



**UNIVERSITAS SUMATERA UTARA (USU)
FACULTY OF AGRICULTURE
ANIMAL SCIENCE STUDY PROGRAM**

Document Code
(to be followed)

SEMESTER LEARNING PLAN (RPS)

COURSE (MK)	CODE	Course Group	WEIGHT (credits)	SEMESTER	Date of Preparation
Livestock Genetics	PTN1202	Exact	3	II	February 5, 20
AUTHORIZATION/ATTESTATION	SLP Developer Lecturer		Approved Head of Study Program		Knowing Chairman of LINKUP USU
	Prof. Dr. Ir. Sayed Umar, MS Dr. Usman Budi, S.Pt., M.Si. Fuad Hasan, S.Pt., M.Si. Dian Tria Fatmila, S.Pt., M.Si.		Dr. Ir. Ma'ruf Tafsin, M.Si., IPM.		Prof. Dr. Dwi Suryanto M.Sc.
Learning Outcomes	LO-Study Program Charged to Course				
	LO01	Able to apply logical, critical, systematic and innovative thinking through the approach and implementation of animal science and technology by applying the character of BINTANG.			
	LO12	Have coherent and up-to-date knowledge in the field of animal science and in accordance with applicable legal regulations can apply animal welfare aspects.			
	Course Learning Outcomes (CLO)				CLO Weight
	CLO0110: Able to explain logically about the meaning, uses of genetics, genetic material, trait variation, principles of inheritance of traits, gene interactions, sequenced genes, chromosome maps, sex determination, probability theory, population genetics and genetic engineering.				60.82%
	CLO1201: Able to explain the latest innovations related to the development of livestock genetics in accordance with applicable regulations				39.18%
	End Capability of Each Learning Stage (Sub-CLO)				
	Sub-CLO1	After attending this lecture, students will be able to explain an overview of the role of livestock genetics in supporting knowledge in the field of animal science.			
	Sub-CLO2	After attending this lecture, students will be able to explain the nature of inheritance and chromosome theory.			
	Sub-CLO3	After attending this lecture, students will be able to explain the material of genetics and protein synthesis.			
Sub-CLO4	After attending this lecture, students will be able to explain mendelian genetics				

	Sub-CLO5	After attending this lecture, students will be able to explain gene interactions and hereditary trait changes.										
	Sub-CLO6	After attending this lecture, students will be able to explain the Hardy-Weinberg probability theory.										
	Sub-CLO7	After attending this lecture, students will be able to explain lethal genes and multiple alleles.										
	Sub-CLO8	After attending this lecture, students will be able to explain gene sequencing										
	Sub-CLO9	After attending this lecture, students will be able to explain sex determination										
	Sub-CLO10	After attending this lecture, students will be able to explain the series of genitalia										
	Sub-CLO11	After attending this lecture, students will be able to explain genetic engineering and applied genetics.										
Correlation of CLO with Sub-CLO		Sub-CLO1	Sub-CL O2	Sub-CL O3	Sub-CLO4	Sub-CL O5	Sub-CLO6	Sub-CLO7	Sub-CLO8	Sub-CL O9	Sub-CL O10	Sub-CLO11
	CLO0110	√	√	√	√	√	√	√	√	√	√	√
	CLO1201	√			√	√	√		√	√		√
Brief Course Description	After completing the Livestock Genetics course, second semester students, Animal Science Study Program, Faculty of Agriculture, Universitas Sumatera Utara are expected to be able to explain about the definition, uses of genetics, genetic material, trait variation, principles of inheritance of traits, gene interactions, sequential genes, chromosome maps, sex determination, probability theory, population genetics and genetic engineering. This course is conducted in Indonesian as the language of instruction, and 14 face-to-face meetings consisting of material presentation, case method, project-based, quizzes, assignments, and practicum both offline and online.											
Study Material:	BK03 Basic Animal Science											
Learning Materials	<ol style="list-style-type: none"> 1. Introduction (terms, uses, history of genetics, and role of livestock genetics) 2. Inheritance traits and chromosome theory 3. Genetics and protein synthesis materials 4. Mendelian genetics 5. Gene interaction and hereditary trait change 6. Hardy-Weinberg probability theory 7. Lethal genes and double alleles 8. Stringed gene 9. Selection criteria and implementation of selection in dairy cattle 											

