

SEMESTER LEARNING PLAN (SLP)

**FEED PROCESSING TECHNOLOGY
(23101120603)**



TEACHING TEAM :

Prof. Dr. Ir. Budiman, MP.
195812311986031026

Prof. Dr. Ir. Jasmal Ahmari Syamsu, M.Si., IPU., ASEAN
Eng 196811051993011001

Dr. Ir. Nancy Lahay, MP.
195912071987032001

Dr. Ir. Jamila, S.Pt., M.Si., IPM.
197505112003122003

Marhamah Nadir, SP., M.Si., Ph.D.
197302092008122002

Indrawirawan, S.Pt, M.Sc
199206122024061001

**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

Visi Strategi

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-2 (P1) - Mastering the concepts, theories, and methods of developing effective, efficient, and sustainable livestock (K-01).

ILO-7 (KK1) - Able to apply livestock science and technology that is oriented towards increasing production, efficiency, quality, and sustainability (SS-01).

ILO-2 - (KK3) - Skilled in managing livestock enterprises (SS-03).

Course Learning Outcomes (CLO)

CLO-1: Students are able to describe the development of livestock product technology appropriately (SLO-5)

CLO-2: Students are able to identify, properties, types, advantages, disadvantages and classify the sources of feed ingredients (CPL2)

CLO-3: Students are able to analyze the sources, production, legislation, immobilisation and utilization of enzymes and other additives in producing feed. (CPL7)

CLO-4: Students are able to diagnose forage feed ingredients, concentrates and ingredients derived from agro- industrial waste and local ingredients as quality feed (CPL7)

CLO-5: Students are able to apply technology in processing feed ingredients physically, chemically and biologically (CPL7)

CLO 6: Students are able to conduct testing, supervision and control of feed quality in the feed processing process in improving and maintaining feed quality (CPL7)

CLO-7: Students are able to analyze the potential, apply and disseminate feed processing technology in the livestock industry (CPL7)

Sub-CLO

Sub-CLO 1: Able to describe the historical scope and identify the benefits of technology in feed development (CLO 1)

Sub-CLO 2: Able to identify, properties, types, advantages, disadvantages and classify sources of feed ingredients (CLO-2)

Sub CLO-3: Able to identify the production and utilization of enzymes and other additives in producing feed (CLO-3)

Sub CLO-4: Able to detect forage feed ingredients, concentrates, ingredients derived from agro- industrial waste and local ingredients that can improve feed quality (CLO-4)

Sub CLO-5: Able to apply technology in processing forage feed ingredients physically, chemically and biologically ()

Sub CLO-6: Able to apply technology in the processing of concentrate feed ingredients physically, chemically and biologically (CLO-5)

Sub CLO-7: Able to apply technology in processing feed ingredients from agro-industrial waste physically, chemically and biologically (CLO-5)

Sub CLO-8: Able to test the quality of feed from processing and storage (CLO-6)

Sub CLO-9: Able to supervise and control the quality of feed in the feed industry ()

Sub CLO-10: Able to analyze the potential and apply the processing of feed ingredients in smallholder farms (CLO-7)

Sub CLO-11: Able to disseminate feed processing technology in the livestock industry (CLO-7)

Learning Analysis

Feed Processing Technology



Able to disseminate feed processing technology in the livestock



Able to analyze the potential and apply the processing of feed ingredients in smallholder farms (CLO-7)



Able to supervise and control the quality of feed in the feed



Able to test the quality of feed from processing and storage (CLO-6)



Able to apply technology in processing feed ingredients from agro-industrial waste physically, chemically



Able to apply technology in the processing of concentrate feed ingredients physically, and chemically



Able to apply technology in the processing of forage feed ingredients physically, chemically and



Able to detect forage feed ingredients, concentrates, ingredients derived from agro-industrial waste and



Able to identify the production and utilization of enzymes and other additives in producing feed



Able to identify, nature, type, advantages, disadvantages and classify the sources of feed ingredients



Able to describe the scope of history and identify the benefits of technology in feed development



