Extension Reinvent Itself?* NCAP Policy Brief No. 16.

6. Abbatoir dan Teknik Penyemblihan/ Abattoirs and Livestock Slaughter Techniques

Module name	Feasibility Study and Project Evaluation
Module level	Bachelor Programme
Code	18030463P060
Subtitle, if applicable	
Courses, if applicable	Reguler
Semester	VI
Person responsible for the module	Fikri Ardhani, MSc., M.Si.
Lecturer	Ari Wibowo, Ph.D.
Language	Billingual (Indonesian and English)
Relation curriculum	
Type of teaching, contact hours	Lecture, Lesson
Workload	Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)
	Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester
Credit point	3 SKS (4.8 ECTS)
	Details: 1 Credit = 170 min / week 1 Credit = 170 min x 14 week = 2720 min / semester 1 ECTS = 28 h / semester 1 Credit = 2720/ 60 / 28 = 1.6 ECTS 3 Credit = 1.6 x 3 = 4.8 ECTS
Recommed prerequisites	
Module Objectives/Intended Learning Outcomes	Students are able to understand and explain the definition/definition of abattoirs as well as livestock slaughtering techniques, both large/small ruminant livestock, poultry and non-ruminants. Understand animal/livestock slaughter standards based on animal welfare and Halal.
Content	The courses provided include the standards of slaughterhouses (RPH) and poultry slaughterhouses, as well as sections/divisions in animal slaughter operations. The implementation of SSOP, GMP, animal welfare and Halal standardization in the animal slaughter process. Operational support equipment for animal slaughter.
Study and Examination Requirements and Forms of Examination	Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)

	<table><tr><td>No.</td><td>Objects of Assessment</td><td>Forms of Assessment</td><td>Quantity (%)</td></tr><tr><td>1</td><td>Affective</td><td>Participation</td><td>10</td></tr><tr><td>2</td><td>Task</td><td>Study group persentations Q&A</td><td>20</td></tr><tr><td>3</td><td>Mid semester test</td><td>Written test</td><td>30</td></tr><tr><td>4</td><td>Final semester test</td><td>Written test</td><td>40</td></tr><tr><td colspan="3">Total</td><td>100</td></tr></table>
Media Employed	Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)
Reading List	• Adeen, A. (2014). Impact of Halal Slaughtering on Quality and Shelf-life of Broiler Chicken Meat Aneesa. (Prince Songkla University, Thailand). • Temple, G., & Neville, G.G. (1998). Animal welfare and meat science. CAB International. UK. • Alhazmi, H.K.H.A. (2013). New Zealand Muslim Consumer Attitudes towards Purchasing Halal Foods. A thesis submitted to Auckland University of Technology in partial fulfilment of the requirements for the degree of Master of Business (MBus) Primary Superv. Auckland university of Technology. p.121. • Grandin, T., & Smith, G. C. (2004). Animal Welfare and Humane Slaughter. Animal Welfare, 1–26. • Lawrie, R.A., & Ledward, D.A. (2006). Lawrie's Meat science, seventh ed. Woodhead Publishing, Cambridge, p. 279-305. • Miele, M., Rucinska, K. & Anil, H. (2013). Report on Halal Slaughter Practices in Wales Study Commissioned by the Welsh Government, Cardiff University. Wales, UK.

Module Descriptions of Elective Course

1. Ilmu dan Teknologi Susu dan Telur/ Milk And Egg Science and Technology

Module name	Milk And Egg Science and Technology
Module level	Bachelor Programme
Code	220305653P003
Subtitle, if applicable	
Courses, if applicable	Reguler

Semester	I
Person responsible for the module	Dr. Muh. Ichsan Haris, S.Pt., M.P.
Lecturer	• Dr. Muh. Ichsan Haris, S.Pt., M.P. • Ari Wibowo, S.Pt., M.Si., Ph.D. • Arif Ismanto, S.Pt., M.Si. • Nurul Fajrih, S.Pt., M.Si. • Amalina Nur Wahyuningtyas, S.Pt., M.Si.
Language	Billingual (Indonesian and English)
Relation curriculum	Elective course
Type of teaching, contact hours	Lecture, Lesson
Workload	Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)
	Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester
Credit point	2 SKS (3.2 ECTS)
	Details: 1 Credit = 170 min / week 1 Credit = 170 min x 14 week = 2720 min / semester 1 ECTS = 28 h / semester 1 Credit = 2720/ 60 / 28 = 1.6 ECTS 2 Credit = 1.6 x 2 = 3.2 ECTS
Recommed prerequisites	
Module Objectives/Intended Learning Outcomes	• Demonstrate a responsible attitude towards work in his/her field of expertise independently, academic norms and ethics. • Able to study the implementation of development or implementation of science and technology that pays attention to and applies humanities values in accordance with their expertise based on scientific rules, procedures and ethics in order to produce solutions, ideas, designs or art criticism, compile scientific descriptions of the results of their studies in the form of a thesis or final assignment report, and upload it to the university website. • Mastering science and technology, applying science and technology, following developments in science and technology, basic livestock skills, and providing solutions to problems in the livestock sector. • Able to develop livestock resources based on local wisdom. • Able to carry out planning, development, research and innovation in the field of animal husbandry in humid tropical rainforest environments.
Content	• Introduction to Milk and Egg Technology Characteristics of Livestock in Indonesia • Overview of Milk Nutritional Value from a Micromilk Perspective • Milk Quality Testing • Functional Characteristics of Eggs

<table>
<tr><td></td><td>

Physical Properties of Milk (milk density, milk viscosity, freezing and boiling points, and milk oxidation-reduction potential)
Fortified Milk (Definition, Vitamin D fortification and multivitamin-mineral fortification, soft curd milk, low-sodium milk)
Microorganisms in Milk (lactic acid bacteria, fermented milk technology, dairy product adulteration)
Egg Quality for Consumption (Use of Eggs as Food Ingredients, Egg Quality Systems for Consumption, Quality Testing and Analysis of Egg Quality Properties)
Functional Egg Products and Processing and Modification Technologies for Processed Eggs
Egg Preservation and Freezing Technologies, and Building an Industry Based on Egg Processing Technology
Hen Day Principles and Egg Production Mass and Productivity of Various Poultry
Utilization of Egg Nutrients for Health (BV Value or (14. Whole egg processing technology and production cost analysis)
A brief overview of egg uses as a non-food item

</td></tr>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
<table>
<tr><th>No.</th><th>Objects of Assessment</th><th>Forms of Assessment</th><th>Quantity (%)</th></tr>
<tr><td>1</td><td>Affective</td><td>Participation</td><td>10</td></tr>
<tr><td>2</td><td>Task</td><td>Study group persentations Q&A</td><td>20</td></tr>
<tr><td>3</td><td>Mid semester test</td><td>Written test</td><td>30</td></tr>
<tr><td>4</td><td>Final semester test</td><td>Written test</td><td>40</td></tr>
<tr><td colspan="3">Total</td><td>100</td></tr>
</table>
</td></tr>
<tr><td>Media Employed</td><td>Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)</td></tr>
<tr><td>Reading List</td><td>

Hintono A. 2022. Egg Science. Semarang: UNDIP Press Semarang. ISBN : 978-979-097-959-8.
Rumondor DBJ, Tamasoleng M. 2020. Animal Product Processing Science. Manado: Unsrat Press. ISBN 978-623-7968-12-2.
Susilo A, Rosyidi D, Jaya F, Apriliyani MW. 2019. Basic Teaching Materials for Livestock Product Technology. Malang: UB Press. ISBN 978-602-432-698-2.
Wahyuningtyas AN, Taufik E, Soenarno MS, Sulfiar AET, Atmoko BA, Nugrogo T. 2023. Comparison of Physicochemical, Microbiological, and Organoleptic Characteristics of Dali, Dangke, and Fresh Cheese from Goat Milk. Journal of Animal Science and Veterinary Science. 28(4): 227-236.

</td></tr>
</table>

	• Wulandari Z. 2004. Physicochemical and Total Microbial Properties of Salted Duck Eggs Resulting from Different Salting Techniques and Storage Times. Livestock Media. 27(2). • Wulandari Z, Taufik E, Syarif M. 2017. A Study of the Quality of Pasteurized Milk Products Resulting from the Application of a Cooling Chain. Journal of Animal Production Science and Technology.. 5(3): 94-100.