	10. Genitalia 11. Genetic engineering and applied genetics				
References	<p>Main:</p> <ol style="list-style-type: none"> Gardner, E. J., M. J. Simmons, and D. P. Snustad. 1991. Principles of Genetics 8th ed. New Delhi: Wiley India Pvt. Limited Noor, R. R. 2008. Genetika Ternak. Jakarta: Penebar Swadaya Nusantari, E. 2015. Genetika Belajar Genetika dengan Mudah & Komprehensif: (Dilengkapi Data Hasil Riset tentang Kesulitan Memahami Konsep Genetika dan Riset dalam Pembelajaran Genetika). Yogyakarta: Deepublish Kanakraj, P. 2018. A Textbook of Animal Genetics. New Delhi: Agri BioVet Press Brah, G. S. 2014. Animal Genetics: Concepts and Implementations 2nd ed. New Delhi: Kalyani Publishers Tomar, A. Kumar, S. S. Tomar, dan R. Singh. 2020. Animal Genetic and Breeding. Delhi: Astral International Khatib, H. 2015. Molecular and Qualitative Animal Genetics. Hoboken: Wiley-Blackwell F. A. Crew. 1925. Animal Genetics – The Science of Animal Breeding. England: Read Books Gunawan, A., C. Sumantri, dan R. Juniarti. 2017. Gen Dan Keragaman Genetik Ternak. Bogor: IPB Press Ciptadi, G., Aulanni'am, A. Budiarto, dan Y. Oktanella. 2019. Genetika dan Pemuliaan Peternakan – Veteriner. Malang: Press 				
	<p>Additional:</p> <ol style="list-style-type: none"> Anonymous. 2014. Penuntun Praktikum Dasar Genetika Ternak Sifat Kualitatif dan Sifat Kuantitatif Pada Ternak. U Kendari Subekti, K. dan F. Arlina. 2011. Karakteristik Genetik Eksternal Ayam Kampung di Kecamatan Sungai Pagu Kabupaten Solok Selatan. Jurnal Ilmiah Ilmu-Ilmu Peternakan. Vol. 14(2): 74-86 Practicum handbook National and international journals 				
Lecturers	<ol style="list-style-type: none"> Prof. Dr. Ir. Sayed Umar, MS. Dr. Usman Budi, S.Pt., M.Si. Fuad Hasan, S.Pt., M.Si. Dian Tria Fatmila, S.Pt., M.Si. 				
Conditional Subjects	-				
	End ability of each learning stage (Sub-CLO)	Assessment	Form of Learning; Learning Methods; Student Assignment;	Study Material (Learning Material)	Assessment Weight (%)

(1)	(2)	Indicator (3)	Criteria and Techniques (4)	[Estimated Time]		(7)	(8)
				Asynchronous (5)	Synchronous (6)		
1	Sub-CLO1: After attending this lecture, students will be able to explain an overview of the role of livestock genetics in supporting knowledge in the field of animal science.	a. Accuracy in explaining the terms, uses and history of genetics b. Accuracy in explaining the role of livestock genetics	Criteria: Essay and multiple choice assessment rubric Techniques: <i>Test</i>	Asynchronous (5) KM+PT (1 week x 3 credits x 120 minutes) Learning Methods: <i>Self-Paced Learning</i> Activities: a. Attendance b. Download and read the Syllabus (RPS), Learning Implementation Plan (SAP), Course Agreement, and Learning Materials Moda (Learning Management System): class.usu.ac.id	Synchronous (6) Face-to-Face (TM) (1 week x 2 credits x 50 minutes) Learning Methods: a. Lecture b. Discussion Activities: a. Online/offline learning b. Class discussion c. Take notes on learning materials Media: a. Slides/ ppt b. Zoom meeting / LCD c. Text book	Subject matter: a. Terms, uses and history of genetics b. The role of livestock genetics	This CLO be assessed during mid-semester exam (UT) (20% (CLO) & CLO1
2-3	Sub-CLO 2: After attending this lecture, students will be able to explain the nature of inheritance and chromosome theory.	a. Accuracy in explaining the definition and structure of cells b. Accuracy in explaining cell division c. Accuracy in explaining the formation of gamete cells	Criteria: E Use essay and multiple choice assessment rubrics Techniques: <i>Test</i>	Asynchronous (5) KM+PT (2 weeks x 3 credits x 120 minutes) Learning Methods: <i>Self-Paced Learning</i> Activities: a. <i>Recording attendance</i> b. <i>Completing quiz</i>	Synchronous (6) Face-to-Face (TM) (1 week x 2 credits x 50 minutes) Learning Methods: a. Lecture b. Discussion Activities: a. Online/offline learning b. Class discussion	Subject matter: a. Cell b. Cell division c. Gametogenesis d. Chromosomes e. Genes f. Dominant gene g. Recessive gene	This CLO be assessed during mid-semester exam (UT) (20% (CLO

