

# SEMESTER COURSE PLAN (SCP)

DAIRY CATTLE SCIENCE  
(23101121202)



## TEACHING TEAM :

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BACHELOR PROGRAMME IN ANIMAL HUSBANDRY  
FACULTY OF ANIMAL SCIENCE  
HASANUDDIN UNIVERSITY  
MAKASSAR  
2025

**BACHELOR PROGRAMME IN ANIMAL HUSBANDRY  
FACULTY OF ANIMAL SCIENCE  
HASANUDDIN UNIVERSITY**

**Vision**

Vision of the study program :

Becoming an international standard in livestock education provider based on the Indonesian Maritime Continent

**Vision Strategic**

In accordance with the vision, mission, and objectives that have been set, the Animal Husbandry Study Program of the Faculty of Animal Science sets the following objectives to be achieved:

- a. Improving the quality of learning implementation that is in line with the needs of industry and society based on research and international standards;
- b. Creating networks and partnerships in the development of Animal Husbandry science and technology and its utilization in the implementation of learning;
- c. Producing graduates who have character, vision, creativity and innovation in the field of animal husbandry science and technology with an entrepreneurial perspective.

**Mission**

The mission carried out in the implementation of the Bachelor of Animal Husbandry Study Program, Faculty of Animal Husbandry, Hasanuddin University is

- 1) Organizing quality learning to produce independent and globally competitive Animal Husbandry scholars.
- 2) Developing animal husbandry science for the benefit of the nation.
- 3) Providing a conducive academic climate for implementing education with an entrepreneurial perspective.

**Graduate Profiles**

No	Profile	Description
1	Manager	Graduates who apply concepts and techniques in managing livestock farming and institutions related to livestock businesses such as financial institutions
2	Young Researcher	Graduates who able to apply scientific concepts and methods in solving problems in the development of the field of Animal Husbandry
3	Planners	Graduates who able to prepare potential and problem analysis, as well as formulate plans and strategies for the development of the livestock and related industries
4	Educators	Graduates who have the ability and skills to transfer science and technology to students in the field of animal husbandry
5	Entrepreneur	Graduates who able to apply business in the field of Animal Husbandry as their main business, or business development to support livestock business
6	Bureaucrat	Graduates who are able to organize government duties, especially in the affairs of livestock development

### **Learning Outcomes imposed on the Course**

ILO-4 (KU1) - Able to apply logical, critical, systematic, and innovative thinking in the context of developing or implementing information technology-based science and technology (GS-01).

ILO-6 (KU3) - Able to be responsible for achieving group work results, supervising and evaluating the completion of work assigned to workers under his/her responsibility (GS-03).

### **Course Learning Outcomes (CLO)**

CLO-1: After taking the Dairy Cattle Science course, students are expected to be able to implement the importance of dairy cattle as milk producers, dairy cattle breeds, breeding systems, reproductive systems, anatomy and development of the mammary glands, physiology and secretion of milk, components and nutritional value of milk and factors that influence them, the need for food substances, feed ingredients, housing in dairy cattle, and raising dairy buffalo.

### **Sub-CLO**

Sub-CLO 1: Able to analyze profitable factors and plan a dairy farming business.

Sub-CLO 2: Able to evaluate the characteristics and origin of several dairy cattle breeds (dairy cows, dairy goats and dairy buffaloes).

Sub-CLO 3: Able to apply the breeding system in dairy livestock (recording system and evaluation of recording in dairy livestock) reproductive system of dairy livestock (dairy cows, dairy goats and dairy buffaloes).

Sub CLO-4: Able to apply the reproductive system of dairy livestock (dairy cows, dairy goats and dairy buffaloes) and factors that affect the reproductive performance of dairy livestock.

Sub CLO-5: Able to analyze anatomy and physiology, mammary gland development, and milk secretion in dairy cattle (before lactation and heifers as well as during lactation and dry period).

Sub-CLO 6: Able to measure the components and nutritional values contained in milk, and internal and external factors that affect milk production and quality.

Sub-CLO 7: Able to implement the needs and uses of food substances and sources of feed ingredients in dairy cattle (main feed and additional feed/concentrates, and types of rations).

Sub-CLO 8: Able to apply the housing system in dairy cattle (function of cages, location and requirements of cages, parts of cages and their equipment, types and types of cages, as well as the uses and benefits of milk rooms and equipment related to milk management).

Sub CLO-9: Able to apply dairy buffalo farming management.