2. Ilmu Ekonomi Produksi Peternakan/Economics of Livestock Production

Module name	Economics of Livestock Production
Module level	Bachelor Programme
Code	220305653P003
Subtitle, if applicable	
Courses, if applicable	Reguler
Semester	V
Person responsible for the module	Prof. Dr. Hamdi Mayulu, S.Pt., M.Si.
Lecturer	• Dinar Anindyasari, S.Pt., M.Si. • Cori Qamara, S.Pt., M.Pt. • Dede Aprylasari, S.Pt., M.Pt. • I Putu Gede Didik Widiarta, S.Pt., M.Pt.
Language	Billingual (Indonesian and English)
Relation curriculum	Elective course
Type of teaching, contact hours	Lecture, Lesson
Workload	Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)
	Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester
Credit point	2 SKS (3.2 ECTS)
	Details: 1 Credit = 170 min / week 1 Credit = 170 min x 14 week = 2720 min / semester 1 ECTS = 28 h / semester 1 Credit = 2720/ 60 / 28 = 1.6 ECTS 2 Credit = 1.6 x 2 = 3.2 ECTS
Recommed prerequisites	
Module Objectives/Intended Learning Outcomes	Mastering effective and efficient livestock knowledge and technology, including breeding, feeding, yield processing, marketing management and organizing a sustainable livestock production system. Mastering general knowledge of the principles of leadership, communication, and livestock resource management so that they are able to implement them in the world of work. Mastering the concept of solving livestock problems based on science with scientific methods Able to compile and report the results of the study at point c in the form of scientific papers or design specifications in good and correct Indonesian, and publish them on the university website Able to make appropriate decisions in the context of solving problems in the field of livestock based on the results of data and information analysis.
Content	This course presents how rational producer behavior should be in making decisions about the problems of a business or doing a business. The

<table>
<tr><td></td><td>material studied consisted of: definition and scope of production economics; the relationship between inputs and outputs in the production process, the relationship between inputs, the relationship between outputs, and the cost of production and supply.</td></tr>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
<table>
<tr><th>No.</th><th>Objects of Assessment</th><th>Forms of Assessment</th><th>Quantity (%)</th></tr>
<tr><td>1</td><td>Affective</td><td>Participation</td><td>10</td></tr>
<tr><td>2</td><td>Task</td><td>Study group persentations Q&A</td><td>20</td></tr>
<tr><td>3</td><td>Mid semester test</td><td>Written test</td><td>30</td></tr>
<tr><td>4</td><td>Final semester test</td><td>Written test</td><td>40</td></tr>
<tr><td colspan="3">Total</td><td>100</td></tr>
</table></td></tr>
<tr><td>Media Employed</td><td>Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)</td></tr>
<tr><td>Reading List</td><td>• Teken, I.B. and Sofjan Asnawi. Microeconomics Theory Lecture Materials. Copyright © 2019 Rajawali Press. All Rights Reserved.
• Sumodiningrat, G. and L.A., Iswara, 1987. Production Economy. Karunika Jakarta Publisher, Open University.
• Doll, J.P., and Frank Orazem, 1978. Production Economics. Theory with Application. Grid. Inc. Ohio.
• Ferguson, C.E. and Gould,J.F., 1075. Microeconomy Theory. Richard D. Irwin Inc, 4th Edision.
• Soekartawi, 1990. Theory of Production Economics with the Subject of Cobb-Douglas Function Analysis, Rajawali Press, Jakarta.</td></tr>
</table>

3. Tingkah Laku dan Kesejahteraan Ternak/Behavior and Animal Welfare

Module name	Behavior and Animal Welfare
Module level	Bachelor Programme
Code	180300462P022
Subtitle, if applicable	
Courses, if applicable	Reguler
Semester	V
Person responsible for the module	Ari Wibowo, S.Pt., M.Si., Ph.D
Lecturer	• Prof. Dr. Hamdi Mayulu, S.Pt., M.Si. • Apdila Safitri, S.Pt., M.Si. • Andi Nurmasytha AS., S.Pt., M.Si.
Language	Billingual (Indonesian and English)
Relation curriculum	Elective course

<table>
<tr><td>Type of teaching, contact hours</td><td>Lecture, Lesson</td></tr>
<tr><td rowspan="2">Workload</td><td>Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)</td></tr>
<tr><td>Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester</td></tr>
<tr><td rowspan="2">Credit point</td><td>2 SKS (3.2 ECTS)</td></tr>
<tr><td>Details:
1 Credit = 170 min / week
1 Credit = 170 min x 14 week = 2720 min / semester
1 ECTS = 28 h / semester
1 Credit = 2720/ 60 / 28 = 1.6 ECTS
2 Credit = 1.6 x 2 = 3.2 ECTS</td></tr>
<tr><td>Recommed prerequisites</td><td></td></tr>
<tr><td>Module Objectives/Intended Learning Outcomes</td><td>
<table>
<tr><td>Contributing to improving the quality of life in society, nation, state, love for the homeland, nationalism, culture, views, religion, obedience to the law and the progress of civilization based on Pancasila and having social sensitivity and concern for the community and the environment (S2)</td></tr>
<tr><td>Demonstrate an attitude of responsibility for work in his/her area of expertise independently, academic norms and ethics (S3)</td></tr>
<tr><td>Able to examine the implications of the development or implementation of science and technology that pays attention to and applies humanities values in accordance with their expertise based on scientific rules, procedures and ethics in order to produce solutions, ideas, designs or art criticism, compile scientific descriptions of the results of their studies in the form of a thesis or final project report, and upload them on the university website (KU2)</td></tr>
<tr><td>Mastering science and technology, applying science and technology, following the development of science and technology, basic skills in animal husbandry, and providing problem solving in the field of animal husbandry (P1)</td></tr>
</table>
</td></tr>
<tr><td>Content</td><td>The courses given include the relationship between interaction between humans and livestock, changes in behavior, productivity and physiology of livestock. Welfare of productivity and quality of livestock products.</td></tr>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
<table>
<tr><th>No.</th><th>Objects of Assessment</th><th>Forms of Assessment</th><th>Quantity (%)</th></tr>
<tr><td>1</td><td>Affective</td><td>Participation</td><td>10</td></tr>
<tr><td>2</td><td>Task</td><td>Study group persentations Q&A</td><td>20</td></tr>
</table>
</td></tr>
</table>

	3	Mid semester test	Written test	30
	4	Final semester test	Written test	40
	Total			100
Media Employed	Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)			
Reading List	• Appleby, M.C., Cussen, V.A., Garces, L., Lambert, L.A. & Turner, J. (2008). Long distance transport and welfare of farm animals. CAB International. UK. • Paul, H.H., & Grahame, J.C. (2011). Human-livestock interactions, the stockperson and productivity and welfare of intensively farmed animals. CAB international. UK. • Temple, G., & Neville, G.G. (1998). Animal welfare and meat science. CAB International. UK.			

4. Produksi Ternak Unggas/ Poultry Production

Module name	Poultry Production
Module level	Bachelor Programme
Code	220305653P006
Subtitle, if applicable	
Courses, if applicable	Reguler
Semester	V
Person responsible for the module	Ir. Julinda Manullang, S.Pt., M.Si.
Lecturer	Ir. Julinda Manullang, S.Pt., M.Si. Nurul Fajrih H., S.Pt., M.Si. Akhmat Rizkuna, S.Pt., M.Si. Amani Aldiyanti, S.Pt., M.Pt.
Language	Indonesian
Relation curriculum	Elective courses
Type of teaching, contact hours	Lecture, Lesson
Workload	Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)
	Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester
Credit point	2 SKS (3.2 ECTS)
	Details: 1 Credit = 170 min / week 1 Credit = 170 min x 14 week = 2720 min / semester 1 ECTS = 28 h / semester 1 Credit = 2720/ 60 / 28 = 1.6 ECTS

<table>
<tr><td></td><td>2 Credit = 1.6 x 2 = 3.2 ECTS</td></tr>
<tr><td>Recommed prerewuisites</td><td></td></tr>
<tr><td>Module Objectives/Intended Learning Outcomes</td><td>This course discusses the scope of poultry production, its origins, classification, morphological characteristics, anatomical and physiological systems of poultry organs, the basics of housing, poultry housing and the poultry farming environment, poultry feed, poultry management and diseases.</td></tr>
<tr><td>Content</td><td>1. Understanding poultry, its origins, breeds, and strains
2. Poultry anatomy and physiology
3. Poultry housing
4. Poultry feed
5. Sanitation and poultry disease prevention
6. Poultry management
7. Post-harvest and poultry diseases</td></tr>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
<table>
<tr><td>No.</td><td>Objects of Assessment</td><td>Forms of Assessment</td><td>Quantity (%)</td></tr>
<tr><td>1</td><td>Affective</td><td>Participation</td><td>10</td></tr>
<tr><td>2</td><td>Task</td><td>Study group persentations Q&A</td><td>20</td></tr>
<tr><td>3</td><td>Mid semester test</td><td>Written test</td><td>30</td></tr>
<tr><td>4</td><td>Final semester test</td><td>Written test</td><td>40</td></tr>
<tr><td colspan="3">Total</td><td>100</td></tr>
</table></td></tr>
<tr><td>Media</td><td>Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)</td></tr>
<tr><td>Reading List</td><td>

Kartasudjana, R. Dan E. Suprijatna. 2006. Manajemen Ternak Unggas. Penebar Swadaya.
Muharlaien, E. Sudjarwo, A. Harmiati, dan H. Setyo. 2017. Ilmu Produksi Ternak Unggas. Buku Ajar. UB Pres.
Nesheim, M.C., R.E. Austic and Lesly. 1979. Poultry Production. Lea & Febiger. Philadelphia.
Nickel, R., A.Schummer, E.Seiferle, and W.G. Siller. 1977. Anatomy of the Domestic Birds. Springer-Verlag. New York. Heidelberg. Berlin
North, M. O. 1984. Commercial Chicken Production Manual. AVI Publishing Company, Inc. Westport, Connecticut.
Suprijatna, E., U. Atmomarsono, dan R. Kartasudjana. 2008. Ilmu Dasar Ternak Unggas. Penebar Swadaya.
Sturky, P.P. 1976. Avian Physiologi. Springer-Verlag, New York Heidelberg Berlin

</td></tr>
</table>

	• Wahju, J. 2015. Ilmu Nutrisi Unggas. Gadjah Mada University Press. • Leeson, S., J.D. Summers. 2001. Nutrition of the Chicken. University Books, Guelph, Ontario, Canada • National Research Council. 1994. Nutrient Requirements of Poultry.