		<p>d. Accuracy in explaining chromosomes</p> <p>e. Accuracy in explaining genes</p> <p>f. Accuracy in explaining dominant and recessive genes</p> <p>g. Accuracy in explaining gene action</p>		<p>Quiz 1: Quiz to measure student understanding of inheritance traits and chromosome theory.</p> <p>Moda (Learning Management System): class.usu.ac.id</p>	<p>c. Take notes on learning materials</p> <p>Media:</p> <p>a. Slides/ ppt</p> <p>b. Zoom meeting / LCD</p> <p>a. Text book</p>	<p>h. Gene action</p>
4	<p>Sub-CLO 3:</p> <p>After attending this lecture, students will be able to explain the material of genetics and protein synthesis.</p>	<p>a. Accuracy in explaining the structure of DNA and RNA</p> <p>b. Accuracy in explaining the function of DNA and RNA</p> <p>c. Accuracy in explaining the relationship between DNA and RNA</p>	<p>Criteria: Paper assessment rubric</p> <p>Techniques: <i>Non-test:</i> <i>Assignment</i></p>	<p>KM+PT (2 weeks x 3 credits x 120 minutes)</p> <p>Learning Methods: <i>Self-Paced Learning</i></p> <p>Activities:</p> <p>a. <i>Recording attendance</i></p> <p>b. <i>Completing assignment</i></p> <p>Assignment 1: Make a resume of the structure and function of DNA and RNA (picture & description), collected in pdf form</p> <p>Moda (Learning Management</p>	<p>Face-to-Face (TM) (1 week x 2 credits x 50 minutes)</p> <p>Learning Methods:</p> <p>a. Lecture</p> <p>b. Discussion</p> <p>Activities:</p> <p>a. Online/offline learning</p> <p>b. Class discussion</p> <p>c. Take notes on learning materials</p> <p>d. Presentation</p> <p>Media:</p> <p>a. Slides/ ppt</p> <p>b. Zoom meeting / LCD</p> <p>c. Text book</p>	<p>Subject matter:</p> <p>a. Structure of DNA and RNA</p> <p>b. Functions of DNA and RNA</p> <p>c. The relationship between DNA and RNA</p>

Assignment 1: 5 (CLO3)

				System): class.usu.ac.id		
5-6	Sub-CLO 4: After attending this lecture, students will be able to explain mendelian genetics	<ul style="list-style-type: none"> a. Accuracy in explaining the general principle of mendel b. Accuracy in explaining the separation principle c. Accuracy in explaining symbols and terminology in mendelian genetics d. Accuracy in explaining monohybrid, dihybrid and polyhibrid crosses 	<p>Criteria: Use presentation and paper assessment rubrics</p> <p>Techniques: <i>Non-Test:</i> <i>Project based learning</i></p>	<p>Independent Activities (KM) + Structured Assignments (PT) (1 week x 3 credits x 120 minutes)</p> <p>Learning Methods: <i>Self-Paced Learning</i></p> <p>Activities:</p> <ul style="list-style-type: none"> a. <i>Recording attendance</i> b. <i>Completing assignment</i> c. <i>Practicum</i> <p>Case Method 1:</p> <ul style="list-style-type: none"> a. Lecturer divides students into groups. b. Conducting a practicum on genetic buttons. c. Make a practicum report on Genetic Buttons in understanding Mendel's Law through several problems 	<p>Face-to-Face (TM) (1 week x 2 credits x 50 minutes)</p> <p>Learning Methods:</p> <ul style="list-style-type: none"> a. Lecture b. Discussion <p>Activities:</p> <ul style="list-style-type: none"> a. Online/offline learning b. Class discussion c. Take notes on learning materials <p>Media:</p> <ul style="list-style-type: none"> a. Slides/ ppt b. Zoom meeting / LCD c. Text book 	<p>Subject matter:</p> <ul style="list-style-type: none"> a. General principle of mendel b. Separation principle c. Symbols and terminology Monohybrid crosses d. Dihybrid crosses e. Polyhybrid crosses

CM: 2
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CLO1

				Moda (Learning Management System): class.usu.ac.id		
7	Sub-CLO 5: After attending this lecture, students will be able to explain gene interactions and hereditary trait changes.	<ul style="list-style-type: none"> a. Accuracy in explaining the nature and types of interactions b. Accuracy in explaining complementary c. Accuracy in explaining Cryptomancy d. Accuracy in explaining epistasis e. Accuracy in explaining polyimetry f. Accuracy in explaining qualitative and quantitative characters g. Accuracy in explaining mutation and abrasion h. Accuracy in explaining mutagen variation and gene mutation 	<p>Criteria: Use essay and multiple choice assessment rubrics</p> <p>Techniques: <i>Test</i></p>	<p>Independent Activities (KM) + Structured Assignments (PT) (1 week x 3 credits x 120 minutes)</p> <p>Learning Methods: <i>Self-Paced Learning</i></p> <p>Activities:</p> <ul style="list-style-type: none"> a. <i>Recording attendance</i> b. <i>Practicum</i> <p>Moda (Learning Management System): class.usu.ac.id</p>	<p>TM (1 week x 2 credits x 50 minutes)</p> <p>Learning Methods:</p> <ul style="list-style-type: none"> a. Lecture b. Discussion <p>Activities:</p> <ul style="list-style-type: none"> a. Online/offline learning b. Class discussion c. Take notes on learning materials <p>Media:</p> <ul style="list-style-type: none"> a. Slides/ ppt b. Zoom meeting / LCD c. Text book 	<p>Subject matter:</p> <ul style="list-style-type: none"> a. Nature and types of interactions b. Complement ary c. Kriptomeri d. Epistasis e. Polimeri f. Qualitative and quantitative characters g. Mutation and abrasion h. Mutagen variation and gene mutation


