

## **SEMESTER COURSE PLAN (SCP)**

**ANIMAL MICROBIOLOGY  
(23I01110402)**



### **TEACHING TEAM**

Prof. Dr. drh. Ratmawati Malaka, M.Sc.  
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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**

**Visi**

Vision of the Study Program:

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

**Program Educational Objectives (PEO)**

- 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 of the Study Program**

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

**Graduate Profile**

No	Profil	Deskripsi
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

## **ILO charged to Course**

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

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).

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

CLO-1: Students are able to evaluate the history of microbial development and the theories that accompany it, microbial growth and analyze the factors influencing it, microbial metabolism, viral replication and immune response to microbial infection. (ILO2 and ILO4)

## **Sub-CLO**

Sub CLO-1: Students are able to analyze how learning materials, learning forms, assessment indicators and other agreements (CLO-1)

Sub CLO-2: Students are able to describe the development of microbiology in the world and its relationship with human and animal life (CLO-1)

Sub CLO-3: Able to evaluate the history of microbiology ( )

Sub CLO-4: Able to distinguish between eukaryotic and prokaryotic structures and morphology (CLO-1)

Sub CLO-5: Able to describe the structure and morphology of bacteria, viruses and fungi (CLO-1)

Sub CLO-6: Able to isolate and identify bacteria (CLO-1)

Sub CLO-7: Able to describe the isolation and identification of viruses (CLO-1)

Sub CLO-8: Able to illustrate by making videos about the growth of bacteria, viruses and fungi (CLO-1)

Sub CLO-9: Able to make diagrams on the metabolism of bacteria, viruses and fungi (CLO-1)

Sub CLO-10: Able to diagram the immune response related to bacterial, viral and fungal infections and how to prevent them with vaccination and antibody formation (CLO-1)

Sub CLO-11: Able to perform an analysis of the relationship between microbes and their relationship with the development of livestock. (CLO-1)

# Learning Analysis

Animal Husbandry Microbiology



Able to conduct an analysis of the relationship between microbes and their relationship with the development of livestock. (CLO-1)



Able to diagram the immune response related to bacterial, viral and fungal infections and how to prevent them with vaccination and antibody formation (CLO-1)



Able to create diagrams on the metabolism of bacteria, viruses and fungi (CLO-1)



Able to illustrate by making videos about the growth of bacteria, viruses and fungi (CLO-1)



Able to describe the isolation and identification of viruses (CLO-1)



Able to isolate and identify bacteria (CLO-1)



Able to describe the structure and morphology of bacteria, viruses and fungi (CLO-1)



Able to distinguish between eukaryotic and prokaryotic structures and morphologies (CLO-1)



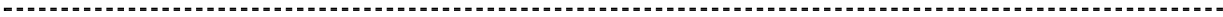
Able to evaluate the history of microbiology ( )



Students are able to describe the development of microbiology in the world and its relationship with human and animal life (CLO-1)



Students are able to analyze how the learning material, learning forms, assessment indicators and other agreements (CLO-1)





**HASANUDDIN UNIVERSITY**  
**FAKULTY OF ANIMAL SCIENCE**  
**BACHELOR PROGRAMME IN ANIMAL HUSBANDRY**  
**SEMESTER LEARNING PLAN**