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

Course	Code	Course Group	Credit Points	Semester	Date of Preparation
Feed Processing Technology	23I01120603	Production	3	3	24 September 2024
Authority	Developer Lecturer		Course Coordinator	Head of study Program	
	Prof. Dr. Ir. Budiman, MP., Prof. Dr. Ir. Jasmal Ahmari Syamsu, M.Si., IPU., ASEAN Eng, Dr. Ir. Nancy Lahay, MP., Dr. Ir. Jamila, S.Pt., M.Si., IPM., Marhamah Nadir, SP.,M.Si., Ph.D., Indrawirawan, S.Pt, M.Sc		Dr. Ir. Jamila, S.Pt., M.Si., IPM.	Dr. Agr. Ir. Renny Fatmyah Utamy, S. Pt., M. Agr., IPM	
Course Learning Outcomes	ILOs that are imposed on the course				
	ILO-2	Mastering the concepts, theories and methods of effective, efficient and sustainable livestock developer			
	ILO-7	Able to apply animal science and technology that is oriented towards increasing production, efficiency, quality and sustainability.			
	ILO-9	Able to run animal husbandry entrepreneurship			
	ILO⇒ Course Learning Outcomes (CLO)				
	Upon completion of this course, it is expected that:				
	ILO-2	CLO-1: Students are able to describe the historical scope and benefits of technology in feed developer			
		CLO-2: Students are able to identify, properties, types, advantages, disadvantages and classify the sources of feed ingredients			
	ILO-7	CLO-3 : Students are able to analyze the sources, production, legislation, immobilisation and utilization of enzymes and other additives in producing feed.			
		CLO 4: Students are able to diagnose forage feed ingredients, concentrates and ingredients derived from agro-industrial waste and local ingredients as quality feed.			
CLO 5: Students are able to apply technology in the processing of feed ingredients physically, chemically and biologically					
CLO-6: Students are able to conduct testing, supervision and control of feed quality in the feed processing process in improving and maintaining feed quality.					
CLO-7: Students are able to analyze the potential, apply and disseminate feed processing technology in the livestock industry.					
CLO⇒ Sub-CLOs					

	CLO-1	SUB-CLO-1: Able to describe the scope of history and identify the benefits of technology in feed development
	CLO-2	SUB-CLO-2: Able to identify, properties, types, advantages, disadvantages and classify sources of feed ingredients
	CLO-3	SUB-CLO-3: Able to identify the production and utilization of enzymes and other additives in producing feed
	CLO-4	SUB-CLO-4: Able to detect forage feed ingredients, concentrates, ingredients derived from agro-industrial waste and local ingredients that can improve feed quality
	CLO-5	SUB-CLO-6: Able to apply technology in the processing of concentrate feed ingredients physically, chemically and biologically
		SUB-CLO-7: Able to apply technology in processing feed ingredients from agro-industrial waste physically, chemically and biologically
	CLO-6	SUB-CLO-8: Able to test the quality of feed processing and storage results
	CLO-7	SUB-CLO-10: Able to analyze the potential and apply the processing of feed ingredients in smallholder farms
		SUB-CLO-11: Able to disseminate feed processing technology in the livestock industry

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						
				Interactive Lecture	Group Presentation	Problem Base Learning	Practicum/ Field Practice			
ILO-2	CLO-1	SUB-CLO-1		5	5	0	5	0	15	
ILO-2	CLO-2	SUB-CLO-2		5	0	0	0	5	10	
ILO-7	CLO-3	SUB-CLO-3		5	5	0	5	0	15	
ILO-7	CLO-4	SUB-CLO-4		3	0	7	0	0	10	
ILO-5	CLO-4	SUB-CLO-5		3	0	0	7	0	10	
ILO-5	CLO-5	SUB-CLO-6		3	0	5	7	0	15	
ILO-7	CLO-5	SUB-CLO-7		10	0	5	10	0	25	
				34	10	17	34	5	100	