5. Produksi Ternak Potong/Livestock Production

Module name	Livestock Production
Module level	Bachelor Programme
Code	220305653P007
Subtitle, if applicable	
Courses, if applicable	Reguler
Semester	V
Person responsible for the module	Ir. Suhardi, S.Pt., M.P., Ph.D.
Lecturer	• Prof. Dr. Hamdi Mayulu, S.Pt., M.Si • Anhar Faisal Fanani, S.Pt., M.Si. • Fandini Meilia Anjani, S.Pt., M.Si • Nurliani Erni, S.Pt., M.Si
Language	Indonesian
Relation curriculum	Elective courses
Type of teaching, contact hours	Lecture, Lesson
Workload	Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)
	Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester
Credit point	3 SKS (4.8 ECTS)
	Details: 1 Credit = 170 min / week 1 Credit = 170 min x 14 week = 2720 min / semester 1 ECTS = 28 h / semester 1 Credit = 2720/ 60 / 28 = 1.6 ECTS 3 Credit = 1.6 x 3 = 4.8 ECTS
Recommed prerewuisites	
Module Objectives/Intended Learning Outcomes	Upholding human values in carrying out duties based on religion, morals, and ethics
	Contributing to improving the quality of life in society, nation, state, and civilization progress based on Pancasila
	Mastering science and technology and basic skills of animal husbandry
	Able to apply basic science and technology of livestock
	Able to provide solutions to problems in the livestock sector

<table>
<tr><td>Content</td><td>This course discusses the concept of developing and managing a beef cattle business as well as a method of analyzing the productivity of a beef cattle business in a company or region.</td></tr>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
<table>
<tr><th>No.</th><th>Objects of Assessment</th><th>Forms of Assessment</th><th>Quantity (%)</th></tr>
<tr><td>1</td><td>Affective</td><td>Participation</td><td>10</td></tr>
<tr><td>2</td><td>Task</td><td>Study group persentations Q&A</td><td>20</td></tr>
<tr><td>3</td><td>Mid semester test</td><td>Written test</td><td>30</td></tr>
<tr><td>4</td><td>Final semester test</td><td>Written test</td><td>40</td></tr>
<tr><td colspan="3">Total</td><td>100</td></tr>
</table></td></tr>
<tr><td>Media</td><td>Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)</td></tr>
<tr><td>Reading List</td><td>

Agus, A. 1999. Concentrated Feed Technology. Faculty of Animal Husbandry, Gadjah Mada University, Yogyakarta.
Arora, S. P. 1995. Microbial Digestion in Ruminants. Gadjah Mada University Press, Yogyakarta.
Erni, N. 2023. Performance of Javanese Cows, Peranakan Ongole and Simmental Peranakan Ongole Cattle Raised in the Same Conditions. Agriovet Journal. 5(2)
Lasley, J.F. 1978. Genetic of Livestock Improvement. 3rd Ed. Prentice-Hall Inc., Englewood Cliffs. New Jersey.
Mackenzie, D. 1980. Goat Husbandry. Faber Paperbacks, London.
Mc. Dowell, R. E. 1972. Improvement of Livestock Production in Warm Climates. Freeman and Company, San Franscisco.
Moran, J.B. 1978. Comparison of Performance of Beef Cattle in Indonesia. Ruminancy Seminar, P4, Bogor.
Muhamad, N., Suci W., Satria B. K., N. Ningsih., A. Putri Y. 2024. Slaughter Livestock Production. Deepublish. Yogyakarta.
Muksid, A, and A. T. Widodo. 2017. Cutting-edge livestock production technology. Agricultural Human Resources Extension and Development Agency. Ministry of Agriculture.
Nurmeiliasari, Heri DP., Dadang s., N. Jamiah R., AD. Prasetyo, and A. Sanjaya. 2024. Introduction of Superior Animal Feed Forage to Increase Beef Cattle Production in Marga Sakti Village, Padang Jaya District, North Bengkulu Regency. Scientific Journal of the Development and Application of Science and Technology. 22(1): 175-181.

</td></tr>
</table>

6. Sistem Integrasi Ternak di Lahan Pertanian/ Livestock Integration System on Agricultural Land

Module name	Livestock Integration System on Agricultural Land
Module level	Bachelor Programme
Code	220305653P009
Subtitle, if applicable	
Courses, if applicable	Reguler
Semester	V
Person responsible for the module	Prof. Dr. Ir. Taufan P. Daru, M.Si.
Lecturer	• Prof. Dr. Taufan P. Daru, M.P. • Apdila Safitri, S.Pt., M.Si. • Ardiansyah, S.Pt., M.Si. • Dede Aprylasari, S.Pt., M.Pt.
Language	Billingual (Indonesian and English)
Relation curriculum	Elective course
Type of teaching, contact hours	Lecture, Lesson
Workload	Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)
	Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester
Credit point	2 SKS (3.2 ECTS)
	Details: 1 Credit = 170 min / week 1 Credit = 170 min x 14 week = 2720 min / semester 1 ECTS = 28 h / semester 1 Credit = 2720/ 60 / 28 = 1.6 ECTS 2 Credit = 1.6 x 2 = 3.2 ECTS
Recommed prerequisites	
Module Objectives/Intended Learning Outcomes	• Master and be able to apply knowledge and technology in animal husbandry, keep up with the development of science and technology, possess basic livestock farming skills, and provide solutions to problems in the field of animal husbandry. • Be able to develop livestock resources based on local wisdom to support sustainable livestock development. • Be able to work collaboratively in a team, adapt to the work environment, and utilize information and communication technology (ICT) to support livestock activities. • Be able to assess the implications of the development or application of animal science and technology by considering humanistic values, and prepare scientific papers (thesis or final project reports) based on proper scientific principles, procedures, and ethics. • Actively contribute to improving the quality of life in society, the nation, and the state by upholding nationalism, cultural values,

<table>
<tr><td></td><td>religious views, legal compliance, and demonstrating social sensitivity and concern for the community and environment based on Pancasila.</td></tr>
<tr><td>Content</td><td>• Course contract information and academic regulations
• Concept of livestock integration systems
• Cattle–Rice Field Integration System
• Cattle–Rice Field Integration System (continued)
• Cattle–Corn Integration System
• Cattle–Corn Integration System (continued)
• Agroforestry System
• Silvopasture
• Livestock Integration System on Oil Palm Plantation Land
• Livestock Integration System on Oil Palm Plantation Land (continued)
• Livestock Integration System on Coconut Plantation Land
• Livestock Integration System on Cocoa Plantation Land
• Capacity Building for Ruminant Livestock
• Capacity Building for Ruminant Livestock (continued)</td></tr>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
<table>
<tr><th>No.</th><th>Objects of Assessment</th><th>Forms of Assessment</th><th>Quantity (%)</th></tr>
<tr><td>1</td><td>Affective</td><td>Participation</td><td>10</td></tr>
<tr><td>2</td><td>Task</td><td>Study group persentations Q&A</td><td>20</td></tr>
<tr><td>3</td><td>Mid semester test</td><td>Written test</td><td>30</td></tr>
<tr><td>4</td><td>Final semester test</td><td>Written test</td><td>40</td></tr>
<tr><td colspan="3">Total</td><td>100</td></tr>
</table></td></tr>
<tr><td>Media Employed</td><td>Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)</td></tr>
<tr><td>Reading List</td><td>• Daru, TP., Suhardi, Yusuf, R., Wibowo, A. 2013. Studi Potensi Pemanfaatan Limbah Kelapa Sawit Sebagai Pakan Ternak Di Kecamatan Bongan Kabupaten Kutai Barat. Barong Tongkok : Dinas Perkebunan, Tanaman Pangan, Peternakan dan Perikanan Kabupaten Kutai Barat.
• Daru, T.P., Yulianti, A, Widodo, E., (2014), Potensi Hijauan di Perkebunan Kelapa Sawit Sebagai Pakan Sapi Potong di Kabupaten Kutai Kartanegara, Pastura J. Trop. Forage Sci, 3(2), 94-98.
• Daru, TP., Sunaryo W, Pagoray, H., Suhardi, Mayulu, H, Ibrahim, Safitri, A. 2023. Diversity, nutrient contents and production of forage plants in an integrated cattle livestock-oil palm plantation in</td></tr>
</table>

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- Direktorat Pengembangan Peternakan. 2002. Integrasi ternak pada areal tanaman jagung. Direktorat Pengembangan Ternak, Direktorat Jenderal Bina Produksi Ternak, Departemen Pertanian. Jakarta.
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- Priyanto, R., Setyono,D.J., I. Kismono, Cyrila, L. 2002. Penyusunan standar kawasan agribisnis peternakan dalam rangka pengembangan sistem informasi. Fakultas Peternakan IPB - Direktorat Pengembangan Peternakan, Direktorat Jenderal Produksi, Departemen Pertanian. Jakarta.
- Sinurat, AP., Mathius, IW., Purwadaria, T. 2012. Pengolahan dan Pemanfaatan Hasil Samping Industri Sawit Sebagai Bahan Pakan. Bogor: IAARD Press, Badan Penelitian dan Pengembangan Pertanian, Kementerian Pertanian.
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- Steinfeld, H., de Haan, C, Blacburn, H. 1998. Livestock and the environment: issues and options. In:E. Lutz, H.P. Biswanger, P. Hazell, and A. McCalla (Eds.). Agriculture and the environment: perspective on sustainable rural development. The World Bank. Washington, D.C.
- Vergara, N.T. 1982. New Directions in agroforestry: The potential of tropical legume trees. Honolulu : East-West Centre and United Nations University.
- Victorio, E.E., Moog, F.A. 1995. Sheep production in rice-based farming system with fodder tree suplementation. In: Wong, C.C., Ly,

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7. Inseminasi Buatan/ Artificial Insemination