## Learning Analysis

Dairy Livestock Science



Able to apply dairy buffalo farming management ( )



Able to apply the housing system in dairy cattle (function of cages, location and requirements of cages, parts of cages and their equipment, types and types of cages, as well as the uses and benefits of milk rooms and equipment related to milk management). ( )



Able to implement the needs and uses of food substances and sources of feed ingredients in dairy livestock (main feed and additional feed/concentrates, and types of rations). ( )



Able to measure the components and nutritional values contained in milk, and internal and external factors that affect milk production and quality ( ).



Able to analyze anatomy and physiology, mammary gland development, and milk secretion in dairy cattle (before lactation and heifers as well as during lactation and dry period). ( )



Able to apply the reproductive system of dairy livestock (dairy cows, dairy goats and dairy buffaloes) and factors that affect the reproductive performance of dairy livestock ( )



Able to apply the breeding system in dairy livestock (recording system and evaluation of recording in dairy livestock) reproductive system of dairy livestock (dairy cows, dairy goats and dairy buffaloes)



Able to evaluate the characteristics and origin of several dairy cattle breeds (dairy cows, dairy goats and dairy



Able to analyze profitable factors and plan dairy farming business. ( )

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Have passed the subjects of Animal Physiology, Animal Breeding and Animal Reproduction



**HASANUDDIN UNIVERSITY  
FACULTY OF ANIMAL SCIENCE  
BACHELOR PROGRAMME IN ANIMAL HUSBANDRY  
SEMESTER COURSE PLAN**

Course	Code	Course Group	Credit Points	Semester	Date of Preparation
Dairy Cattle Science	23101121202	Dairy Cattle	2	4	24 September 2024
<b>Authority</b>	<b>Developer Lecturer</b>		<b>Course Coordinator</b>		<b>Head of study Program</b>
	Prof. Dr. Ir. Ambo Ako, M.Sc., Prof. Dr. Ir. Muhammad Yusuf, S.Pt., IPU Dr. Agr. Ir. Renny Fatmyah Utamy, S. Pt., M. Agr., IPM, Dr. Sutomo, S.Pt., M.Si.		Prof. Dr. Ir. Ambo Ako, M.Sc.		Dr. Agr. Ir. Renny Fatmyah Utamy, S. Pt., M. Agr., IPM
<b>Course Learning Outcomes</b>	<b>ILOs that are imposed on the course</b>				
	<b>ILO-4</b>		Able to apply logical, critical, systematic, and innovative thinking in the context of developing or implementing information technology-based science and technology (GS-01).		
	<b>ILO-6</b>		Able to be responsible for achieving group work results, supervising and evaluating the completion of work assigned to workers under his/her responsibility (GS-03).		
	<b>ILO⇒ Course Learning Outcomes (CLO)</b>				
	<b>Upon completion of this course, it is expected that:</b>				
	<b>ILO-</b>	<b>CLO-1:</b>	After taking the Dairy Cattle Science course, students are expected to be able to implement the importance of dairy cattle as milk producers, dairy cattle breeds, breeding systems, reproductive systems, anatomy and development of the mammary glands, physiology and secretion of milk, components and nutritional value of milk and factors that influence them, the need for food substances, feed ingredients, housing in dairy cattle, and raising dairy buffalo.		
	<b>CLO⇒ Sub-CLOs</b>				
	<b>CLO 1</b>	<b>SUB-CLO-1</b>	Able to analyze profitable factors and plan a dairy farming business.		
<b>SUB-CLO-2</b>		Able to evaluate the characteristics and origin of several dairy cattle breeds (dairy cows, dairy goats and dairy buffaloes)			

		<b>SUB-CLO-3</b>	Able to apply the breeding system in dairy livestock (recording system and evaluation of recording in dairy livestock) reproductive system of dairy livestock (dairy cows, dairy goats and dairy buffaloes)
		<b>SUB-CLO-4</b>	Able to apply the reproductive system of dairy livestock (dairy cows, dairy goats and dairy buffaloes) and factors that affect the reproductive performance of dairy livestock
		<b>SUB-CLO-5</b>	Able to analyze anatomy and physiology, mammary gland development, and milk secretion in dairy cattle (before lactation and heifers as well as during lactation and dry period)
		<b>SUB-CLO-6</b>	Able to measure the components and nutritional values contained in milk, and internal and external factors that affect milk production and quality
		<b>SUB-CLO-7</b>	Able to implement the needs and uses of food substances and sources of feed ingredients in dairy cattle (main feed and additional feed/concentrates, and types of rations)
		<b>SUB-CLO-8</b>	Able to apply the housing system in dairy cattle (function of cages, location and requirements of cages, parts of cages and their equipment, types and types of cages, as well as the uses and benefits of milk rooms and equipment related to milk management).
		<b>SUB-CLO-9</b>	Able to apply dairy buffalo farming management