Course	Code	Course Group	Credits	SEMESTER	Compilation Date
Animal Husbandry Microbiology	23I01110402		2	1	9 Agustus 2023
<b>AUTHORITY</b>	<b>SCP Development Lecturer</b>		<b>Coordinator</b>		<b>Head of Study Program</b>
	Prof. Dr. drh. Ratmawati Malaka, M.Sc., drh. Farida Nur Yuliati, M.Si., Dr. Wahniyathi, S.Pt.,M.Si		Prof. Dr. drh. Ratmawati Malaka, M.Sc.		Dr. Agr. Ir. Renny Fatmyah Utamy, S. Pt., M. Agr., IPM
<b>Course Learning Outcomes</b>	<b>ILO that are imposed on the course</b>				
	<b>ILO-2:</b>	Mastering the concepts, theories and methods of livestock development that are effective, efficient and sustainable			
	<b>ILO-4:</b>	Able to apply logical, critical, systematic, and innovative thinking in the context of the development or implementation of information technology-based science and technology.			
	<b>ILO ⇒ Course Learning Outcomes (CLO)</b>				
	Upon completion of this course, it is expected:				
	<b>ILO-2</b>	<b>CLO-1:</b> Students are able to evaluate the history of microbial development and the theories that accompany it, microbial growth and analyze the factors influencing it, microbial metabolism, viral replication and immune response to microbial infection.			
	<b>ILO-4</b>	<b>CLO-1 :</b> Students are able to evaluate the history of microbial development and the theories that accompany it, microbial growth and analyze the factors influencing it, microbial metabolism, viral replication and immune response to microbial infection.			
	<b>CLO⇒ Sub-CLO</b>				
	<b>CLO-1</b>	<b>SUB-CLO-1:</b> Students are able to analyze how the learning material, learning forms, assessment indicators and other agreements			
	<b>CLO-1</b>	<b>SUB-CLO-2:</b> Students are able to describe the development of microbiology in the world and its relationship with human and animal life			
<b>CLO-1</b>	<b>SUB-CLO-4:</b> Able to distinguish between eukaryotic and prokaryotic structures and morphologies				
<b>CLO-1</b>	<b>SUB-CLO-5:</b> Able to describe the structure and morphology of bacteria, viruses and fungi				
<b>CLO-1</b>	<b>SUB-CLO-6:</b> Able to isolate and identify bacteria				
<b>CLO-1</b>	<b>SUB-CLO-7:</b> Able to describe the isolation and identification of viruses				
<b>CLO-1</b>	<b>SUB-CLO-8:</b> Able to illustrate by making videos about the growth of bacteria, viruses and fungi				
<b>CLO-1</b>	<b>SUB-CLO-9:</b> Able to create diagrams on the metabolism of bacteria, viruses and fungi				

**SUB-CLO-10:** Able to diagram the immune response related to bacterial, viral and fungal infections and how to prevent them with vaccination and antibody formation

**SUB-CLO-11:** Able to conduct an analysis of the relationship between microbes and their relationship with the development of livestock.

**Correlation between ILO/CLO and Sub-CLO**

ILO that are charged on the course	CLO	SUB CLO	Form of Assessment*					Weight	Value	Student Score
			Formative	Sumative						
				Interactive Lectures	Group Presentations	Case Study	Practicum/Field Practice			
ILO-4	CLO- 1	SUB-CLO-1		0	0	0	0	0		
ILO -4	CLO - 1	SUB- CLO -2		5	5	0	0	10	20	
ILO -4	CLO - 1	SUB- CLO -4		8	2	10	0	0	20	
ILO -4	CLO - 1	SUB- CLO -6		3	2	0	0	0	5	
ILO -4	CLO - 1	SUB- CLO -7		5	0	0	10	0	15	
ILO -4	CLO - 1	SUB- CLO -9		5	0	0	5	5	15	
ILO -4	CLO - 1	SUB- CLO - 10		9	0	16	0	0	25	
				35	9	26	15	15	100	

**Course Description**

Upon completion of this course, students will be able to analyze and synthesize the development and application of technology related to bacteria, viruses and fungi

**Learning Materials /Subject Matter**

Students are able to evaluate and monitor the application of technology in relation to bacteria, viruses and fungi