Module name	Artificial Insemination
Module level	Bachelor Programme
Code	220305653P010
Subtitle, if applicable	
Courses, if applicable	Reguler
Semester	V
Person responsible for the module	drh. Khoiru Indana, M.Si
Lecturer	• drh. Khoiru Indana, M.Si • Kirana Dara Dinanti Adiputra, S.Pt., M.Si • Novemia Fatmarischa, S.Pt., M.Si
Language	Indonesian
Relation curriculum	Elective course
Type of teaching, contact hours	Lecture, Lesson
Workload	Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)
	Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester
Credit point	2 SKS (3.2 ECTS)
	Details: 1 Credit = 170 min / week 1 Credit = 170 min x 14 week = 2720 min / semester 1 ECTS = 28 h / semester 1 Credit = 2720/ 60 / 28 = 1.6 ECTS 2 Credit = 1.6 x 2 = 3.2 ECTS
Recommed prerewuisites	Basic Genetics / General Biology
Module Objectives/Intended Learning Outcomes	Students are able to: 1. Explain the principles and benefits of artificial insemination (AI) 2. Describe semen collection, evaluation, and processing techniques 3. Identify factors affecting semen quality 4. Explain the processes of dilution, freezing, and storage of semen 5. Apply AI techniques and evaluate success rates 6. Differentiate reproductive physiology and AI techniques among species 7. Analyze causes of reproductive failure related to AI
Content	• History and development of artificial insemination • Semen collection methods and semen components • Semen quality assessment techniques • Factors affecting semen quality

<table>
<tr><td></td><td>

Semen dilution and liquid semen storage
Semen freezing and thawing techniques
AI implementation techniques and estrus detection
Recording systems and AI evaluation
Species-specific AI: buffalo, sheep, horses, poultry, pigs
Reproductive failure factors in AI programs
Reporting and presenting AI implementation outcomes

</td></tr>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
<table>
<tr><th>No.</th><th>Objects of Assessment</th><th>Forms of Assessment</th><th>Quantity (%)</th></tr>
<tr><td>1</td><td>Affective</td><td>Participation</td><td>10</td></tr>
<tr><td>2</td><td>Task</td><td>Study group persentations Q&A</td><td>20</td></tr>
<tr><td>3</td><td>Mid semester test</td><td>Written test</td><td>30</td></tr>
<tr><td>4</td><td>Final semester test</td><td>Written test</td><td>40</td></tr>
<tr><td colspan="3">Total</td><td>100</td></tr>
</table>
</td></tr>
<tr><td>Media</td><td>Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)</td></tr>
<tr><td>Reading List</td><td>

Susilawati, T. (2011). Spermatologi. UB Press. ISBN: 978-602-8960-04-5
Adiputra, K. D. D., Sukandi, S., Sonjaya, H., Hasbi, H., & Suhardi, S. (2025). Semen Quality of Bali Bulls Produced by The South Sulawesi Regional Artificial Insemination Center in The Dry And Rainy Seasons. Jurnal Ilmiah Ilmu-Ilmu Peternakan, 28(1), 40–48.
Adiputra, K. D. D., Sukandi, S., Farida, S., Sonjaya, H., & Hasbi, H. (2023). Progressive motility, DNA fragmentation, intact plasma membrane, and acrosome status of frozen semen Bali and Simmental bulls. Hasanuddin Journal of Animal Science, 4(2), 109–118.
Zaenuri, L. A. et al. (2023). Sosialisasi keuntungan inseminasi buatan pada sapi Bali di kelompok peternak sapi desa Sapit. Jurnal Pengabdian Magister Pendidikan IPA, 6(4).
Wanma, F. D. et al. (2022). Tingkat keberhasilan dan faktor yang mempengaruhi keberhasilan pelaksanaan inseminasi buatan pada program UPSUS SIWAB di Provinsi Papua. Jurnal Ilmu Peternakan dan Veteriner Tropis, 12(2), 175–183.

</td></tr>
</table>

8. Bisnis Peternakan/Livestock Business

Module name	Livestock Business
Module level	Bachelor Programme
Code	220305652P012

Subtitle, if applicable	
Courses, if applicable	Reguler
Semester	V
Person responsible for the module	Dinar Anindyasari, S.Pt., M.Si.
Lecturer	• Ir. Julinda R. Manullang, M.P • Dede Aprylasari, S.Pt., M.Pt. • I Putu Gede Didik Widiarta, S.Pt., M.Pt. • Cori Qamara, S.Pt., M.Pt.
Language	Indonesian
Relation curriculum	Elective course
Type of teaching, contact hours	Lecture, Lesson
Workload	Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)
	Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester
Credit point	2 SKS (3.2 ECTS)
	Details: 1 Credit = 170 min / week 1 Credit = 170 min x 14 week = 2720 min / semester 1 ECTS = 28 h / semester 1 Credit = 2720/ 60 / 28 = 1.6 ECTS 2 Credit = 1.6 x 2 = 3.2 ECTS
Recommed prerewuisites	-
Module Objectives/Intended Learning Outcomes	• Mastering general knowledge of business concepts and strategies, identifying strategic issues, business policies and business model canvas so that they are able to implement them in the world of work • Able to apply management principles in managing a livestock business, Able to analyze economic and financial aspects in the livestock business. • Able to design and implement marketing strategies for livestock products.
Content	The Livestock Business course is relevant to prepare students to manage and develop livestock businesses effectively and sustainably. Students will learn aspects of livestock business such as scope, business concepts, strategies, identification of strategic issues, decision-making, business communication, policies, strategy formulation, and the Business Model Canvas. With a deep understanding and practical skills, students will be able to design and implement business strategies in accordance with the dynamics of the livestock industry. They will also learn to identify and address strategic issues, make data-driven decisions, and communicate and formulate business policies to support business growth. This course provides a strong foundation for students to play an active role and contribute to the economic development of the livestock sector.

<table>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
<table>
<tr><th>No.</th><th>Objects of Assessment</th><th>Forms of Assessment</th><th>Quantity (%)</th></tr>
<tr><td>1</td><td>Affective</td><td>Participation</td><td>10</td></tr>
<tr><td>2</td><td>Task</td><td>Study group persentations Q&A</td><td>20</td></tr>
<tr><td>3</td><td>Mid semester test</td><td>Written test</td><td>30</td></tr>
<tr><td>4</td><td>Final semester test</td><td>Written test</td><td>40</td></tr>
<tr><td colspan="3">Total</td><td>100</td></tr>
</table></td></tr>
<tr><td>Media</td><td>Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)</td></tr>
<tr><td>Reading List</td><td>
Edwards, D. W. D., & Edwards, G. C. (2001). Business Management in Agriculture. Blackwell Publishing. ISBN 978-0632054908.
Williams, C. C. (2010). Introduction to Agribusiness Management. Prentice Hall. ISBN 978-0135077812.
McCormick, P. L. (2003). Agricultural and Food Marketing Management. CRC Press. ISBN 978-0824742578.
Barry, P. J. (2005). Strategic Management for Agricultural and Agribusiness Managers. Iowa State Press. ISBN 978-0813826208.
Palmer, S. D. (2014). The Business of Farming: How to Build a Successful Farm Business. University of Missouri Press. ISBN 978-0826219765.
</td></tr>
</table>

9. Nutrisi Unggas dan Non-Ruminansia/Poultry and Non-Ruminant Nutrition

Module name	Poultry and Non-Ruminant Nutrition
Module level	Bachelor Programme
Code	220305653P013
Subtitle, if applicable	
Courses, if applicable	Reguler
Semester	5 (Five)
Person responsible for the module	Ir. Julinda Manullang, S.Pt., M.Si.
Lecturer	• Ir. Julinda Manullang, S.Pt., M.Si. • Nurul Fajrih H., S.Pt., M.Si. • Apdila Safitri, S.Pt., M.Si. • Akhmat Rizkuna, S.Pt., M.Si.
Language	Indonesian
Relation curriculum	Elective courses

<table>
<tr><td>Type of teaching, contact hours</td><td>Lecture, Lesson</td></tr>
<tr><td rowspan="2">Workload</td><td>Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)</td></tr>
<tr><td>Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester</td></tr>
<tr><td rowspan="2">Credit point</td><td>2 SKS (3.2 ECTS)</td></tr>
<tr><td>Details:
1 Credit = 170 min / week
1 Credit = 170 min x 14 week = 2720 min / semester
1 ECTS = 28 h / semester
1 Credit = 2720/ 60 / 28 = 1.6 ECTS
2 Credit = 1.6 x 2 = 3.2 ECTS</td></tr>
<tr><td>Recommed prerewuisites</td><td></td></tr>
<tr><td>Module Objectives/Intended Learning Outcomes</td><td>This course aims to provide students with comprehensive knowledge and skills in the field of poultry and non-ruminant nutrition, including feed ingredients, digestive physiology, nutrient requirements, absorption mechanisms, and practical feeding strategies. It is designed to develop students’ cognitive, affective, and psychomotor competencies in applying nutritional principles to support the productivity and welfare of poultry, rabbits, pigs, and horses.</td></tr>
<tr><td>Content</td><td>1. Introduction to Non-Ruminant Nutrition
2. Poultry Metabolism
3. Poultry Nutrition Biotechnology
4. History and Development of Horse Husbandry
5. Basic Nutrition for Rabbits and Feed Ingredients
6. Basic Nutrition for Pigs and Feed Ingredients</td></tr>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
<table>
<tr><td>No.</td><td>Objects of Assessment</td><td>Forms of Assessment</td><td>Quantity (%)</td></tr>
<tr><td>1</td><td>Affective</td><td>Participation</td><td>10</td></tr>
<tr><td>2</td><td>Task</td><td>Study group persentations Q&A</td><td>20</td></tr>
<tr><td>3</td><td>Mid semester test</td><td>Written test</td><td>30</td></tr>
<tr><td>4</td><td>Final semester test</td><td>Written test</td><td>40</td></tr>
<tr><td colspan="3">Total</td><td>100</td></tr>
</table></td></tr>
<tr><td>Media</td><td>Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)</td></tr>
<tr><td>Reading List</td><td>• Candrawasih, D. (2016). Ilmu Gizi Ternak Non Ruminansia. Universitas Udayana.</td></tr>
</table>

	• Dewi, G.A.M.K. (2017). Ilmu Ternak Babi. Universitas Udayana. • Siagian et al. (2005). Pengaruh Substitusi Jagung terhadap Karkas Babi. Media Peternakan. • Siagian, H.P. (1999). Manajemen Ternak Babi. IPB. • Sihombing, D.T.H. (2006). Ilmu Ternak Babi. Gadjah Mada University Press. • Sihombing, R.H. (2003). Pengaruh Zeolit dan Tepung Darah pada Babi. Skripsi, IPB. • Winarno, F.G. (2004). Kimia Pangan dan Gizi. Gramedia.