**Correlation between ILOs/CLOs to Sub-CLOs**

ILOs that are imposed on the course	ILO	SUB CLO	Form Assessment+								Weight	Value	Student Score
			Formative	Summative									
				Group Paper Assignment	Quiz	Case Study	Group Presentation	Interactive Lecture	Problem Base Learning	Task Paper Individual			
ILO-	CLO-	SUB-CLO-4		0	0	15	0	0	0	0	15		
ILO-	CLO-	SUB-CLO-5		0	5	5	5	5	0	0	20		
ILO-	CLO-	SUB-CLO-6		0	0	0	0	5	10	0	15		
ILO-	CLO-	SUB-CLO-7		0	0	5	0	0	5	0	10		
ILO-	CLO-	SUB-CLO-8		0	0	0	0	10	10	0	10		
ILO-	CLO-	SUB-CLO-9		0	0	8	0	0	0	5	5		
				22.5	7.5	25	5	10	25	5	100		

<b>Course Description</b>	This course discusses the importance of dairy livestock as milk producers, dairy livestock nations, breeding systems, reproductive systems, anatomy and devSLOpment of the mammary glands, physiology and secretion of milk, components and nutritional value of milk and factors that affect them, the need for food substances, feed ingredients, housing in dairy livestock, and raising dairy buffalo.
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<p><b>Learning Materials / Subject Matter</b></p>		<ol style="list-style-type: none"> <li>1. Responding to learning contracts and forms of learning applied in the learning process, as well as assessment criteria; Evaluating favorable factors in dairy farming; and Planning a dairy farming business.</li> <li>2. Evaluate the characteristics and origin of several dairy cattle breeds; Evaluate the characteristics and origin of several dairy goat breeds; and Evaluate the characteristics and origin of several dairy buffalo breeds.</li> <li>3. Implement the recording system of dairy cattle and Implement the evaluation of recording in dairy cattle.</li> <li>4. Implement the reproductive system of dairy heifers in goats, cows, and buffaloes; Implement the reproductive system of dairy mothers in goats, cows, and buffaloes; and Implement factors that affect the reproductive performance of dairy cattle.</li> <li>5. Analyze the anatomy and development of mammary glands in dairy cattle (pre-lactation and heifers as well as during lactation and dry period)</li> <li>6. Analyze the physiology and process of milk secretion.</li> <li>7. Measure the components and nutritional values contained in milk; Evaluate internal factors affecting milk production and quality; and Evaluate external factors affecting milk production and quality.</li> <li>8. Measure and analyze the needs of food substances in dairy livestock and Evaluate the usefulness of food substances in dairy livestock.</li> <li>9. Implement the function of feedstuffs in dairy cattle; implement the source of main feedstuffs in dairy cattle; and implement the source of supplementary feedstuffs (concentrates) in dairy cattle.</li> <li>10. Implement the function of cages on dairy farms; Implement the location and conditions of dairy farms; Implement the parts of cages and their equipment; Implement the types and types of cages on dairy farms; and Implement the uses and benefits of milk rooms and equipment related to milk management.</li> <li>11. Evaluate dairy buffalo farming</li> </ol>
<p><b>Reference</b></p>		<p><b>Key Reference</b></p>
		<ol style="list-style-type: none"> <li>1. Alim, A. F. dan T. Hidaka. 2002. Teknologi Sapi Perah di Indonesia: Pakan dan Tatalansana Sapi Perah. Proyek Peningkatan Teknologi Sapi Perah. JICA-Dairy Technology Improvement Project. Bandung.</li> <li>2. Ambo Ako. 2012. Ilmu Ternak Perah Daerah Tropis. Penerbit IPB Press. Bogor</li> <li>3. Ensminger, M. E. 1980. Dairy Cattle Science. Clovis, California.</li> <li>4. Foley, R. C., D. L. Bath, F. N. Dickinson and H. A. Tucker. 1980. Dairy Cattle: Principles, Practices, Problems, Profits. Lea and Febiger-Philadelphia.</li> <li>5. Hidayat, A., P. Effendi, A. A. Fuad, Y. Patyadi, K. Tagucghidan T. Sugiwaka. 2002. Teknologi Sapi Perah di Indonesia: Kesehatan Pemerahan. Proyek Peningkatan Teknologi Sapi Perah. JICA-Dairy Technology Improvement Project. Bandung.</li> <li>6. Kutches, A. J. 1979. Feeding Dairy Cattle. In Livestock Feed and Feeding (Edited by D.C. Chruch). O &amp; B. Book, Inc, USA.</li> <li>7. Makin, M. 2011. Tata Laksana Peternakan Sapi Perah. Penerbit Graha Ilmu. Yogyakarta.</li> <li>8. Maton, A., J. Daelemans and J. Lambrecht. 1985. Housing of Animals. Elsevier, Amsterdam-Oxford-New York- Tokyo.</li> <li>9. Moran, J. 2005. Tropical Dairy Farming: Feeding Management for Small Holder Dairy Farmers in the Humid Tropics. Landlinks Press. Australia.</li> <li>10. Murti, T.W. 2001. Ilmu Ternak Kerbau. Penerbit Kanisius. Yogyakarta.</li> <li>11. Prihadi, S. dan Adiarto. 2008. Ilmu Ternak Perah. Fakultas Peternakan, Universitas Gajah Mada. Yogyakarta.</li> <li>12. Schmidt, G. H., L. D. Van Vleck and M. F. Hutjens. 1988. Principles of Dairy Science. Prentice Hall, Englewood Cliffs, New Jersey.</li> <li>13. Sudono, A. 1999. Ilmu Produksi Ternak Perah. Jurusan Ilmu Produksi Ternak, Fakultas Peternakan, Institut Pertanian Bogor.</li> </ol>
		<p><b>Additional Reference</b></p>
		<ol style="list-style-type: none"> <li>1. Adiarto. 2012. Beternak Sapi Perah Ramah Lingkungan. Penerbit PT. Citra Aji Parama. Yogyakarta.</li> </ol>