Course Description	This course studies and discusses the objectives, scope of feed processing technology, properties and types of feed ingredients, various benefits of biotechnology in feed production, classifying sources of feed ingredients, identifying and analyzing enzymes, feed additives, forages, concentrates, agro-industrial waste and local ingredients that can improve feed quality, applying technology in feed processing, testing feed processing and storage results, analyzing the potential and application of processing feed ingredients for smallholder farms and disseminating them to the livestock industry
Learning Materials / Subject Matter	<ol style="list-style-type: none"> 1. Definition, purpose and scope of feed processing technology 2. Resource utilization and potential development of local feed ingredients 3. Feed processing strategies (grain, fiber, forage and agro-industrial residues) 4. Application of technology in processing feed ingredients (physically, chemically and biologically) 5. Testing, supervision and quality control in improving and maintaining feed quality 6. Analyze the potential, application and dissemination of feed technology in the livestock business and industry
Reference	Key Reference
	<ol style="list-style-type: none"> 1. Kapti Rahayu. 1991. Teknologi Enzim. Pusat Antar Universitas Pangan dan Gizi. Proyek Peningkatan Perguruan Tinggi Universitas Gadjah Mada Yogyakarta. 2. Ristiano Utomo. 2012. Evaluasi Pakan dengan Metode Noninvasif. PT. Citra Aji Parama 3. Ristiano Utomo. 2015. Konservasi Hijauan Pakan dan Peningkatan Kualitas Bahan Pakan Berserat Tinggi. Gadjah Mada University Press 4 4. Sudirman, SU. 2013. Evaluasi Pakan Tropis dari Konsep ke Aplikasi (Metode In Vitro Feses). Pustaka Reka Cipta. 5. Suharsono. Enzimologi. Pusat Antar Universitas Pangan dan Gizi. Proyek Peningkatan Perguruan Tinggi Universitas Gadjah Mada Yogyakarta.
	Additional Referece
	<ol style="list-style-type: none"> 1. Jamila Mustabi. 2023. Analisis Pengembangan Jerami Padi sebagai Pakan Ternak. Penerbit PT. Nas Media Pustaka
Teaching Team	<ol style="list-style-type: none"> 1. Prof. Dr. Ir. Budiman, MP., 2. Prof. Dr. Ir. Jasmal Ahmari Syamsu, M.Si., IPU., ASEAN Eng, 3. Dr. Ir. Nancy Lahay, MP., 4. Dr. Ir. Jamila, S.Pt., M.Si., IPM., 5. Marhamah Nadir, SP.,M.Si., Ph.D., 6. Indrawirawan, S.Pt, M.Sc
Course requirements	FEED PROCESSING TECHNOLOGY

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 describe the scope of history and identify the benefits of technology in feed development (CLO- 1)	Formative: - Summative: -	Formative Criteria: Summative Criteria: Interactive Lecture (5) Group Presentation (5)	Lecture: Small group discussion, case study, cooperative learning, collaborative learning, project-based learning.		Definision of feed processing technology. Purpose of fesda processing technology Scope of feed processing technology Benefits of biotechnology in feed processing	10
2	Able to identify, properties, types, advantages, disadvantages and classify the sources of feed ingredients (CLO- 2)	Formative: - Summative: -	Formative Criteria: Summative Criteria: Interactive Lecture (5) Individual Paper Assignment (5)	Lecture: Small group discussion, case study, cooperative learning, collaborative learning, project-based learning. 1 x 2 x 50		Identify. classification of feed ingredients. Knowing the nature of materials based on their physical characteristics, shape, and usefulness. International classification of feed ingredients	10

3-4	Able to identify the production and utilization of enzymes and other additives in producing feed (CLO-3)	Formative: - Summative: -	Formative criteria: Summative criteria: Group Presentation (5) Interactive Lecture (5) Assessment Techniques: Test and Non-Test	Lecture: Small group discussion, case study, cooperative learning, collaborative learning, project-based learning. 2 x 2 x 50		Identify and immobilize enzymes Identify the production of additives in producing rations	10
5-6	Able to detect forage feed ingredients, concentrates, ingredients derived from agro-industrial waste and local ingredients that can improve feed quality (CLO-4)	Formative: - Summative: -	Formative Criteria: Summative Criteria: Interactive Lecture (3) Problem Base Learning (7) assessed with rubric I011240003 Assessment Technique: None	Lecture: Small Group Discussion, Case Study, Cooperative Learning, Collaborative Learning, Project-based Learning 2 x 2 x 50		Detection of feed ingredients from forage, concentrates, agro-industrial waste and local ingredients. Processing strategies for forage concentrates, agro-industrial waste and local ingredients. Processing on the structure, nutrient content, toxins and inhibitors in feed ingredients	10