**Referensi Utama**

<b>Referensi</b>	<p>1. Anonim. 1983/ Difco Manual. Detroit. Michigan  2. Carperter, P. 1984. Microbiology. W.R. Saunders Cmp. London  3. Elmer, W.K. 1999. Diagnostic Microbiology. Lippincot Comp. Toronto.  4. Malaka, R. N.Y. Farida, Kusumnadari, I.P. 2001. Mikrobiologi Hewan. Buku Ajar, Program A2 Jurusan Produksi Ternak. Fakultas Peternakan Unhas  5. Merchant, IA, and R.A. Parker. 1987. Veteriner Bacteriology and Virology. The Iowa State University Press. Iowa, USA. 6. Tortora, G.J., Funke, B.R. and Case, C.L. 1995. Microbiology and Introduction. 2 ed. The Benyamin/Cumming. Publ Comp., Parkway. USA</p>						
	<b>Additional References</b>						
	1. Related Journals, books						
<b>Teaching Team</b>	Prof. Dr. drh. Ratmawati Malaka, M.Sc., drh. Farida Nur Yuliaty, M.Si., Dr. Wahniyathi, S.Pt.,M.Si.						
<b>Required courses</b>							
Week	Sub CLO (End-of-stage learning ability)	Assessment		Learning Forms and Methods [estimasi waktu] ( <i>Learning Method</i> )		Learning Materials ( <i>Content</i> )	Weights of Assessment (%)
		Indicator	Techniques & Criteria	Luring ( <i>Offline System</i> )	Daring ( <i>Online System</i> )		
1	2	3	4	5	6	7	8
1	Students are able to analyze how learning materials, learning forms, assessment indicators and other agreements (CLO-1)	<b>Formative:</b> -  <b>Sumative:</b>  Clarity on the ability to describe learning contracts,	<b>Formative Criteria:</b> <b>Sumative Criteria:</b> Interactive Studying (0) <b>Assessment</b> <b>Techniques:</b> None	<b>Studying:</b>  Diskusi kelompok (Small Group Discussion)  1 x 50 mnt		Contracts and learning plans	0

2	Students are able to describe the development of microbiology in the world and its relationship with human and animal life (CLO-1)	<p><b>Formative:</b></p> <p>-</p> <p><b>Sumative:</b></p> <p>Description of the development of microbiology in the world in relation to human life: Zoetiology of diseases:</p> <ol style="list-style-type: none"> <li>1. The role of beneficial bacteria</li> <li>2. Bacteria that cause disease</li> </ol>	<p><b>Formative Criteria:</b></p> <p><b>Sumative Criteria:</b></p> <p>Interactive Studying(5)</p> <p>Group Presentation (5) is assessed by rubric I011240001</p> <p><b>Assessment Techniques:</b></p> <p>None</p>	<p><b>Studying:</b></p> <p>Group discussions (Small Group Discussion)</p> <p>1 x 50 mnt</p>		<ul style="list-style-type: none"> <li>- The importance of miroba in human life</li> <li>- Beneficial bacteriaan</li> <li>- Harmful bacteria</li> </ul>	10
3	Students are able to describe the development of microbiology in the world and its relationship with human and animal life (CLO-1)	<p><b>Formative:</b></p> <p>-</p> <p><b>Sumative:</b></p> <p>Description of the development of microbiology in the world in relation to human life: Zoology of diseases:</p> <ol style="list-style-type: none"> <li>1. The role of beneficial bacteria</li> <li>2. Bacteria that cause disease</li> </ol>	<p><b>Formative Criteria:</b></p> <p><b>Sumative Criteria:</b></p> <p>Problem Base Learning (10) Assessed by rubric I011240003</p> <p><b>Assessment Techniques:</b></p> <p>None</p>	<p><b>Studying:</b></p> <p>Group discussions (Small Group Discussion) None</p> <p>1 x 50 mnt</p>		<ul style="list-style-type: none"> <li>- The importance of miroba in human life</li> <li>- Beneficial bacteriaan</li> <li>- Harmful bacteria</li> </ul>	10