		<p>2. Agus, A. 2012. Bahan Pakan Konsentrat untuk Sapi. Penerbit PT. Citra Aji Parama. Yogyakarta.</p> <p>3. Firman, A. 2010. Agribisnis Sapi Perah, Bisnis Sapi Perah dari Hulu sampai Hilir. Penerbit Widya Padjadjaran, Bandung.</p> <p>4. Hidayat, A. dan K. Hosokawa. 2002. Kesehatan Reproduksi. Proyek Peningkatan Teknologi Sapi Perah. JICA-Dairy Technology Improvement Project. Bandung.</p> <p>5. Soeharsono. 2008. Laktasi. Produksi dan Peranan Air Susu Bagi Kehidupan Manusia. Penerbit Widya Padjadjaran. Bandung.</p> <p>6. Sudono, A., Ernawati dan R. Ratih. 1999. Milking Technique, Milk Handling, Evaluation and Processing. Study Program of Animal Product Technology (APTEC). Dairy Lab. Fac. of Animal Science-IPB. Bogor.</p> <p>7. Syarif, E. K. dan B. Harianto. 2011. Beternak dan Bisnis Sapi Perah. Penerbit Agro Media Pustaka. Jakarta.</p>					
<b>Teaching Team</b>		<p>Prof. Dr. Ir. Ambo Ako, M.Sc.,  Prof. Dr. Ir. Muhammad Yusuf, S.Pt., IPU  Dr. Agr. Ir. Renny Fatmyah Utamy, S. Pt., M. Agr., IPM,  Dr. Sutomo, S.Pt., M.Si.</p>					
<b>Course requirements</b>		Animal Physiology, Animal Breeding, Animal Reproduction Science					
Week	Sub CLO (End ability of each learning stage)	Assesment		Forms and Methods of Learning [time estimate]		Content	Weight of Assesment (%)
		Indicator	Technique & Criteria	Offline	Online		
1	2	3	4	5	6	7	8