10. Pengolahan Limbah Ternak/ Livestock Waste Processing

Module name	Livestock Waste Processing
Module level	Bachelor Programme
Code	220305612W009
Subtitle, if applicable	
Courses, if applicable	Reguler
Semester	IV
Person responsible for the module	Arif Ismanto, S.Pt., M.Sc.
Lecturer	1. Arif Ismanto, S.Pt., M.Sc. 2. Ir. Julinda Romauli Manullang, MP. 3. Amani Aldiyanti, S.Pt., M.Pt. 4. Akhmat Rizkuna, S.Pt., M.Si.
Language	Indonesian
Relation curriculum	Elective course
Type of teaching, contact hours	Lecture, Lesson
Workload	Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)
	Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester
Credit point	3 SKS (3.2 ECTS)
	Details: 1 Credit = 170 min / week 1 Credit = 170 min x 14 week = 2720 min / semester 1 ECTS = 28 h / semester 1 Credit = 2720/ 60 / 28 = 1.6 ECTS 3 Credit = 1.6 x 3 = 4,8 ECTS
Recommed prerewuisites	-
Module Objectives/Intended Learning Outcomes	The Livestock Waste Processing course covers essential concepts and techniques for managing waste from animal farming operations, with a detailed focus on physical, chemical, and biological waste parameters, various handling methods, production of biogas, composting, gelatin extraction, and types of waste from poultry farming.

<table>
<tr><td>Content</td><td>The course examines livestock waste parameters, livestock waste management, biogas production, liquid urine, gelatin, compost production, and waste from poultry farming.</td></tr>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
<table>
<tr><th>No.</th><th>Objects of Assessment</th><th>Forms of Assessment</th><th>Quantity (%)</th></tr>
<tr><td>1</td><td>Affective</td><td>Participation</td><td>10</td></tr>
<tr><td>2</td><td>Task</td><td>Study group persentations Q&A</td><td>20</td></tr>
<tr><td>3</td><td>Mid semester test</td><td>Written test</td><td>30</td></tr>
<tr><td>4</td><td>Final semester test</td><td>Written test</td><td>40</td></tr>
<tr><td colspan="3">Total</td><td>100</td></tr>
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<tr><td>Media</td><td>Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)</td></tr>
<tr><td>Reading List</td><td>Taiganides, E. P. 1977. Animal Waste. Applied Science Publisher, Ltd. London
Taiganides, E. P. 1987. Animal Waste Management and Wastewater treatment. In: Animal Production and Environmental Health. Edit. By: D. Strauch. Elsevier Publishers. B. V. Tokyo. Pp 91-153
Triatmojo, S. 2002. Bioakumulasi Logam Krom pada Lumpur Kering Limbah Penyamakan Kulit. Disertasi S3. Pascasarjanan, IPB. Bogor</td></tr>
</table>

11. Pembibitan Ternak Unggas/ Poultry Breeding

Module name	Poultry Breeding
Module level	Bachelor Programme
Code	220305663P04
Subtitle, if applicable	
Courses, if applicable	Reguler
Semester	VI
Person responsible for the module	Ir. Julinda Manullang, S.Pt., M.Si.
Lecturer	Ir. Julinda Manullang, S.Pt., M.Si. Nurul Fajrih H., S.Pt., M.Si. Akhmat Rizkuna, S.Pt., M.Si. Amani Aldiyanti, S.Pt., M.Pt.
Language	Indonesian
Relation curriculum	Elective courses
Type of teaching, contact hours	Lecture, Lesson
Workload	Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)

<table>
<tr><td></td><td>Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester</td></tr>
<tr><td>Credit point</td><td>2 SKS (3.2 ECTS)</td></tr>
<tr><td></td><td>Details:
1 Credit = 170 min / week
1 Credit = 170 min x 14 week = 2720 min / semester
1 ECTS = 28 h / semester
1 Credit = 2720/ 60 / 28 = 1.6 ECTS
2 Credit = 1.6 x 2 = 3.2 ECTS</td></tr>
<tr><td>Recommed prerewuisites</td><td></td></tr>
<tr><td>Module Objectives/Intended Learning Outcomes</td><td>This course discusses the hierarchy of poultry breeding and policies, poultry breeding systems and selection, poultry breeding management, hatchery management, poultry health, and the handling and processing of poultry egg breeding and hatching waste. This course is designed to develop students' cognitive, affective, and psychomotor skills in implementing effective and sustainable breeding practices.</td></tr>
<tr><td>Content</td><td>1. Introduction to Poultry Breeding
2. Breeding Hierarchy and Poultry Breeding Policy
3. Poultry Breeding and Selection Systems
4. Poultry Breeding Management
5. Poultry Hatchery Management
6. Poultry Health
7. Handling and Processing of Breeding and Hatchery Waste</td></tr>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
<table>
<tr><td>No.</td><td>Objects of Assessment</td><td>Forms of Assessment</td><td>Quantity (%)</td></tr>
<tr><td>1</td><td>Affective</td><td>Participation</td><td>10</td></tr>
<tr><td>2</td><td>Task</td><td>Study group persentations Q&A</td><td>20</td></tr>
<tr><td>3</td><td>Mid semester test</td><td>Written test</td><td>30</td></tr>
<tr><td>4</td><td>Final semester test</td><td>Written test</td><td>40</td></tr>
<tr><td colspan="3">Total</td><td>100</td></tr>
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<tr><td>Media</td><td>Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)</td></tr>
<tr><td>Reading List</td><td>• Supriyatna,E. dkk., 2005. Ilmu Dasar Ternak Unggas. Penebar Swadaya. Jakarta
• North, M. O., & Bell, D. D. (1990). Commercial Chicken Production Manual. Springer Science & Business Media.
• Tullet, S. G. (1991). Avian Incubation. Butterworth-Heinemann Ltd.</td></tr>
</table>

	• Bell, D. D., & Weaver, W. D. (2001). *Commercial Chicken Meat and Egg Production*. Springer Science & Business Media. • Sudaryani T dan Santosa H. 2003. Pembibitan Ayam Ras. Penebar Swadaya, Jakarta • McDaniel, C. D., & Brake, J. (1981). *Evaluating Hatchability and Fertility in Poultry Eggs*. Poultry Science Association. • Saif, Y. M., Fadly, A. M., Glisson, J. R., McDougald, L. R., Nolan, L. K., & Swayne, D. E. (2008). *Diseases of Poultry*. Wiley-Blackwell. • FAO. (2011). *Manual on Livestock Waste Management*. FAO Animal Production and Health Paper. • Peraturan Pemerintah Republik Indonesia Nomor 48 Tahun 2011 Tentang Sumber Daya Genetik Hewan Dan Perbibitan Ternak • Glatz, P. C., & Rodda, B. K. (2012). A survey of hatchery waste management practices. Journal of Environmental Science and Engineering. B, 1(2B).

12. Sosiologi Pedesaan/ Rural Sociology

Module name	Rural Sociology
Module level	Bachelor Programme
Code	220305662P06
Subtitle, if applicable	
Courses, if applicable	Reguler
Semester	VI
Person responsible for the module	Dinar Anindyasari, S.Pt., M.Si
Lecturer	• Dinar Anindyasari, S.Pt., M.Si. • Dede Aprylasari, S.Pt., M.Pt. • I Putu Gede Didik Widiarta, S.Pt., M.Pt. • Cori Qamara, S.Pt., M.Pt.
Language	Billingual (Indonesian and English)
Relation curriculum	Elective course
Type of teaching, contact hours	Lecture, Lesson
Workload	Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)
	Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester
Credit point	2 SKS (3.2 ECTS)
	Details: 1 Credit = 170 min / week 1 Credit = 170 min x 14 week = 2720 min / semester 1 ECTS = 28 h / semester 1 Credit = 2720/ 60 / 28 = 1.6 ECTS 2 Credit = 1.6 x 2 = 3.2 ECTS
Recommed prerequisites	