This CLO be assessed during mid-semester exam (UT) (20% (CLO & CLO1

8	MID SEMESTER EXAMINATION (UTS)					209	
9	<p>Sub-CLO 6:</p> <p>After attending this lecture, students will be able to explain the Hardy-Weinberg probability theory.</p>	<p>a. Accuracy in explaining the definition and examples of the use of Hardy-Weinberg probability theory</p> <p>b. Accuracy in explaining gene frequency changes</p>	<p>Criteria: Paper assessment rubric</p> <p>Techniques: <i>Test:</i> <i>Quiz</i></p>	<p>Independent Activities (KM) + Structured Assignments (PT) (1 week x 3 credits x 120 minutes)</p> <p>Learning Methods: <i>Self-Paced Learning</i></p> <p>Activities:</p> <ol style="list-style-type: none"> <i>Recording attendance</i> <i>Completing assignment</i> <i>Practicum</i> <p>Quiz 2: Quiz to measure students' understanding of Hardy-Weinberg probability through calculations on several cases</p> <p>Moda (Learning Management System): class.usu.ac.id</p>	<p>Face-to-Face (TM) (1 week x 2 credits x 50 minutes)</p> <p>Learning Methods:</p> <ol style="list-style-type: none"> Lecture Discussion <p>Activities:</p> <ol style="list-style-type: none"> Online/offline learning Class discussion Take notes on learning materials <p>Media:</p> <ol style="list-style-type: none"> Slides/ ppt Zoom meeting / LCD Text book 	<p>Subject matter:</p> <ol style="list-style-type: none"> Definition and examples of using Hardy-Weinberg probability theory Gene frequency changes 	<p>Quiz 1 (CLO1 & CLO1)</p>

10-11	<p>Sub-CLO 7:</p> <p>After attending this lecture, students will be able to explain lethal genes and multiple alleles.</p>	<p>a. Accuracy in explaining the kinds of lethal genes</p> <p>b. Accuracy in explaining multiple alleles</p> <p>c. Accuracy in explaining fur pigmentation</p> <p>d. Accuracy in explaining people's blood type</p> <p>e. Accuracy in explaining the Rh system</p> <p>f. Accuracy in explaining blood types in animals</p> <p>g. Accuracy in explaining double alleles in livestock</p> <p>h. Accuracy in explaining the ABO system and groups A1 and A2</p>	<p>Criteria: Use essay and multiple choice assessment rubrics</p> <p>Techniques: <i>Test</i></p>	<p>Independent Activities (KM) + Structured Assignments (PT) (1 week x 3 credits x 120 minutes)</p> <p>Learning Methods: <i>Self-Paced Learning</i></p> <p>Activities: a. <i>Recording attendance</i></p> <p>Moda (Learning Management System): class.usu.ac.id</p>	<p>Face-to-Face (TM) (1 week x 2 credits x 50 minutes)</p> <p>Learning Methods: a. Lecture b. Discussion</p> <p>Activities: a. Online/offline learning b. Class discussion c. Take notes on learning materials</p> <p>Media: a. Slides/ ppt b. Zoom meeting / LCD c. Text book</p>	<p>Subject matter:</p> <p>a. Types of lethal genes</p> <p>b. Definition of multiple alleles</p> <p>c. Fur pigmentation</p> <p>d. Blood type of person</p> <p>e. Rh system</p> <p>f. Blood groups in animals</p> <p>g. Multiple alleles in livestock</p> <p>h. ABO system and groups A1 and A2</p>	<p>This CLO be assessed during final-semester exam (UAS) (20%) (CLO 7)</p>
12	<p>Sub-CLO 8:</p> <p>After attending this lecture, students will be able to explain gene sequencing</p>	<p>a. Accuracy in explaining morgan's findings on drosophila</p>	<p>Criteria: Use essay and multiple choice assessment rubrics</p> <p>Techniques:</p>	<p>Independent Activities (KM) + Structured Assignments (PT) (1 week x 3 credits x 120 minutes)</p>	<p>Face-to-Face (TM) (1 week x 2 credits x 50 minutes)</p> <p>Learning Methods: a. Lecture</p>	<p>Subject matter:</p> <p>a. Morgan's findings in drosophila</p> <p>b. Cross moving</p>	<p>This CLO be assessed during final-semester exam</p>