1	Able to analyze profitable factors and plan a dairy farming business. ()	<p><b>Formative:</b></p> <p>-</p> <p><b>Summative:</b></p> <ol style="list-style-type: none"> <li>1. Respond about the learning contact and the form of learning applied in the learning process, as well as the assessment criteria.</li> <li>2. Can evaluate favorable factors in dairy farming.</li> <li>3. Can plan a dairy farming business.</li> </ol>	<p><b>Criteria Formative:</b></p> <p><b>Criteria Summative:</b></p> <p>Group Paper Assignment (2.5) assessed with rubric I01124000 1</p> <p>Quiz (2.5)</p> <p><b>Assessment Technique:</b></p> <p>Non-Test</p>	<p><b>Studying:</b></p> <p>Small group discussion, collaborative learning</p> <p>1 x 2 x 50</p>		<p>Favorable factors in dairy farming. Planning a dairy farming business. (Literature: 2, 3, 4, 7, 9, 11, 12)</p>	5
2	Able to evaluate the characteristics and origin of several dairy cattle breeds (dairy cows, dairy goats and dairy buffaloes). ()	<p><b>Formative:</b></p> <p>-</p> <p><b>Summative:</b></p> <ol style="list-style-type: none"> <li>1. Able to evaluate the characteristics and origin of several dairy cattle breeds</li> <li>2. Can evaluate the characteristics and origin of some dairy goat breeds.</li> <li>3. Can evaluate the characteristics and origin of several dairy buffalo breeds.</li> </ol>	<p><b>Criteria Formative:</b></p> <p><b>Criteria Summative:</b></p> <p>Group Paper Assignment (2.5) assessed with rubric I01124000 1</p> <p>Quiz (2.5)</p>	<p><b>Studying:</b></p> <p>Small group discussion, collaborative learning</p> <p>1 x 2 x 50</p>		<ol style="list-style-type: none"> <li>1. Characteristics and origin of some dairy cattle breeds</li> <li>2. Characteristics and origin of some dairy goat breeds</li> <li>3. Characteristics and origin of some dairy buffalo breeds</li> </ol> <p>(Literature: 2, 3, 10, 11, 13)</p>	10

			<b>Assessment Technique:</b>  None				
3	Able to analyze favorable factors and plan a dairy farming business. ()	<b>Formative:</b> -  <b>Summative:</b> 1. Able to be able to implement a recording system for dairy cattle. 2. Can can implement recording of dairy cattle	<b>Criteria Formative:</b>  <b>Criteria Summative:</b> Group Paper Assignment (10) assessed with rubric I01124000 1 Quiz (2.5) <b>Assessment Technique:</b>  None	<b>Studying:</b> Small group discussion, collaborative learning  1 x 2 x 50		1. Recording system of dairy cattle. 2. Evaluation of recording in dairy cattle. (Reader: 3, 4, 7, 11, 12)	10

4-6	Able to apply the reproductive system of dairy livestock (dairy cows, dairy goats and dairy buffaloes) and factors that affect the reproductive performance of dairy livestock ()	<p><b>Formative:</b></p> <p>-</p> <p><b>Summative:</b></p> <p>Can implement the reproductive system of dairy heifers in goats, cows, and buffaloes.</p> <p>Can implement the reproductive system of dairy mothers in goats, cows and buffaloes.</p> <p>Can implement factors that affect the reproductive performance of dairy cattle.</p>	<p><b>Criteria Formative:</b></p> <p><b>Criteria Summative:</b></p> <p>Group Paper Assignment (15) assessed with rubric I011240001</p> <p><b>Assessment Technique:</b></p> <p>Test and Non-Test</p>	<p><b>Studying:</b></p> <p>Small group discussion, collaborative learning</p> <p>3 x 2 x 50</p>	<p>Reproductive system of blood dairy animals in goats, cows and buffaloes.</p> <p>Reproductive system of mother dairy animals in goats, cows and buffaloes.</p> <p>Factors affecting the reproductive performance of dairy livestock.</p> <p>(Literature: 2, 3, 4, 7, 9, 11, 12)</p>	15
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7	Able to analyze anatomy and physiology, mammary gland development, and milk secretion in dairy cattle (before lactation and heifers as well as during lactation and dry period). ()	<p><b>Formative:</b></p> <p>-</p> <p><b>Summative:</b></p> <p>Can analyze the anatomy and development of the mammary gland in dairy cattle (pre-lactation and heifers as well as during lactation and dry periods).</p>	<p><b>Criteria Formative:</b></p> <p><b>Criteria Summative:</b></p> <p>Group Presentation (5) assessed with rubric I01124000 1</p> <p>Case Study (5) assessed with rubric I01124000 3</p> <p><b>Assessment Technique:</b></p> <p>None</p>	<p><b>Studying:</b></p> <p>Small group discussion, collaborative learning</p> <p>1 x 2 x 50</p>	<p>Anatomy and development of mammary glands in dairy cattle (pre-lactation and heifers as well as during lactation and dry period).</p> <p>(Literature: 2, 4, 9, 11)</p>	10
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8	Able to analyze anatomy and physiology, mammary gland development, and milk secretion in dairy cattle (before lactation and heifers as well as during lactation and dry period). ( )	<p><b>Formative:</b> -</p> <p><b>Summative:</b> Can Analyze the physiology and process of milk secretion.</p>	<p><b>Criteria Formative:</b></p> <p><b>Criteria Summative:</b></p> <p>Interactive Lecture (5)</p> <p>Quiz (5)</p> <p><b>Assessment Technique:</b> None</p>	<p><b>Studying:</b> Small group discussion, collaborative learning</p> <p>1 x 2 x 50</p>	<p>Physiology and process of milk secretion. (Literature: 2, 4, 9, 11)</p>	10
9-10	Able to measure the components and nutritional values contained in milk, and internal and external factors that affect milk production and quality ( )	<p><b>Formative:</b> -</p> <p><b>Summative:</b> Able to measure the components and nutritional values contained in breast milk</p>	<p><b>Criteria Formative:</b></p> <p><b>Criteria Summative:</b></p> <p>Interactive Lecture (5)</p> <p>Problem Base Learning (10) assessed with rubric I011240003</p> <p><b>Assessment Technique:</b> None</p>	<p><b>Studying:</b> Small group discussion, collaborative learning 2 x 2 x 50</p> <p><b>Practicum, Studio Practice, Workshop Practice, Field Practice:</b> Case Study, Collaborative Learning, Project-based Learning 2 x 2 x 50'</p>	<p>Components and nutritional value of milk</p> <p>Internal factors affecting milk production and quality.</p> <p>External factors affecting milk production and quality. (Literature: 1, 2, 3, 5, 9, 11, 12)</p>	15