<table>
<tr><td>Module Objectives/Intended Learning Outcomes</td><td>1. Students are able to explain concepts, theories, and approaches in rural sociology and understand the social, cultural, and economic dynamics of rural communities.
2. Students are able to analyze social structure, stratification, social change, as well as the impact of modernization and globalization on rural communities.
3. Students are able to integrate ethical values, humanities, and local wisdom in the analysis and implementation of rural development programs.</td></tr>
<tr><td>Content</td><td>• Introduction to Sociology
• Characteristics of Rural Communities
• Poverty and Social Polarization
• Concept of Community Empowerment</td></tr>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
<table>
<tr><th>No.</th><th>Objects of Assessment</th><th>Forms of Assessment</th><th>Quantity (%)</th></tr>
<tr><td>1</td><td>Affective</td><td>Participation</td><td>10</td></tr>
<tr><td>2</td><td>Task</td><td>Study group persentations Q&A</td><td>20</td></tr>
<tr><td>3</td><td>Mid semester test</td><td>Written test</td><td>30</td></tr>
<tr><td>4</td><td>Final semester test</td><td>Written test</td><td>40</td></tr>
<tr><td colspan="3">Total</td><td>100</td></tr>
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<tr><td>Media Employed</td><td>Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)</td></tr>
<tr><td>Reading List</td><td>• Priyotamtomo W., 2001, Bahan Kuliah Sosiologi Pedesaan, Fakultas Pertanian UGM (tidak diterbitkan)
• Rahardjo, 1999, Pengantar Sosiologi Pedesaan dan Pertanian, Edisi Pertama, Gadjah Mada University Press. Jogyakarta.
• Svalastoga, K., 1989. Diferrensiasiasi Sosial. Bina Aksara Jakarta.
• Shahab K., 2007. Sosiologi Pedesaan. Ar Ruzz Media. Jogyakarta.
• Soekanto S., 2003, Sosiologi Suatu Pengantar, Cetakan ke-36, PT. Raja Grafindo Persada
• Ulrich P., 1993, Sosiolologi Pertanian, Yayasan Obor Indonesia Jakarta
• Wiriaatmadja, S., 1976. Sosiologi Pedesaan. Cetakan ke 4. Yasaguna. Jakarta.
• Yuliati Y. dan Purnomo M., 2003, Sosiologi Pedesaan, Lappera Pustaka Utama.</td></tr>
</table>

	• Slamet, M., 2003. Membentuk Pola Perilaku Manusia Pembangunan. IPB Press • Soekartawi, 1990. *Ilmu Ekonomi Produksi Peternakan.* Rajawali Press. Jakarta. • Direktorat Bina Usaha Tani Ternak dan Pengolahan Hasil, 1997. *Analisa Kelayakan Usaha Tani Ternak*. Ditjennak Deptan. Jakarta. • Swasta, B., dan Sukotjo, I., 2000. *Pengantar Bisnis Modern*. Edisi Ketiga. Penerbit Liberty. Yogyakarta.

13. Pengelolaan Ternak di Lahan Pasca Tambang/ Livestock Management in Post-Mining Land

Module name	Livestock Management in Post-Mining Land
Module level	Bachelor Programme
Code	220305662P08
Subtitle, if applicable	
Courses, if applicable	Reguler
Semester	VII
Person responsible for the module	Prof. Dr.Ir. Taufan Purwokusumaning Daru, MP
Lecturer	Apdila safitri, S.Pt., M.Si.
Language	Billingual (Indonesian and English)
Relation curriculum	Elective course
Type of teaching, contact hours	Lecture, Lesson
Workload	Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)
	Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester
Credit point	2 SKS (3.2 ECTS)
	Details: 1 Credit = 170 min / week 1 Credit = 170 min x 14 week = 2720 min / semester 1 ECTS = 28 h / semester 1 Credit = 2720/ 60 / 28 = 1.6 ECTS 2 Credit = 1.6 x 2 = 3.2 ECTS
Recommed prerequisites	
Module Objectives/Intended Learning Outcomes	Students are able to identify the quality of post-coal mining land and use it as land to develop livestock.
Content	The scope of the livestock management course in post-mining land includes an introduction to post-mining land conditions, how to improve land quality, identify and predict the production of feed plants, prepare land for livestock, and manage livestock on post-mining land.

<table>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
<table>
<tr><td>No.</td><td>Objects of Assessment</td><td>Forms of Assessment</td><td>Quantity (%)</td></tr>
<tr><td>1</td><td>Affective</td><td>Participation</td><td>10</td></tr>
<tr><td>2</td><td>Task</td><td>Study group persentations Q&A</td><td>20</td></tr>
<tr><td>3</td><td>Mid semester test</td><td>Written test</td><td>30</td></tr>
<tr><td>4</td><td>Final semester test</td><td>Written test</td><td>40</td></tr>
<tr><td colspan="3">Total</td><td>100</td></tr>
</table></td></tr>
<tr><td>Media Employed</td><td>Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)</td></tr>
<tr><td>Reading List</td><td>
Ferris FG, Kleinman LH, Stewart DG, Stowe RL, Viclund LE. 1996. Handbook of Western Reclamation Techniques. Denver: The Office of Technology Transfer, Western Regional Coordinating Centre, Office of Surface Mining Reclamation and Enforcement.
Gizikoff, K.G. 2004. Re-Establishing Livestock Use on Mine Landscapes in The Southern Interior of BC. KG Consulting, Merrit BC.
Heidschmidt, R.K, Stuth, J.W. 1991. Grazing Management: An Ecological Perspective. Portland : Timber Press.
Errington, J.C. 2002. Toward Result-Based Standards for Mine Reclamation in British Columbia. In: High Elevation Mine Reclamation. Proceedings of the 26th. Annual British Columbia Mine Reclamation Symposium. BC Technical ang Research Committee on Reclamation/Canadian Land Reclamation Association. Bitech Publishers Ltd.
</td></tr>
</table>

14. Bioteknologi Peternakan/Livestock Bitechnology

Module name	Livestock Bitechnology
Module level	Bachelor Programme
Code	220305662P09
Subtitle, if applicable	
Courses, if applicable	Reguler

<table>
<tr><td>Semester</td><td>VI</td></tr>
<tr><td>Person responsible for the module</td><td>Ir. Suhardi, S.Pt., M.P., Ph.D.</td></tr>
<tr><td>Lecturer</td><td>• Dr. Nurul Fajrih H, S.Pt., M.Si.
• Kirana Dara Dinanti A. S.Pt., M.Si.
• Karenina Dwi Yulianti, S.Pt., M.Si.</td></tr>
<tr><td>Language</td><td>Billingual (Indonesian and English)</td></tr>
<tr><td>Relation curriculum</td><td>Elective Course</td></tr>
<tr><td>Type of teaching, contact hours</td><td>Lecture, Lesson</td></tr>
<tr><td>Workload</td><td>Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)
Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester</td></tr>
<tr><td>Credit point</td><td>2 SKS (3.2 ECTS)
Details:
1 Credit = 170 min / week
1 Credit = 170 min x 14 week = 2720 min / semester
1 ECTS = 28 h / semester
1 Credit = 2720/ 60 / 28 = 1.6 ECTS
2 Credit = 1.6 x 2 = 3.2 ECTS</td></tr>
<tr><td>Recommed prerequisites</td><td></td></tr>
<tr><td>Module Objectives/Intended Learning Outcomes</td><td>Contributing to improving the quality of life in society, nation, state, and civilization progress based on Pancasila.
Cooperate and have social sensitivity and concern for the community and the environment
Demonstrate responsibility for work in his/her area of expertise independently
Internalizing the spirit of independence, struggle, and entrepreneurship
Mastering effective and efficient livestock knowledge and technology, including breeding, feeding, yield processing, marketing management and organizing a sustainable livestock production system</td></tr>
<tr><td>Content</td><td>Livestock Biotechnology is a course that studies the biological concepts that underlie the development and application of Biotechnology in various aspects of the livestock sector. The study began with the definition and basic principles of Biotechnology, the biological concepts underlying the development of Biotechnology, followed by a discussion on the application of biotechnology in the fields of production, reproduction, livestock nutrition, and livestock product technology. As a provision for attitude development, in this course issues related to the ethics of Biotechnology implementation are also studied and discussed.</td></tr>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
<table>
<tr><th>No.</th><th>Objects of Assessment</th><th>Forms of Assessment</th><th>Quantity (%)</th></tr>
</table></td></tr>
</table>

	1	Affective	Participation	10
	2	Task	Study group persentations Q&A	20
	3	Mid semester test	Written test	30
	4	Final semester test	Written test	40
	Total			100
Media Employed	Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)			
Reading List	• Hajrah, Hafsan, Zulkarnain, Makmur. 2022. Pemanfaatan Bioteknologi dalam Bidang Peternakan untuk Peningkatan Kualitas Hewan Ternak di Sulawesi Selatan. *Jurnal Teknosains,* 16(2): 261-270. • Ihtiar, A., Dewi Vira, T., Panca Faizsyahrani, L., Anggraini, N., Azuhro, V., Rita Sulistya Dewi, E., Nurwahyunani, A. 2023. The Utilization of Household Waste Through Ecoenzymes. *International Journal of Humanities, Social Sciences and Business (Injoss),* 2(2), 239-249. https://doi.org/10.54443/injoss.v2i2.75 • Journal, C. D., Surtina, D., Sari, R. M., Astuti, T., Akbar, S. A., Hendri, J., Asri, A., Fermentasi, P., Village, T. G., District, S., City, S. (2022). Peningkatan Produktivitas Ternak Potong melalui Penyediaan Pakan Fermentasi dan Pencegahan Pengendalian Penyakit Mulut dan Kuku di Kelompok Tani Sapakek Basamo Kota Solok. *Jurnal Pengabdian Masyarakat*, 3(2): 1168-1173. • Kua, M. Y., Natal, Y. R., Ngurah, D., Laksana, L., Lopa, S. B., Tene, F., Menge, D., Moo, D., Polu, P., Loa, P. Y. 2023. Pemanfaatan bioteknologi pada bidang peternakan sebagai pengendalian penyakit hwan ternak: literature review. *Jurnal Flobamorata Mengabdi,* 1(1), 7-15. • Muchlis, Sema, Sonjaya, Toleng. 2022. Penerapan Bioteknologi dalam Produksi Ternak. *Jurnal Ilmu dan Teknologi Peternakan.* 8(2), 95-104. • Said, S., Agung, P. P., Putra, W. P. B., Kaiin, E. M. (2020). The Role of Biotechnology in Animal Production. *IOP Conference Series: Earth and Environmental Science,* 492(1), 012035. https://doi.org/10.1088/1755-1315/492/1/012035 • Sutarno. 2016. Rekayasa Genetik dan Perkembangan Bioteknologi di Bidang Peternakan. *Proceeding Biology Education Conference*. 13(1): 23-27. • Tarigan, S., Wibowo, M. H., Indriani, R. (2023). Efektivitas Lapangan Vaksinasi Flu Burung H5N1 yang Sangat Patogen pada Lapisan Komersial di Indonesia. *Jurnal Ilmu Ternak,* 18(1): 45-52.			