7-8	Able to apply technology in the processing of forage feed ingredients physically, chemically and biologically ()	Formative: - Summative: -	Formative Criteria: Summative Criteria: Interactive Lecture (3) Practicum/Field Practice (7) Assessment Techniques: Test and Non-Test	Lecture: Small group discussion, cooperative learning, collaborative learning, project-based learning. 2 x 2 x 50	Physical forage processing. Chemical forage processing, chemicals used in forage feed processing technology. Biological forage processing, biological ingredients used in forage feed processing technology used in forage processing technology forage feed processing technology Effect of forage processing on shape, nutrient content, toxins and inhibitors	10
9-10	Able to apply technology in the processing of concentrate feed ingredients physically, chemically and biologically (CLO-5)	Formative: - Summative: -	Formative Criteria: Summative Criteria: Interactive Lecture (3) Practicum/Field Practice (7) Assessment Technique: None	Lecture: Small group discussion, cooperative learning, collaborative learning, project-based learning. 2 x 2 x 50	Physical forage processing. Chemical forage processing, chemicals used in forage feed processing technology. Biological forage processing, biological ingredients used in forage feed processing technology used in forage processing technology forage feed processing technology Effect of forage processing on shape, nutrient content, toxins and inhibitors	5

11-12	Able to apply technology in processing feed ingredients from agro-industrial waste physically, chemically and biologically (CLO-5)	<p>Formative:</p> <p>-</p> <p>Summative:</p> <p>-</p>	<p>Formative Criteria: Summative Criteria: Interactive Lecture (5) Practicum/Field Practice (10) assessed with rubric IO11240002</p> <p>Assessment Technique:</p> <p>None</p>	<p>Lecture:</p> <p>Small group discussion, cooperative learning, collaborative learning, project-based learning.</p> <p>2 x 2 x 50</p>	<p>Physical processing of feed originating from agro-industrial waste.</p> <p>Chemical processing of agro-industrial waste origin feed, chemicals used in agro-industrial waste origin feed processing technology</p> <p>Biological processing of feed from agro-industrial waste, biological ingredients used in feed processing technology of feed from agro-industrial waste</p>	15
13-14	Able to test the quality of feed from processing and storage (CLO-6)	<p>Formative:</p> <p>-</p>	<p>Formative criteria: Summative criteria: Problem Base Learning (10)</p> <p>Assessment Technique:</p> <p>None</p>	<p>Lecture:</p> <p>Small group discussion, cooperative learning, collaborative learning, project-based learning.</p> <p>2x 2 x 50</p>	<p>Physical, chemical and biological feed quality testing</p> <p>Supervision and control of feed quality in preservation, storage</p> <p>Feed processing strategies in maintaining feed quality</p>	10
15-16	Able to analyze the potential and apply feed processing in smallholder farms (CLO-7)	<p>Formative:</p> <p>-</p> <p>Summative:</p> <p>-</p>	<p>Formative Criteria: Summative Criteria: Interactive Lecture (5) Practicum/Field Practice (10) assessed with rubric IO11240002</p>	<p>Lecture:</p> <p>Small group discussion, cooperative learning, collaborative</p>	<p>Feed potential analysis</p> <p>Feed technology dissemination</p> <p>Feed technology application in smallholder farms</p>	15

			Assessment Technique: None	learning, project-based learning. 2 x 2 x 50			
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Matrix of SLO, SLO, and Assessment Method

ILO / CLO	CLO-1	CLO-2	CLO-3	CLO-4	CLO-5	CLO-6	CLO-7
ILO-2 (P1)	Interactive Lecture (Weight 5%) Group Presentation (Weight 5%)	Interactive Lecture (Weight 5%) Individual Paper Assignment (Weight 5%)					
ILO-7 (KK1)			Group Presentation (Weight 5%) Interactive Lecture (Weight 5%)	Interactive Lecture (Weight 3%) Problem Base Learning (Weight 7%)	Interactive Lecture (Weight 3%) Practicum/Field Practice (Weight 7%) Interactive Lecture (Weight 5%) Practicum / Field Practice (Weight 10%)	Problem Base Learning (Weight 10%)	Interactive Lecture (Weight 5%) Practicum / Field Practice (Weight 10%)
ILO-9 (KK3)							

Evaluation Type and Assessment Weight

Type	Assessment Weight
Interactive Lecture	34
Group Presentation	10
Problem Base Learning	17
Practicum/Field Practice	34
Individual Paper Assignment	5
Total	100

Assessment and Evaluation of Student Achievement of CLO

ILOs that are imposed on the course	ILO	SUB CLO	Form Assessment+						Weight	Value	Student Score
			Formative	Summative							
				Interactive Lecture	Group Presentation	Problem Base Learning	Practicum/Field Practice	Individual Paper Assignment			
ILO-2	CLO-1	SUB-CLO-1		5	5	0	5	0	15		
ILO-2	CLO-2	SUB-CLO-2		5	0	0	0	5	10		
ILO-7	CLO-3	SUB-CLO-3		5	5	0	5	0	15		
ILO-7	CLO-4	SUB-CLO-4		3	0	7	0	0	10		
ILO-5	CLO-4	SUB-CLO-5		3	0	0	7	0	10		
ILO-5	CLO-5	SUB-CLO-6		3	0	5	7	0	15		
ILO-7	CLO-5	SUB-CLO-7		10	0	5	10	0	25		
				34	10	17	34	5	100		