11	Able to implement the needs and uses of food substances and sources of feed ingredients in dairy livestock (main feed and additional feed/concentrates, and types of rations). ( )	<p><b>Formative:</b> -</p> <p><b>Summative:</b> Can measure and analyze the need for food substances in dairy cattle. Can measure and evaluate the usefulness of food substances in dairy cattle.</p>	<p><b>Criteria Formative:</b></p> <p><b>Criteria Sumative:</b> Case Study (5) assessed with rubric I01124000 3</p> <p><b>Assessment Technique:</b>  None</p>	<p><b>Studying:</b> Small group discussion, collaborative learning</p> <p>1 x 2 x 50</p>	<p>The need for food substances in dairy cattle.</p> <p>Usefulness of food substances in dairy cattle. (Literature: 1, 2, 4, 6, 7, 9)</p>	5
12-13	Able to implement the needs and uses of food substances and sources of feed ingredients in dairy livestock (main feed and additional feed/concentrates, and types of rations). ( )	<p><b>Formative:</b> -</p> <p><b>Summative:</b> Can implement the function of dairy animal feed. Can implement the main sources of feed ingredients in dairy cattle. Can implement sources of additional feed ingredients (concentrates) in dairy cattle.</p>	<p><b>Criteria Formative:</b></p> <p><b>Criteria Sumative:</b> Problem Base Learning (5) assessed with rubric I01124000 3</p> <p><b>Assessment Technique:</b>  None</p>	<p><b>Studying:</b> Small group discussion, collaborative learning</p> <p>2 x 2 x 50</p>	<p>Function of dairy animal feed ingredients.</p> <p>Sources of main feed ingredients in dairy cattle.</p> <p>Sources of additional feed ingredients (concentrates) in dairy livestock.</p> <p>Types of rations in dairy livestock. (Literature: 1, 2, 4, 6, 7, 9)</p>	5