15. Penyuluhan dan Komunikasi Pembangunan Peternakan/ Extension and Development Communication

Module name	Extension and Development Communication
Module level	Bachelor Programme
Code	220305662P10
Subtitle, if applicable	
Courses, if applicable	Reguler
Semester	V
Person responsible for the module	Dinar Anindyasari, S.Pt., M.Si.
Lecturer	1. Dinar Anindyasari, S.Pt., M.Si. 2. Dede Aprylasari, S.Pt., M.Pt. 3. I Putu Gede Didik Widiarta, S.Pt., M.Pt. 4. Cori Qamara, S.Pt., M.Pt.
Language	Billingual (Indonesian and English)
Relation curriculum	Elective course
Type of teaching, contact hours	Lecture, Lesson
Workload	Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)
	Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester
Credit point	2 SKS (3.2 ECTS)
	Details: 1 Credit = 170 min / week 1 Credit = 170 min x 14 week = 2720 min / semester 1 ECTS = 28 h / semester 1 Credit = 2720/ 60 / 28 = 1.6 ECTS 2 Credit = 1.6 x 2 = 3.2 ECTS
Recommed prerequisites	
Module Objectives/Intended Learning Outcomes	• Able to contribute to the development of livestock communities through the application of effective extension principles, based on social communication and innovation in farmers' decision-making. • Able to collaborate and demonstrate social sensitivity in understanding farmers' needs and applying effective communication strategies to support the success of extension activities. • Demonstrates professionalism and responsibility in designing, implementing, and evaluating extension programs to improve farmers' welfare. • Internalizes the spirit of independence and innovation in developing extension programs that encourage farmers to adopt better technologies and livestock practices. • Masters extension methods based on information and communication technology to enhance the effectiveness of livestock innovation dissemination and empower farmers in managing sustainable livestock businesses.
Content	• Concepts of Livestock Extension • Concepts of Farmer Behavior in Livestock Farming

<table>
<tr><td></td><td>

Theories and Concepts of Social Communication
The Role of Communication in Livestock Extension
Innovation in Livestock Farming
Adoption and Diffusion Processes of Innovation in Livestock
Livestock Extension Methods
Participatory Approaches in Livestock Extension
Planning of Livestock Extension Programs
Implementation of Livestock Extension Programs
Evaluation of Livestock Extension Programs
Impact of Extension on Farmer Behavior Change
Challenges and Issues in Livestock Extension

</td></tr>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
<table>
<tr><th>No.</th><th>Objects of Assessment</th><th>Forms of Assessment</th><th>Quantity (%)</th></tr>
<tr><td>1</td><td>Affective</td><td>Participation</td><td>10</td></tr>
<tr><td>2</td><td>Task</td><td>Study group persentations Q&A</td><td>20</td></tr>
<tr><td>3</td><td>Mid semester test</td><td>Written test</td><td>30</td></tr>
<tr><td>4</td><td>Final semester test</td><td>Written test</td><td>40</td></tr>
<tr><td colspan="3">Total</td><td>100</td></tr>
</table>
</td></tr>
<tr><td>Media Employed</td><td>Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)</td></tr>
<tr><td>Reading List</td><td>

Tangible and Intangible Benefits of Agricultural Extension in Developing Countries: Evidence from Indonesia. 2020. Jurnal Penyuluhan Pertanian, 15(1): 45-62. Dwi Suryanto, Ahmad Zainal, dan Agustin Riawan
Pengantar Penyuluhan Pertanian: Teori dan Praktik. 2018. Salim M. Ibrahim dan Sutrisno. Penerbit Alfabeta. ISBN 978-602-4223-45-2.
Komunikasi Pembangunan Peternakan: Teori, Praktik, dan Evaluasi. 2021. Zulfikar Zahri dan Agus M. Indrawati. Penerbit Gama Press. ISBN 978-602-4321-76-3.
Direktorat Jenderal Peternakan, 2005. Kebijakan Penyuluhan Peternakan di Indonesia. http://www.ditjenpeternakan.go.id.
Mubyarto, 2000. Penyuluhan Pertanian: Suatu Perspektif Sosial Ekonomi. Penerbit Kanisius. Yogyakarta.
Meiranto, D. dan Yani, S., 2016. Komunikasi Efektif dalam Penyuluhan Peternakan. Penerbit Gadjah Mada University Press. Yogyakarta.
Budi W., 2010. Penyuluhan Pertanian dan Pemberdayaan Petani. Fakultas Ekonomi, Universitas Sebelas Maret. Surakarta.
Rohmawati, M. dan Akbar, H., 2012. Model Penyuluhan dan Penyebaran Teknologi Peternakan di Pedesaan. Jurnal Ilmiah Peternakan, 8(4): 189-205.
Sutanto, P., 2008. Sistem Informasi Penyuluhan Peternakan.

</td></tr>
</table>

	Penerbit Lembaga Penerbitan Fakultas Pertanian UNS. Surakarta. • Kotler, P., 2010. Manajemen Pemasaran dalam Konteks Pembangunan Pertanian. Penerbit Erlangga. Jakart. • Muhammad, A., 2003. Penyuluhan Pertanian dalam Pembangunan Pedesaan. Penerbit Sinar Grafika. Jakarta. • Widodo, H. dan Rina, A., 2014. Penyuluhan Peternakan: Teori dan Aplikasi di Lapangan. Penerbit Andi. Yogyakarta. • Gustiawan, S., 2015. Pengembangan Penyuluhan Peternakan melalui Media Komunikasi. Universitas Pendidikan Indonesia. Bandung.

16. Nutrisi Ruminansia/Ruminant Nutrition

Module name	Extension and Development Communication
Module level	Bachelor Programme
Code	220305662P10
Subtitle, if applicable	
Courses, if applicable	Reguler
Semester	VI
Person responsible for the module	Prof. Dr. Ir. Hamdi Mayulu, S.Pt., M.Si
Lecturer	• Apdillah Safitri, S.Pt., M.Si • Servis Simanjuntak, S.Pt., M.Si
Language	Billingual (Indonesian and English)
Relation curriculum	Elective course
Type of teaching, contact hours	Lecture, Lesson
Workload	Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)
	Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester
Credit point	3 SKS (4.8 ECTS)
	Details: 1 Credit = 170 min / week 1 Credit = 170 min x 14 week = 2720 min / semester 1 ECTS = 28 h / semester 1 Credit = 2720/ 60 / 28 = 1.6 ECTS 3 Credit = 1.6 x 3 = 4.8 ECTS
Recommed prerequisites	Animal Nutrition Science; Feed Ingredients Formulation Ration
Module Objectives/Intended Learning Outcomes	• Have the ability to apply the fields of animal science and technology in various environments that are useful in the development of ruminant livestock; • Have the ability to identify, analyze, synthesize, and formulate problems in the field of animal husbandry, especially the development of ruminant livestock • Have scientific ability to formulate, analyze, solve problems in the field of ruminant farming, and make appropriate recommendations; and

<table>
<tr><td></td><td>• Have the ability to communicate verbally well and convey messages in improving the welfare of ruminant livestock farmers (beef cattle, buffalo, goats and sheep).</td></tr>
<tr><td>Content</td><td>Ruminant nutrition has limitations and scope to understand: Comparative anatomy of the digestive tract, ruminant digestive system, role of rumen microbes, process of digestion of carbohydrates, nitrogen, fat in beef cattle, buffalo, goats and sheep. Principles of analysis and evaluation of ruminant feed, Application of nutritional concepts related to the determination of nutrient needs according to physiological status, production level, and effect of feed on Nutrient fulfillment in the rations of beef cattle, dairy cows, buffaloes, goats, and sheep, as well as working livestock.</td></tr>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
<table>
<tr><td>No.</td><td>Objects of Assessment</td><td>Forms of Assessment</td><td>Quantity (%)</td></tr>
<tr><td>1</td><td>Affective</td><td>Participation</td><td>10</td></tr>
<tr><td>2</td><td>Task</td><td>Study group persentations Q&A</td><td>20</td></tr>
<tr><td>3</td><td>Mid semester test</td><td>Written test</td><td>30</td></tr>
<tr><td>4</td><td>Final semester test</td><td>Written test</td><td>40</td></tr>
<tr><td colspan="3">Total</td><td>100</td></tr>
</table></td></tr>
<tr><td>Media Employed</td><td>Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)</td></tr>
<tr><td>Reading List</td><td>• Regulation of the Minister of Research, Technology and Higher Education Number 57 of 2018, concerning the Statute of Mulawarman University;
• Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 3 of 2020, concerning National Standards for Higher Education;</td></tr>
</table>

17. Sumberdaya Genetik Ternak lokal/Local Livestock Genetic Resources

Module name	Local Livestock Genetic Resources
Module level	Bachelor Programme
Code	220305662P012
Subtitle, if applicable	
Courses, if applicable	Reguler
Semester	VI
Person responsible for the module	Ir. Suhardi, S.Pt., M.P., Ph.D.
Lecturer	• Ir. Suhardi, S.Pt., M.P., Ph.D. • Anhar Faisal Fanani, S.Pt., M.Si. • Nurliani Erni S.Pt., M.Si.