		<p>b. Accuracy in explaining cross moving</p> <p>c. Accuracy in explaining perfect and imperfect series</p>	<p><i>Test</i></p>	<p>Learning Methods: <i>Self-Paced Learning</i></p> <p>Activities:</p> <p>a. <i>Recording attendance</i></p> <p>b. <i>Completing assignment</i></p> <p>Assignment 2: Resume a journal on chimeric genes and submit it as a pdf.</p> <p>Moda (Learning Management System): class.usu.ac.id</p>	<p>b. Discussion</p> <p>Activities:</p> <p>a. Online/offline learning</p> <p>b. Class discussion</p> <p>c. Take notes on learning materials</p> <p>Media:</p> <p>a. Slides/ ppt</p> <p>b. Zoom meeting / LCD</p> <p>c. Text book</p>	<p>c. Perfect and imperfect assemblies</p>	<p>(UA (20% (CLO & CLO1</p>
13	<p>Sub-CLO 9: After attending this lecture, students will be able to explain sex determination</p>	<p>a. Accuracy in explaining the X-Y system</p> <p>b. Accuracy in explaining the Z-W system</p> <p>c. Accuracy in explaining X-O</p> <p>d. Accuracy in explaining the difference between X and Y sperm</p>	<p>Criteria: Use presentation and paper assessment rubrics</p> <p>Techniques: <i>Non-test: Project based learning</i></p>	<p>Independent Activities (KM) + Structured Assignments (PT) (1 week x 3 credits x 120 minutes)</p> <p>Learning Methods: <i>Self-Paced Learning</i></p> <p>Activities:</p> <p>a. <i>Recording attendance</i></p> <p>b. <i>Completing assignment</i></p> <p>c. <i>Practicum</i></p>	<p>Face-to-Face (TM) (1 week x 2 credits x 50 minutes)</p> <p>Learning Methods:</p> <p>a. Lecture</p> <p>b. Discussion</p> <p>Activities:</p> <p>a. Online/offline learning</p> <p>b. Class discussion</p> <p>c. Take notes on learning materials</p> <p>Media:</p>	<p>Subject matter:</p> <p>a. X-Y System</p> <p>b. Z-W system</p> <p>c. X-O System</p> <p>d. X and Y sperm differences</p>	<p>PBL 20% (CLO & CLO1</p>

				<p>Project based learning 2:</p> <p>a. Divide the group evenly (lecturer divides)</p> <p>b. Make a paper on sex determination in various livestock commodities, maximum 15 pages from table of contents to bibliography TNR font size 12 spacing 1.5 sent in pdf form</p> <p>c. Presentation</p> <p>Moda (Learning Management System): class.usu.ac.id</p>	<p>a. Slides/ ppt</p> <p>b. Zoom meeting / LCD</p> <p>c. Text book</p>		
14	<p>Sub-CLO 10:</p> <p>After attending this lecture, students will be able to explain the series of genitalia</p>	<p>Accuracy in explaining factors affecting milk production and composition based on genetic, feed, and environmental aspects.</p>	<p>Criteria: Using an assessment rubric</p> <p>Techniques: <i>Non-test:</i> <i>Project based learning</i></p>	<p>Independent Activities (KM) + Structured Assignments (PT) (1 week x 3 credits x 120 minutes)</p> <p>Learning Methods: <i>Self-Paced Learning</i></p>	<p>Face-to-Face (TM) (1 week x 2 credits x 50 minutes)</p> <p>Learning Methods:</p> <p>c. Lecture</p> <p>d. Discussion</p> <p>Activities:</p> <p>a. Online/offline learning</p>	<p>Subject matter:</p> <p>a. X-string and Y-string</p> <p>b. Hemophilia</p> <p>c. Color Blindness</p> <p>d. Genitalia in drosophila and birds</p>	<p>PBL 10% (CLO)</p>