14-15	Able to apply the housing system in dairy cattle (function of cages, location and requirements of cages, parts of cages and their equipment, types and types of cages, as well as the uses and benefits of milk rooms and equipment related to milk management). ( )	<p><b>Formative:</b></p> <p>-</p> <p><b>Summative:</b></p> <p>Can implement the function of cages in dairy farming.</p> <p>Can implement the determination of location and requirements of cages in dairy farming.</p> <p>Can implement the parts of a cage and its equipment.</p> <p>Can implement types and types of cages in dairy farming.</p>	<p><b>Criteria Formative:</b></p> <p><b>Criteria Summative:</b></p> <p>Problem Base Learning (10) assessed with rubric I01124000 3</p> <p><b>Assessment Technique:</b></p> <p>None</p>	<p><b>Studying:</b></p> <p>Small group discussion, collaborative learning 2 x 2 x 50</p> <p><b>Practicum, Studio Practice, Workshop Practice, Field Practice:</b></p> <p>Project-based Learning 2 x 2 x 50'</p>	<p>Function of cages in dairy farming.</p> <p>Determination of location and requirements of cages on dairy farms.</p> <p>Cage parts and equipment.</p> <p>Types and types of cages on dairy farms.</p> <p>Uses and benefits of milk rooms and equipment - equipment related to milk management. (Literature: 2, 8, 9, 12)</p>	10
16	Able to apply dairy buffalo farming management ( )	<p><b>Formative:</b></p> <p>-</p> <p><b>Summative:</b></p> <p>Able to evaluate dairy buffalo farming</p>	<p><b>Criteria Formative:</b></p> <p><b>Criteria Summative:</b></p> <p>Task Paper Individual (5)</p> <p><b>Assessment Technique:</b></p> <p>None</p>	<p><b>Studying:</b></p> <p>Small group discussion, collaborative learning  1 x 2 x 50</p>	<p>Raising dairy buffalo (Literature: 10, 13)</p>	5
						100

**Matrix ILO, CLO, and Assessment Method**

	<b>ILO/CLO</b>
	ILO-4 (KU 1)
	ILO-6 (KU3)

**Evaluation Type and Assessment Weight**

<b>Type</b>	<b>Assessment Weight</b>
Group Paper Assignment	22.5
Quiz	7.5
Case Study	25
Group Presentation	5
Interactive Lecture	10
Problem Base Learning	25
Task Paper Individual	5
Total	100

**Assessment and Evaluation of Student Achievement of CLO**

ILOs that are charged on the Course	CLO	SUB CLO	Form of Assessment*								Weight	Value	Student Score
			Formative	Summative									
				Group Paper Assignment	Quiz	Case Study	Group Presentation	Interactive Lecture	Problem Base Learning	Individual Paper Assignment			
ILO-	SLOS-	SUB- CLO-1		12.5	2.5	0	0	0	0	0	15		
ILO-	CLO-	SUB- CLO-2		10	0	0	0	0	0	0	10		
ILO-	CLO-	SUB- CLO-4		0	0	15	0	0	0	0	15		
ILO-	CLO-	SUB- CLO-5		0	5	5	5	5	0	0	20		
ILO-	CLO-	SUB- CLO-6		0	0	0	0	5	10	0	15		
ILO-	CLO-	SUB- CLO-7		0	0	5	0	0	5	0	10		
ILO-	CLO-	SUB- CLO-8		0	0	0	0	0	10	0	10		
ILO-	CLO-	SUB- CLO-9		0	0	0	0	0	0	5	5		
				22.5	7.5	25	5	10	25	5	100		



**HASANUDDIN UNIVERSITY  
FACULTY OF ANIMAL SCIENCE  
BACHELOR PROGRAMME IN ANIMAL HUSBANDRY**

**STUDENT STRUCTURED ASSIGNMENT PLAN**

<b>Course</b>	Dairy Cattle Science				
<b>Code</b>	23101121202	<b>Credit Points</b>	3	<b>Semester</b>	4 (empat)
<b>Developer Lecturer</b>	Prof. Dr. Ir. Ambo Ako, M.Sc.				
<b>Task Form</b>	<b>Task Time</b>				
Documents/Magazines	2 Weeks				
<b>Task Title</b>					
Characteristics and origins of dairy livestock breeds (dairy cows, dairy goats, and dairy buffalo)					
<b>Course Learning Outcomes</b>					
Sub-CLO1 Able to evaluate the characteristics and origins of several dairy breeds (dairy cows, dairy goats, and dairy buffaloes)					
<b>Task Description</b>					
<p>The students' assignment is a group project to write a paper on "Characteristics and Origins of Dairy Livestock" by choosing one of the following subtopics: Dairy Cows, Dairy Goats, and Dairy Buffalo. The paper should be written according to the following procedure:</p> <ol style="list-style-type: none"> <li>1) Each group chooses one of the following subtopics: Dairy Cows, Dairy Goats, and Dairy Buffalo.</li> <li>2) Discuss among the group members to identify the process stages for each of the selected sub-topics. Information related to the selected sub-topic can be obtained from textbooks and journals.</li> <li>3) Create a paper with the following systematics:             <ol style="list-style-type: none"> <li>I. Introduction</li> <li>II. Discussion</li> <li>III. Conclusion</li> <li>IV. Literature</li> </ol> </li> <li>4) Group presentation</li> </ol>					
<b>Assignment Method</b>					
1. Conducted in groups using the Small Group Discussion (SGD) learning method.					
<b>Form and Format of Output</b>					
a. Object of Cultivation: Dairy cattle b. Form of Output: Paper					
<b>Indicators, Criteria and Assessment Weight</b>					
<p><b>Indicators:</b></p> <ol style="list-style-type: none"> <li>1. Systematics: 10%</li> <li>2. Accuracy of analysis: 25%</li> <li>3. Depth of material: 30%</li> <li>4. Novelty and reputation of library materials: 10%</li> <li>5. Team cohesiveness: 10%</li> <li>6. Mastery of the material: 15%</li> </ol>					
<b>Implementation Schedule</b>					
2 weeks					