<table>
<tr><td></td><td>• Novemia Fatmarischa, S.Pt., M.Si.</td></tr>
<tr><td>Language</td><td>Indonesian</td></tr>
<tr><td>Relation curriculum</td><td>Elective course</td></tr>
<tr><td>Type of teaching, contact hours</td><td>Lecture, Lesson</td></tr>
<tr><td rowspan="2">Workload</td><td>Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination)</td></tr>
<tr><td>Total time of 2720 minutes or equivalent to a total of 45 hours in 14 weeks per semester</td></tr>
<tr><td rowspan="2">Credit point</td><td>2 SKS (3.2 ECTS)</td></tr>
<tr><td>Details:
1 Credit = 170 min / week
1 Credit = 170 min x 14 week = 2720 min / semester
1 ECTS = 28 h / semester
1 Credit = 2720/ 60 / 28 = 1.6 ECTS
2 Credit = 1.6 x 2 = 3.2 ECTS</td></tr>
<tr><td>Recommed prerewuisites</td><td></td></tr>
<tr><td>Module Objectives/Intended Learning Outcomes</td><td>• Student are able to understand and explain the fundamentals and principles of genetic conservation of local livestock.
• Student are able to identify the genetic potential and development prospects of various types of germplasm animals in East Kalimantan that have potential as livestock, including ruminants, non-ruminants, poultry, and prospective wildlife species.
• Student are able to understand and explain the management mechanisms for the maintenance of local livestock species in East Kalimantan.
• Student are able to understand the application of local genetic resources across different regions in East Kalimantan Province to support the availability of animal-based protein sources.</td></tr>
<tr><td>Content</td><td>1. Fundamental knowledge of germplasm and livestock genetic resources.
2. Biological aspects, problems, potential, behavior characteristics, management, and research progress on the Sambar deer (Rusa unicolor), Kalang buffalo, Nunukan chicken, Alabio duck, and prospective wildlife species.</td></tr>
<tr><td>Study and Examination Requirements and Forms of Examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in The Academic Regulations of Mulawarman University (No Practical Work)
<table>
<tr><th>No.</th><th>Objects of Assessment</th><th>Forms of Assessment</th><th>Quantity (%)</th></tr>
<tr><td>1</td><td>Affective</td><td>Participation</td><td>10</td></tr>
<tr><td>2</td><td>Task</td><td>Study group persentations Q&A</td><td>20</td></tr>
<tr><td>3</td><td>Mid semester test</td><td>Written test</td><td>30</td></tr>
<tr><td>4</td><td>Final semester test</td><td>Written test</td><td>40</td></tr>
</table></td></tr>
</table>

	Total	100
Media	Laptop/Handphone/Zoom Meeting for online lecture/ Mulawarman Online Learning System (MOLS)	
Reading List	• Alwi, M. C. Sumantri, S. Darwati. 2014. Karakteristik Genetik dan Fenotip Ayam Nunukan di Pulau Tarakan, Kalimantan Timur. Jurnal Veteriner. Vol 15 (2) : 173-181. • Campbell & Reeu, 1991. Biology. Pearson Education Inc. Publishing. • Curran, L. M. 2004. Lowland forest loss in protected areas of Indonesian Borneo, Science 13 February 2004 : Vol. 303 . no. 5660, pp. 1000-1003. • FAO. 2007. The State Of The World's Animal Genetic Resources For Food And Agriculture. Rome, Italy. • Harris, M.I., H. Mayulu, R. Yusuf, N.R. Fauziah, S.N. Rahmatullah. 2015. Peran Ternak Lokal Asli Kalimantan Timur Dan Strategi Pengembangannya Dalam Menunjang Ketahanan Pangan Nasional. Jurnal Teknologi Pertanian Universitas Mulawarman 10(2):65-72. • Kuspriyadi, 2002. Penangkaran rusa dan tata cara perijinannya, Makalah Seminar dan Lokalatih Rusa, Yogyakarta. • Kwatrina, R.T. dan A, Sukmana. 2008. Mengenal beberapa aspek dalam perencanaan penangkaran rusa sambar (*Cervus unicolor*) dengan sistem semi-intensif di Kampus kehutanan terpadu Aek Nauli. Prosiding ekspose hasil-hasil penelitian. Peran penelitian dalam melestarikan dan memanfaatkan potensi sumberdaya hutan di Sumbagut. Pusat Litbang Hutan dan Konservasi Alam. Bogor. Pp. 129-140. • Nalbandov, A.V. 1990. Reproductive physiology of mammals and birds. Alih Bahasa: S. Keman. UI-Press. Jakarta. • Partodihardjo, S. 1987. Ilmu Reproduksi Hewan. Dalam: Utami, Ida Ayu Putri. 2009. Daya tahan spermatozoa ayam buras (peranakan sentul) pada Tiga macam pengencer. Ganec Swara Edisi Khusus. Vol 13: 39-42. • Rohaeni, E.S., A. Hamdan, A. Subhan dan R. Qomariah. 2005. Laporan Akhir Kegiatan Inventarisasi dan Karakterisasi Kerbau Rawa sebagai Ternak Plasma Nutfah di Kalimantan Selatan. BPTP Kalimantan Selatan, Banjarbaru. • Rohaeni, E.S dan Tarmudji. 1994. Potensi dan kendala dalam pengembangan peternakan itik Alabio di Kalimantan Selatan. Warta Penelitian dan Pengembangan Pertanian 16 (1): 4-6. • Salsabela, A. dan Suhardi. 2023. Performa Reproduksi dan Body Condition Score Kerbau Rawa (*Bubalus bubalis*) Betina di Pulau Lanting. Journal of Livestock and Animal Health Vol. 6, No.1: 35-40. • Sartika, T., S. Sulandari, M.S.A. Zein, dan S. Paryanti. 2006. Ayam Nunukan : Karakter Genetik, Fenotipe dan Pemanfaatannya. Wartazoa. Vol 16 : 216-222. • Semiadi, G., P. D. Muir, T. N. Barry, C. J. Veltman & J. Hodgson. 1993. Grazing patterns of sambar deer (*Cervus unicolor*) and red deer (*Cervus elaphus*) in captivity, New Zealand Journal of Agricultural Research, 36:2, 253-260. • Semiadi, G, P.D. Muir and T.N. Barry. 1994. General biology of

sambar deer (*Cervus unicolot*) in captivity. New Zealand Journal of Agricultural Research, 37:1, 79-85.

- Semiadi, G., T. N. Barry, P. D. Muir & J. Hodgson. 1995. Dietary preferences of sambar (*Cervus unicolor*) and red deer (*Cervus elaphus*) offered browse, forage legume and grass species. Journal of Agricultural Science, Cambridge, 125, 99-107.
- Semiadi, G dan R.T.P. Nugraha. 2004. Panduan Pemeliharaan Rusa Tropis. Pusat Penelitian Biologi Lembaga Ilmu Pengetahuan Indonesia, Bogor.
- Suhardi, P. Summpunn, M. Duangjinda, S. Wuthisuthimethavee. 2020. Phenotypic diversity characterization of Kalang and Thale Noi Buffalo (*Bubalus bubalis*) in Indonesia and Thailand: Perspectives for the buffalo breeding development. Biodiversitas : Vol. 21 (11) : 5128-5137.
- Suhardi, P. Summpunn, and S. Wuthisuthimethavee. 2021. mtDNA D-loop sequence analysis of Kalang, Krayan, and Thale Noi buffaloes (*Bubalus bubalis*) in Indonesia and Thailand reveal genetic diversity. J. Indonesian Trop.Anim. Agric. 46(2):93-105.
- Suhardi. 2024. The Discovery of Genetic and Mithocondrial DNA Sequencing of Kalang Buffalo. Deepublish, Yogyakarta.
- Suryana. 2007. Prospek dan peluang pengembangan itik Alabio di Kalimantan Selatan. Jurnal Litbang Pertanian 26 (3):109-114. Suryana, R.R. Noor, P.S. Hardjosworo dan L.H. Prasetyo. 2010. Karakteristik fenotipe itik Alabio (Anas platyrhynchos Borneo) di Kalimantan Selatan. Bul. Plasma Nutfah 17 (1) : 61- 67.
- Suryana, 2011. Karakterisasi fenotipik dan genetik itik Alabio dan pemanfaatannya di Kalimantan Selatan secara berkelanjutan. Disertasi. Sekolah Pascasarjana Institut Pertanian Bogor.
- Suryana, 2013. Pemanfataan keragaman genetik untuk meningkatkan produktivitas itik Alabio (Anas platyrhynchos Borneo). Jurnal Litbang Pertanian (in Press)
- Susanti, T., dan L.H. Prasetyo. 2009. Pendugaan parameter genetik sifat-sifat produksi telur itik Alabio. Prosiding Seminar Nasional Teknologi Peternakan dan Veteriner “Inovasi Teknologi Mendukung Pengembangan Agribisnis Peternakan Ramah Lingkungan”. Bogor, 11-12 Nopember 2008. Puslitbang Peternakan, Bogor. hlm. 588-610.
- Williamson, G. dan W.J.A. Payne. 1993. Pengantar Peternakan di Daerah Tropis. Gadjah Mada Press, Yogyakarta.