				<p>Activities:</p> <ol style="list-style-type: none"> <i>Recording attendance</i> <i>Completing assignment</i> <i>Practicum</i> <p>Project-Based Learning 3:</p> <ol style="list-style-type: none"> Divide the group evenly (lecturer divides) Make a paper on genital mutilation, problems caused by genital mutilation, and prevention in subsequent offspring, maximum 15 pages from table of contents to bibliography TNR font size 12 spacing 1.5 sent in pdf form. Presentation <p>Moda (Learning Management System): class.usu.ac.id</p>	<ol style="list-style-type: none"> Class discussion Take notes on learning materials <p>Media:</p> <ol style="list-style-type: none"> Slides/ ppt Zoom meeting / LCD Text book 		
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15	<p>Sub-CLO 11:</p> <p>After attending this lecture, students will be able to explain genetic engineering and applied genetics.</p>	<p>a. Accuracy in explaining recombinant DNA</p> <p>b. Accuracy in explaining gene transfer</p>	<p>Criteria: Using an assessment rubric</p> <p>Techniques: <i>Test:</i> <i>Case Method</i></p>	<p>Independent Activities (KM) + Structured Assignments (PT) (1 week x 3 credits x 120 minutes)</p> <p>Learning Methods: <i>Self-Paced Learning</i></p> <p>Activities:</p> <ol style="list-style-type: none"> <i>Recording attendance</i> <i>Completing assignment</i> <i>Practicum</i> <p>Moda (Learning Management System): class.usu.ac.id</p>	<p>Face-to-Face (TM) (1 week x 2 credits x 50 minutes)</p> <p>Learning Methods:</p> <ol style="list-style-type: none"> Lecture Discussion <p>Activities:</p> <ol style="list-style-type: none"> Online/offline learning Class discussion Take notes on learning materials <p>Media:</p> <ol style="list-style-type: none"> Slides/ ppt Zoom meeting / LCD Text book 	<p>Subject matter:</p> <ol style="list-style-type: none"> Recombinant DNA Gene transfer 	<p>This CLO be assessed during final-semester examination (UAS) (20% of CLO) & CLO1</p>
16	FINAL SEMESTER EXAMINATION (UAS)						20%

Notes in accordance with SN Dikti Permendikbud No 3/2020:

- Learning Outcomes of Graduates of Study Program (LO-SP) are the abilities possessed by each graduate of Study Program which are internalization of attitudes, mastery of knowledge and skills according to the level of the study program obtained through the learning process.
- LOs imposed on courses are some of the learning outcomes of study program graduates (LO-SP) used for the formation / development of a course consisting of aspects of attitude, general skills, specific skills and knowledge.
- Course LO (CLO) is an ability that is specifically described from the ELOs charged to the course, and is specific to the study material or learning material for the course.
- Course Sub-CP (Sub-CLO) is an ability that is specifically described from CLO which can be measured or observed and is the final ability planned at each stage of learning, and is specific to the learning material of the course.
- Indicators of ability assessment in the process and student learning outcomes are specific and measurable statements that identify the ability or performance of student learning outcomes accompanied by evidence.
- Assessment criteria are benchmarks used as a measure or measure of learning achievement in assessment based on predetermined indicators. Assessment criteria are guidelines for assessors so that the assessment is consistent and unbiased. Criteria can be quantitative or qualitative.
- Assessment techniques: test and non-test.

8. Forms of learning: Lecture, Reception, Tutorial, Seminar or equivalent, Practicum, Studio Practice, Workshop Practice, Field Practice, Research, Community Service and/or other equivalent forms of learning.
9. Learning Methods: *Small Group Discussion, Role-Play & Simulation, Discovery Learning, Self-Directed Learning, Cooperative Learning, Collaborative Learning, Contextual Learning, Project Based Learning*, and other equivalent methods.
10. Learning Materials are details or descriptions of study materials that can be presented in the form of several topics and sub-topics.
11. The assessment weight is the percentage of assessment of each sub-CLO achievement which is proportional to the difficulty level of the sub-CLO achievement, and totals 100%.
12. **PB= Learning Process**, **PT= Structured Assignment**, **KM= Independent Activity**.

Assessment Design:

CLO Code and Percentage	Sub-CLO Code	Form of Evaluation	Percentage (%)	Total	Evaluation Implementation
CLO0110 (60.82%)	Sub-CLO1	Mid-semester exam (UTS)	3.75	60.82%	Week 8
	Sub-CLO2	Mid-semester exam (UTS)	3.33		Week 8
	Sub-CLO3	Tasks	3.33		Week 4
	Sub-CLO4	CM	10		Week 6
	Sub-CLO5	Mid-semester exam (UTS)	3.75		Week 8
	Sub-CLO6	Quiz	3.33		Week 9
	Sub-CLO7	Final-semester exam (UAS)	5		Week 16
	Sub-CLO8	Final-semester exam (UAS)	3.33		Week 12
	Sub-CLO9	PBL	10		Week 13
	Sub-CLO10	PBL	10		Week 14

	Sub-CLO11	Final-semester exam (UAS)	5		Week 16
CLO1201 (39.18%)	Sub-CLO1	Mid-semester exam (UTS)	3.75	39.18%	Week 8
	Sub-CLO4	CM	10		Week 6
	Sub-CLO5	Mid-semester exam (UTS)	3.75		Week 8
	Sub-CLO6	Quiz	3.34		Week 9
	Sub-CLO8	Final-semester exam (UAS)	3.34		Week 16
	Sub-CLO9	PBL	10		Week 13
	Sub-CLO11	Final-semester exam (UAS)	5		Week 16
Total			100%	100%	

Assessment Plan:

Form of Evaluation	Sub-CLO	Assessment Instrument [Frequency]		Bill (proof)	Assessment Weight (%)
		Formative	Summative		
Quiz/question and answer	Sub-CLO6	Assessment rubric [2 times]	-	Quiz answers uploaded to class.usu.ac.id	5
Tasks	Sub-CLO3	Assessment rubric [2 times]	-	Assignments uploaded to class.usu.ac.id	5

Project-based Learning	Sub-CLO9 and Sub-CLO10	-	Assessment rubric [2 times]	Logbook / worksheets / slides uploaded to class.usu.ac.id	30
Case Method	Sub-CLO4	-	Assessment rubric [3 times]	Logbook / worksheets / slides uploaded to class.usu.ac.id	20
Written exam 1 (Mid-semester exam)	Sub-CLO1, Sub-CLO2, and Sub-CLO5	-	Assessment rubric [1 time]	Written exam result sheet	20
Written exam 2 (Final-semester exam)	Sub-CLO7, Sub-CLO8, and Sub-CLO11	-	Assessment rubric [1 time]	Written exam result sheet	20
Total					100%

Explanation:

- a) Quiz 5%
During the semester there will be 1 quizzes held in class. Quizzes will be conducted through e-learning and is scheduled in advance. The material tested is announced by the lecturer and written in the RPS.
- b) 5% Assignment
During the semester there will be 1 structured assignments. The assignment given is an effort to add insight by making a resume related to the material written in the RPS.
- c) Project-based learning 30%
During the semester there will be case methods, each student will make a paper and report on each case method in groups. Project based learning in this course is conducted 3 times. The papers that have been made will be presented by students. Students will be assessed according to their participation in the presentation and accuracy in the presentation, as well as their participation in the question and answer session when other groups present.
- d) Case Method 20%
During the semester there will be case methods, each student will make a paper and report on each case method in groups. Case method in this course is conducted 1 time. The papers that have been made will be presented by students. Students will be assessed according to their

participation in the presentation and accuracy in the presentation, as well as their participation in the question and answer session when other groups present.

- e) Mid-semester exam (UTS) (mid-test) 20%
The midterm exam covers all the material that has been covered since the beginning of the semester until the 7th meeting both reading and lectures. This exam is conducted in class with multiple choice, short form, and essay questions.
- f) Final-semester exam (UAS) (final-test) 20%
The end-of-semester exam covers all the material that has been covered from the 9th to the 15th meeting, both readings and lectures. This exam is conducted in class with multiple choice, short form, and essay questions.

ASSESSMENT RUBRIC

Quiz Scoring Rubric:

Quiz consists of 5 essay questions done on a sheet of paper (done 2 times during 1 semester)

Score per item	Criteria
16-20	Can answer the question correctly, the steps of working on the problem are correct, and completely correct.
11-15	The steps of working on the problem are correct, there are few mistakes
6-10	Most of the steps are correct, there are many errors
0-5	The steps of working on the problem are not correct, unable to solve the problem

*Maximum score = 100 (5 questions x 20 points)

Teaching Journal/Proposal/Report/Paper Assessment Rubric:

Assessment Criteria	4 Very good	3 Good	2 Simply	1 Less
Understanding of Learning Topics with Resumed Journals	Understand the topic exactly once (25)	Understand the topic (20)	Does not fully and appropriately understand the topic (15)	Not understanding the topic (10)

Contents	Drafts show understanding participants integrate information that has been learned and/or assigned to read during lectures properly and appropriately. (25)	Drafts demonstrate an understanding of the material covered and integrate some of the information that has been learned and/or assigned to read during lectures. (20)	Drafts show an understanding of the material covered and only integrate a small portion of the information that has been learned and/or assigned to read during the lecture. (15)	Drafts show a lack of understanding of the material discussed so that it is not clear and does not integrate the material. information that has been learned and/or assigned to read during lectures. (10)
Clarity of Writing	All writing ideas are well and clearly conveyed. (25)	Most of the ideas are well-written and clear. (20)	Some of the ideas are well-written and clear. (15)	The idea of the writing is not conveyed well and clearly. (10)
Language Clarity	Uses foreign/Indonesian language well and correctly few grammatical and word choice errors that do not interfere with understanding. (25)	Uses foreign/Indonesian language well and correctly with few grammatical and word choice errors that interfere with understanding. (20)	Uses foreign/Indonesian language fairly well and correctly with some grammatical and word choice errors. (15)	Does not use foreign/Indonesian language properly and correctly as the writing contains many grammatical and word choice errors. (10)
Total	81-100 (Excellent)	61-80 (Good enough)	41-60 (Enough)	0-40 (Less)

Group Presentation Task Assessment Rubric:

CATEGORIES	4 Very good	3 Good	2 Simply	1 Less
Group Preparation	The group is fully prepared and has optimized presentation exercises.	The group seemed reasonably prepared but may need more practice presenting.	The group made an effort to prepare but did not do any presentation preparation exercises.	The group seemed to have done no preparation at all for the presentation.