<b>Other</b>
-
<b>Reference List</b>
<ol style="list-style-type: none"> <li>1. Alim, A. F. dan T. Hidaka. 2002. Teknologi Sapi Perah di Indonesia: Pakan dan Tatalansana Sapi Perah. Proyek Peningkatan Teknologi Sapi Perah. JICA-Dairy Technology Improvement Project. Bandung.</li> <li>2. Ambo Ako. 2012. Ilmu Ternak Perah Daerah Tropis. Penerbit IPB Press. Bogor</li> <li>3. Ensminger, M. E. 1980. Dairy Cattle Science. Clovis, California.</li> <li>4. Foley, R. C., D. L. Bath, F. N. Dickinson and H. A. Tucker. 1980. Dairy Cattle: Principles, Practices, Problems, Profits. Lea and Febiger-Philadelphia.</li> <li>5. Hidayat, A., P. Effendi, A. A. Fuad, Y. Patyadi, K. Tagucghidan T. Sugiwaka. 2002. Teknologi Sapi Perah di Indonesia: Kesehatan Pemerahan. Proyek Peningkatan Teknologi Sapi Perah. JICA-Dairy Technology Improvement Project. Bandung.</li> <li>6. Kutches, A. J. 1979. Feeding Dairy Cattle. In Livestock Feed and Feeding (Edited by D.C. Chruch). O &amp; B. Book, Inc, USA.</li> <li>7. Makin, M. 2011. Tata Laksana Peternakan Sapi Perah. Penerbit Graha Ilmu. Yogyakarta.</li> <li>8. Maton, A., J. Daelemans and J. Lambrecht. 1985. Housing of Animals. Elsevier, Amsterdam-Oxford-New York- Tokyo.</li> <li>9. Moran, J. 2005. Tropical Dairy Farming: Feeding Management for Small Holder Dairy Farmers in the Humid Tropics. Landlinks Press. Australia.</li> <li>10. Murti, T.W. 2001. Ilmu Ternak Kerbau. Penerbit Kanisius. Yogyakarta.</li> <li>11. Pihadi, S. dan Adiarto. 2008. Ilmu Ternak Perah. Fakultas Peternakan, Universitas Gajah Mada. Yogyakarta.</li> <li>12. Schmidt, G. H., L. D. Van Vleck and M. F. Hutjens. 1988. Principles of Dairy Science. Prentice Hall, Englewood Cliffs, New Jersey.</li> <li>13. Sudono, A. 1999. Ilmu Produksi Ternak Perah. Jurusan Ilmu Produksi Ternak, Fakultas Peternakan, Institut Pertanian Bogor.</li> </ol>

DEFINITION OF 1 CREDIT IN THE FORM OF LEARNING				Time
A	Lecture, Reception, Tutorial			
	Face to Face	Structured Assignment	Independent Learning	
	50 minutes/week/semester	60 minutes/week/semester	60 minutes/week/semester	2,83
B	Seminars or other similar forms of learning			
	Face to face	Self-study		
	100 minutes/week/semester	70 minutes/week/semester		2,83
C	Practicum, studio practice, workshop practice, field practice, research, community service, and/or other equivalent forms of learning			
	170 minutes/week/semester			2,83

No	Metode Pembelajaran Mahasiswa	Kode
1	Small Group Discussion	SGD
2	Role-Play & Simulation	RPS
3	Discovery Learning	DL
4	Self-Directed Learning	SDL
5	Cooperative Learning	CoL
6	Collaborative Learning	CbL
7	Contextual Learning	CtL
8	Project Based Learning	PjBL
9	Problem Based Learning & Inquiry	PBL
10	Atau metode pembelajaran lain, yang dapat secara efektif memfasilitasi pemenuhan capaian pembelajaran lulusan.	