4	Able to distinguish between eukaryotic and prokaryotic structures and morphology (CLO-1)	<p><b>Formative:</b></p> <p>-</p> <p><b>Sumative:</b></p> <p>Describe structure and morphology</p> <ol style="list-style-type: none"> <li>1. eukariotik</li> <li>2. prokariotik</li> </ol>	<p><b>Formative Criteria:</b></p> <p><b>Sumative Criteria:</b></p> <p>Interactive Studying (5)</p> <p>Case Study (10) is assessed with rubrics I011240001</p> <p><b>Assessment Techniques:</b></p> <p>None</p>	<p><b>Studying:</b></p> <p>Group discussions (Small Group Discussion), Other methods</p> <p>1 x 50 mnt</p>		<ol style="list-style-type: none"> <li>1. Structure and morphology</li> <li>2. Eukaryotic</li> <li>3. Prokaryotic</li> </ol>	15
5	Able to distinguish between eukaryotic and prokaryotic structures and morphology (CLO-1)	<p><b>Formative:</b></p> <p>-</p> <p><b>Sumative:</b></p> <p>Accuracy of discussion, teamwork, activities, creativity:</p> <ol style="list-style-type: none"> <li>1. Structure of bacteria</li> <li>2. Bacterial morphology</li> </ol>	<p><b>Formative Criteria:</b></p> <p><b>Sumative Criteria:</b></p> <p>Interactive Studying (3)</p> <p>Group Presentation (2) is assessed by rubric I011240001</p> <p><b>Assessment Techniques:</b></p> <p>None</p>	<p><b>Studying:</b></p> <p>Group discussions (Small Group Discussion)</p> <p>1 x 50 mnt</p>		<ol style="list-style-type: none"> <li>1. Structure of bacteria</li> <li>2. Bacterial morphology</li> </ol>	5
6	Able to isolate and identify bacteria (CLO-1)	<p><b>Formative:</b></p> <p>-</p> <p><b>Sumative:</b></p> <p>The accuracy of discussions, teamwork, activities, creativity in doing:</p> <ol style="list-style-type: none"> <li>1. Bacterial Isolation</li> <li>2. Bacterial Identification</li> </ol>	<p><b>Formative Criteria:</b></p> <p><b>Sumative Criteria:</b></p> <p>Interactive Studying (3)</p> <p>Group Presentation (2) is assessed by rubric I011240001</p> <p><b>Assessment Techniques:</b></p> <p>None</p>	<p><b>Studying:</b></p> <p>Group discussions (Small Group Discussion)</p> <p>1 x 50 mnt</p>		<ol style="list-style-type: none"> <li>1. Bacterial Isolation</li> <li>2. Bacterial Identification</li> </ol>	5

7-9	Able to describe the isolation and identification of viruses (CLO-1)	<p><b>Formative:</b></p> <p>-</p> <p><b>Sumative:</b></p> <p>Accuracy of discussion, teamwork, activities, creativity in doing: 1. Fungi isolation 2. Identify fungi</p>	<p><b>Formative Criteria:</b></p> <p><b>Sumative Criteria:</b></p> <p>Interactive Studying (5)</p> <p>Practicum/Field Practice (10) is assessed by rubric I011240002</p> <p><b>Assessment Techniques:</b></p> <p>None</p>	<p><b>Studying:</b></p> <p>Group discussions (Small Group Discussion)</p> <p>1 x 50 mnt</p>		<p>1. Fungi Isolation 2. Identification of fungi</p>	15
10-11	Able to make diagrams on the metabolism of bacteria, viruses and fungi (CLO-1)	<p><b>Formative:</b></p> <p>-</p> <p><b>Sumative:</b></p> <p>Completeness, clarity of concept, creativity, teamwork, activities in making diagrams about:</p> <ol style="list-style-type: none"> <li>1. Immune response due to bacterial, viral and fungal infections</li> <li>2. Prevention with vaccination</li> <li>3. Antibody formation</li> </ol>	<p><b>Formative Criteria:</b></p> <p><b>Sumative Criteria:</b></p> <p>Interactive Studying (5)</p> <p>Problem Base Learning (5)</p> <p>Practicum/Field Practice (5) is assessed with rubrics I011240002</p> <p><b>Assessment Techniques:</b></p> <p>None</p>	<p><b>Studying:</b></p> <p>Group discussions (Small Group Discussion)</p> <p>1 x 50 mnt</p>		<p>Diagram about:</p> <ol style="list-style-type: none"> <li>1. Immune response due to bacterial, viral and fungal infections.</li> <li>2. Prevention of diseases with vaccination</li> <li>3. Antibody formation</li> </ol>	15