	Mutual complementarity between group members with clear tasks for each group member. (25)	The responsibilities of each group member need to be identified. (20)	Tasks and responsibilities are assigned and accepted without careful consideration. (15)	Tasks and responsibilities are assigned and accepted randomly. (10)
Presentation Organization	The group presented the content clearly, logically, and systematically, through a cohesive introduction, main points, and conclusion. The group used visual aids that effectively supported and reinforced the presentation. (25)	The group presented the content logically and systematically, with an introduction, main idea and conclusion. The group used visual aids that showed a link to the content of the presentation. (20)	The group presented the content fairly logically and systematically, but it did not contain an introduction, main idea, or conclusion. The group occasionally used visual aids that did not support the content of the presentation. (15)	The group presented the content randomly without any introduction, main idea, or conclusion. Groups using unsupportive visual aids or no visual aids at all. (10)
Task Achievement	Each group member is able to demonstrate solid knowledge through their own exposure and elaboration, and deliver the part of the presentation that is assigned to them within the time allotted. (25)	Each group member demonstrates good knowledge through their own exposure and elaboration but in less time than the time allocated to them. (20)	Each group member demonstrated sufficient knowledge but failed to elaborate, and presented his or her part in only half the time allotted to him or her. (15)	Each group member has no knowledge of the content and presents his/her section in less than half the time allocated to him/her. (10)
Mastery of Presentation Content	Each group member demonstrates full understanding of the presentation topic. The main points presented are supported by evidence and critically evaluated. (25)	Each group member demonstrated a good understanding of the presentation topic. Most of the main points are illustrated with relevant evidence.	Each group member demonstrated a good understanding of some aspect of the topic. Some illustrations are given, but not critically evaluated. (15)	Each group member did not seem to understand the presentation topic very well. Some evidence was mentioned, but not integrated in the presentation or evaluated. (10)

		(20)		
Answers to Questions	The group was able to correctly answer almost all the questions asked by the audience about their presentation topic. (25)	The group was able to correctly answer most of the questions asked by the audience about the tropes of their presentation. (20)	The group was able to correctly answer some of the questions the audience asked about their presentation topic. (15)	The group was unable to answer the questions posed by the audience on the topic of their presentation appropriately. (10)
Communication Quality	Group interaction with the audience shows interest and respect for the opinions of others. Responses support effective communication. (25)	Group interaction with an audience shows interest and respect for the opinions of others. Responses generally support effective communication. (20)	Some parts of the interaction in the discussion show interest and respect for others' opinions. (15)	Interaction in the discussion shows disrespect for other people's opinions. Responses do not support effective communication. (10)
Total	81-100 (Excellent)	61-80 (Good enough)	41-60 (Enough)	0-40 (Less)

Source: Halimi, Sicily. "Assessment Rubric: Learning Plan Book MK Introduction to Teaching Methods", 2021
Maximum score: 25 x 6 components = 150 points: 1.5 = 100

Essay Writing Exam Scoring Rubric:

Assessment Criteria	4 Very good	3 Good	2 Simply	1 Less
Understanding of the Question	Understand the question exactly once (25)	Understand the question (20)	Does not understand the question fully and correctly (15)	Did not understand the question (10)
Contents	Answers show understanding participants integrate information that has been learned and/or assigned to read during lectures properly and appropriately. (25)	Answers demonstrate an understanding of the material in question and integrate some of the information learned	Answers show a lack of understanding of the material in question and only integrate a small portion of the information that has been	The answer shows a lack of understanding of the material in question, so it is not clear and does not integrate the material.

		and/or assigned to read during the lecture. (20)	studied and/or assigned to read during the lecture. (15)	information that has been learned and/or assigned to read during lectures. (10)
Clarity of Writing	All writing ideas are well and clearly conveyed. (25)	Most of the ideas are well-written and clear. (20)	Some of the ideas are well-written and clear. (15)	The idea of the writing is not conveyed well and clearly. (10)
Language Clarity	Uses foreign/Indonesian language well and correctly few grammatical and word choice errors that do not interfere with understanding. (25)	Uses foreign/Indonesian language well and correctly with few grammatical and word choice errors that interfere with understanding. (20)	Uses foreign/Indonesian language fairly well and correctly with some grammatical and word choice errors. (15)	Does not use foreign/Indonesian language properly and correctly as the writing contains many grammatical and word choice errors. (10)
Total	81-100 (Excellent)	61-80 (Good enough)	41-60 (Enough)	0-40 (Less)

Multiple Choice Exam Scoring Rubric:

Score per item	Criteria
100/number of questions	Can answer the question correctly
0	Answers are less precise / not in accordance with the answer key that has been provided