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

STUDENT STRUCTURED ASSIGNMENT PLAN

COURSE	Feed Processing Technology		
CODE	23I01120603	SKS	3
LECTURER	Dr. Ir. Jamila, S.Pt., M.Si., IPM.		
ASSIGNMENT FORMAT	ASSIGNMENT COMPLETION TIME		
Document/Paper	2 Weeks		
ASSIGNMENT TITLE			
Strategies for Processing Feed Materials to Improve Ration Quality			
SUB-LEARNING OUTCOMES OF THE COURSE			
Sub-CLO-6: Able to apply technology in the processing of concentrated feed ingredients physically, chemically, and biological processing of feed ingredients (CLO-5)			
ASSIGNMENT DESCRIPTION			
<p>The student assignment is a group assignment to write a paper on "Feed Material Processing Technology" by choosing 1 of the following sub-topics: Forage Feed Material Processing, Concentrate Feed Material Processing, Agro-industrial Waste Feed Material Processing, and Local Feed Material Processing. The paper should be written according to the following procedures:</p> <ol style="list-style-type: none"> 1) Each group chooses one of the following subtopics: Processing of Forage Feed Materials, Processing of Concentrate Feed Materials, Processing of Agroindustrial Waste Feed Materials, and Processing of Local Feed Materials for one group. 2) Discuss among group members to identify the process stages for each selected subtopic. Information related to the selected subtopic can be obtained from textbooks and journals. 3) Write a paper with the following structure: <ol style="list-style-type: none"> I. Introduction II. Discussion III. Conclusion IV. References 4) Group presentation 			
METHOD OF ASSIGNMENT COMPLETION			
1. Conducted in groups using the Small Group Discussion (SGD) learning method			
OUTPUT FORMAT AND STRUCTURE			
a. Subject: Processing and Feed b. Output Format: Paper			
INDICATORS, CRITERIA, AND WEIGHTING FOR EVALUATION			
Indicators: <ol style="list-style-type: none"> 1. Systematics: 10% 2. Accuracy of analysis: 25% 3. Depth of material: 30% 4. Novelty and reputation of reference materials: 10% 5. Team cohesion: 10% 6. Mastery of material: 15% 			
IMPLEMENTATION SCHEDULE			
2 weeks			
OTHER			
-			
REFERENCE LIST			
1. Jamila Mustabi. 2023. Analisis Pengembangan Jerami Padi sebagai Pakan Ternak. Penerbit PT. Nas Media Pustaka			

Kapti Rahayu. 1991. Teknologi Enzim. Pusat Antar Universitas Pangan dan Gizi. Proyek Peningkatan Perguruan Tinggi Universitas Gadjah Mada Yogyakarta.
 Ristianito Utomo. 2012. Evaluasi Pakan dengan Metode Noninvasif. PT. Citra Aji Parama
 Ristianito Utomo. 2015. Konservasi Hijauan Pakan dan Peningkatan Kualitas Bahan Pakan Berserat Tinggi. Gajah Mada University Press 4
 Sudirman, SU. 2013. Evaluasi Pakan Tropis dari Konsep ke Aplikasi (Metode In Vitro Feses). Pustaka Reka Cipta.
 Suharsono. Enzimologi. Pusat Antar Universitas Pangan dan Gizi. Proyek Peningkatan Perguruan Tinggi Universitas Gadjah Mada Yogyakarta

Understanding 1 credit hour in LEARNING FORMAT			Hours
A	Lecture, Response, Tutorial		
	Face-to-face	Structured Assignments	Independent Study
	50 minutes/week/semester	60 minutes/week/semester	60 minutes/week/semester
			2.83
B	Seminar or other similar forms of learning		
	Face-to-face	Independent study	
	100 minutes/week/semester	70 minutes/week/semester	
			2.83
C	Practical training, studio practice, workshop practice, field practice, research, community service, and/or other equivalent forms of learning		
	170 minutes/week/semester		2.83

No	Student Learning Methods	Code
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	Or other learning methods that can effectively facilitate the fulfillment of learning outcomes for graduates.	