12-14	Able to diagram the immune response related to bacterial, viral and fungal infections and how to prevent them with vaccination and antibody formation (CLO-1)	<p><b>Formative:</b></p> <p>-</p> <p><b>Sumative:</b></p> <p>Completeness, Clarity of concept, creativity, teamwork, activities with assessment indicators: 1. Microbes in relation to diseases in livestock 2. Microbes in relation to livestock products</p>	<p><b>Formative Criteria:</b></p> <p><b>Sumative Criteria:</b></p> <p>Interactive Studying (5)</p> <p>Case Study (10) is assessed with rubrics I011240003</p> <p><b>Assessment Techniques:</b></p> <p>None</p>	<p><b>Studying:</b></p> <p>Group discussions (Small Group Discussion)</p> <p>1 x 50 mnt</p>		Microbes in relation to diseases in livestock 2. Microbes in relation to livestock products	15
15-16	Able to diagram the immune response related to bacterial, viral and fungal infections and how to prevent them with vaccination and antibody formation (CLO-1)	<p><b>Formative:</b></p> <p>-</p> <p><b>Sumative:</b></p> <p>Completeness, Clarity of concept, creativity, teamwork, activities with assessment indicators: 1. Microbes in relation to diseases in livestock 2. Microbes in relation to livestock products</p>	<p><b>Formative Criteria:</b></p> <p><b>Sumative Criteria:</b></p> <p>Interactive Studying (4)</p> <p>Case Study (6) is assessed by rubric I011240003</p> <p><b>Assessment Techniques:</b></p> <p>None</p>	<p><b>Studying:</b></p> <p>Group discussions (Small Group Discussion) None</p> <p>1 x 50 mnt</p>		Microbes in relation to diseases in livestock 2. Microbes in relation to livestock products	10
							100

**Matrix ILO, CLO, and Assessment Methods**

ILO / CLO	CLO-1
ILO-2 (P1)	Interactive Studying Interactive Studying (5% weight) Group presentations (5% weights) Problem Base Learning (10% weights) Interactive Studying (8% weights) Case Study (10% weight) Group Presentation (2% weight) Interactive Studying (3% weight) Group Presentation (2% weight) Interactive Studying (5% weight) Practicum/Field Practice (10% weight) Interactive Studying (5% weight) Problem Base Learning (5% weight) Practicum/Field Practice (5% weight) Interactive Studying (9% weight) Case Study (Bobot 16%)

ILO / CLO	CLO-1
ILO-4 (KU1)	<p>Interactive Studying</p> <p>Interactive Studying (5% weight)</p> <p>Group presentations (5% weights)</p> <p>Problem Base Learning (10% weights)</p> <p>Interactive Studying (8% weights)</p> <p>Case Study (10% weight) Group</p> <p>Presentation (2% weight)</p> <p>Interactive Studying (3% weight)</p> <p>Group Presentation (2% weight)</p> <p>Interactive Studying (5% weight)</p> <p>Practicum/Field Practice (10% weight)</p> <p>Interactive Studying (5% weight)</p> <p>Problem Base Learning (5% weight)</p> <p>Practicum/Field Practice (5% weight)</p> <p>Interactive Studying (9% weight)</p> <p>Case Study (Bobot 16%)</p>

### Evaluation Type and Assessment Weight

Type	Assessment Weight
Interactive Lectures	35
Group Presentations	9
Case Study	26
Practicum/Field Practice	15
Problem Base Learning	15
Total	100

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

ILO that are charged on the Course	CLO	SUB CLO	Form of Assessment*						Weight	Value	Student Score
			Formative	Sumative							
				Interactive Lecture	Group Presentations	Case Study	Practicum/Field Practice	Problem Base Learning			
ILO-4	CLO- 1	SUB-CLO-1		0	0	0	0	0	0		
ILO-4	CLO- 1	SUB-CLO-2		5	5	0	0	10	20		
ILO-4	CLO- 1	SUB-CLO-4		8	2	10	0	0	20		
ILO-4	CLO- 1	SUB-CLO-6		3	2	0	0	0	5		
ILO-4	CLO- 1	SUB-CLO-7		5	0	0	10	0	15		
ILO-4	CLO- 1	SUB-CLO-9		5	0	0	5	5	15		
ILO-4	CLO- 1	SUB-CLO-10		9	0	16	0	0	25		
				35	9	26	15	15	100		



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

**STUDENT STRUCTURED ASSIGNMENT PLAN**

<b>Course</b>	Animal Microbiology				
<b>Code</b>	23101110402	<b>Credits</b>	2	<b>Semester</b>	1 (satu)
<b>Developer Lecturer</b>	Prof. Dr. drh. Ratmawati Malaka, M.Sc				
<b>Task Form</b>	<b>Task Time</b>				
Documents/Magazines	2 Weeks				
<b>Task Title</b>					
Microbes in relation to livestock diseases and Microbes in relation to livestock products.					
<b>Course Learning Outcomes</b>					
Sub CLO-2: Students are able to describe the development of microbiology in the world and its relationship with human and animal life (CLO-1)					
<b>Task Description</b>					
<p>The student's assignment is a group task to make a Paper Assignment " Describe the relationship between microbes and diseases in livestock and the relationship between microbes and humans and animals. The preparation of the paper follows the following procedure:</p> <ol style="list-style-type: none"> <li>1) Each group chooses 1 of the sub-topics for 1 group: the relationship between microbes and livestock diseases, the relationship between microbes and humans and animals, and the relationship between microbes and livestock products. the relationship between microbes and livestock diseases, the relationship between microbes and humans and animals, and the relationship between microbes and livestock products.</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: Microbes and their relationship to disease, humans and animals 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. Anonim. 1983/ Difco Manual. Detroit. Michigan</li> <li>2. Carperter, P. 1984. Microbiology. W.R. Saunders Cmp. London</li> <li>3. Elmer, W.K. 1999. Diagnostic Microbiology. Lippincot Comp. Toronto.</li> <li>4. Malaka, R. N.Y. Farida, Kusumnadari, I.P. 2001. Mikrobiologi Hewan. Buku Ajar, Program A2 Jurusan Produksi Ternak. Fakultas Peternakan Unhas</li> <li>5. Merchant, IA, and R.A. Parker. 1987. Veteriner Bacteriology and Virology. The Iowa State University Press. Iowa, USA.</li> <li>6. Tortora, G.J., Funke, B.R. and Case, C.L. 1995. Microbiology and Introduction. 2 ed. The Benyamin/Cumming. Publ Comp., Parkway. USA</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.	

**Lampiran Rubrik I011240001 | Penilaian Presentasi Mahasiswa**

[https://drive.google.com/drive/u/0/folders/1D7G-Y8uFtSaBOjbdNzPJW19m-sEbj\\_D](https://drive.google.com/drive/u/0/folders/1D7G-Y8uFtSaBOjbdNzPJW19m-sEbj_D)

**Lampiran Rubrik I011240002 | Penilaian praktikum/Praktek Kerja Lapang**

<https://drive.google.com/file/d/18XkwdIpujSLRuaz9HlephJWGmKU6rXD/view?usp=sharing>

**Lampiran Rubrik I011240003 | Penilaian makalah**

[https://drive.google.com/file/d/1PFo5\\_f-uXO6NQsF-rG8p6PMZUDoUI6Q9/view?usp=sharing](https://drive.google.com/file/d/1PFo5_f-uXO6NQsF-rG8p6PMZUDoUI6Q9/view?usp=sharing)