


COURSE LEARNING PLAN

	UNIVERSITY OF BRAWIJAYA FACULTY OF ANIMAL SCIENCE DEPARTMENT OF ANIMAL SCIENCE UNDERGRADUATE STUDY PROGRAM OF ANIMAL SCIENCE LEARNING PLAN			
Course	Code	Weight (credits)	Semester	Compilation Date
Animal Breeding Management	PEP 4014	2	6	January 15, 2020
Authorization	Supervising Lecture		Head of Undergraduate Study Program of Animal Science	Vice Dean 1
	Prof.Dr.Ir.Luqman Hakim,MS. Prof. Dr.Ir.Sucik Maylinda,MS. Prof.Dr.Ir.V.M.Ani Nurgiartiningsih,MSc. Prof.Dr.Ir.Gatot Ciptadi,DESS. IPU, ASEAN Eng. Dr.Ir.Agus Budiarto,MS. Dr Ahmad Furqon, SPT.		Dr. Herly Evanuarini, S.Pt., MP.	Dr. Halim Natsir, S.Pt., MP., IPM., ASEAN Eng.
Learning Outcomes (LO)	PLO			
	1. LO 3: Demonstrate attitudes of friendly and caring about animal welfare and permissible (halal) consumption 2. LO13: Able to apply animal technology that is oriented towards improving production, efficiency, quality, and sustainability based on mastery of animal science including breeding, feed, processing of products, marketing management and organizing a sustainable animal production system, and applying entrepreneurial concepts			
	CLO			
	1. Able to understand the principles of Livestock Breeding Management (LO3) 2. Able to make calculations/analyzes on livestock breeding problems, especially in Indonesia compared to the conditions of livestock in the world (LO13) 3. Able to develop and evaluate the implementation of breeding programs in Indonesia (LO13)			

Brief Course Description	This course encompasses the understanding the concepts of genetic and environmental interactions, data correction, animal superiority test, breeding programs, animal genetic conservation, and biotechnology applications in livestock breeding.	
Topic/Sub-Course/Subject	<ol style="list-style-type: none"> 1. INTRODUCTION 2. Genetic and Environmental Interactions 3. Recording 4. Correction of Quantitative Data for Ruminants and Non-Ruminants 5. Animal/livestock Superiority Test 6. Breeding Program Scheme 7. Ruminant Breeding Program in Tropical and Temperate Areas 8. Non-Ruminant Livestock Breeding Program in Tropical and Temperate Areas 9. Genetic Conservation 10. New Nation Formation 11. Biotechnology Applications in Animal Breeding 	
References	<p>Dalton,D.C., 1981, An Introduction to Practical Animal Breeding, 2nd Ed., Granada Publishing Limited, London.</p> <p>Falconer, D.S., 1981. Introduction to Quantitative Genetics, 2nd Ed., Longman House Brunt Mill, Harlow, Essex, UK.</p> <p>Johansson, I. and J. Rendel, 1968, Genetic Aspects of Dairy Cattle Breeding, University of Illinois Press, Urbane.</p> <p>Lasley, J.F., 1981. Genetics of Livestock Improvement, 4th Ed., Prentice-Hall, inc., Englewood Cliffs, New Jersey.</p> <p>Rege J.E.O. and Okeyo A.M. 2006. Improving our knowledge of tropical indigenous animal genetic resources. International Livestock Research Institute (ILRI). agtr.ilri.cgiar.org/Module/module2/Module2.htm (2 January 2010)</p>	
Learning media	Software	Hardware
Teaching Team	<p>Prof.Dr.Ir.Luqman Hakim,MS.</p> <p>Prof. Dr.Ir.Sucik Maylinda,MS.</p> <p>Prof.Dr.Ir.V.M.Ani Nurgiartiningsih,MSc.</p> <p>Prof.Dr.Ir.Gatot Ciptadi,DESS. IPU, ASEAN Eng.</p> <p>Dr.Ir.Agus Budiarto,MS.</p> <p>Dr Ahmad Furqon, SPT.</p>	
Prerequisite Course		


Week	Sub-Course Learning Outcomes	Indicator	Learning Materials / Topics	Learning Methods	Criteria & Form of Assessment	%
1	Able to understand the relevance and objectives of Livestock Breeding Management	Able to explain the relevance and objectives of Livestock Breeding Management	Introduction: <ul style="list-style-type: none"> • Learning Plan • Definition, relevance and objectives of Livestock Breeding Management 	<ul style="list-style-type: none"> • Lecture • Discussion 	<ul style="list-style-type: none"> • Activeness in discussion 	5%
2	<ul style="list-style-type: none"> • Able to understand the meaning of genotype and environmental interactions • able to understand the difference in livestock performance in different environments 	Able to explain and identify livestock performance in different environments	Genetic and environment interactions <ul style="list-style-type: none"> • Definition • Examples of genotype and environmental interactions on several farm commodities 	<ul style="list-style-type: none"> • Lecture • Discussion 	<ul style="list-style-type: none"> • Activeness in discussion 	5%
3	<ul style="list-style-type: none"> • Understanding the meaning and importance of recording to improve the genetic quality of livestock • Understanding the application of software in field livestock recording 	<ul style="list-style-type: none"> • Having the ability to design models for recording the characteristics of production and reproduction of livestock • Able to explain recording model for livestock production and reproduction characteristics, pedigrees livestock • Able to utilize and apply recording software 	Recording of the livestock: <ul style="list-style-type: none"> • Model recording of livestock production and reproduction characteristics • Introduction to Software Applications in Livestock Record 	<ul style="list-style-type: none"> • Lecture • Group Discussion 	<ul style="list-style-type: none"> • Pro-active and responsive to questions related to the topic • Quiz 	5%

4	Able to understand the correction and analysis of data on ruminants	Able to correct and conduct data analysis on ruminants	Quantitative data of ruminants <ul style="list-style-type: none"> • Correction of data on beef cattle, dairy cattle, goats and sheep • Data analysis on beef cattle, dairy cattle, goats and sheep 	<ul style="list-style-type: none"> • Lecture • case study 	<ul style="list-style-type: none"> • Pro-active and responsive to questions related to the topic • Quiz 	10%
5	Able to understand the correction and analysis of data on non-ruminant livestock	Able to work on corrections and data analysis on non-ruminant livestock	Correction of non-ruminant quantitative data: <ul style="list-style-type: none"> • Data correction for poultry, pigs, rabbits • Data analysis for poultry, pigs, rabbits 	<ul style="list-style-type: none"> • Lecture • Group Discussion 	<ul style="list-style-type: none"> • Presentation • Activeness in discussion 	10%
6	<ul style="list-style-type: none"> • Understanding the meaning of livestock testing based on its own performance and the performance of the animals • Understanding the benefits of livestock superiority test for selection programs 	<ul style="list-style-type: none"> • Able distinguish between performance test and <i>zuriat</i> test 	Application of the livestock superiority test: <ul style="list-style-type: none"> • Performance test on various livestock commodities • <i>Zuriat</i> test on various livestock commodities 	<ul style="list-style-type: none"> • Lecture • Discussion 	<ul style="list-style-type: none"> • Pro-active and responsive to questions related to the topic • Quiz 	5%
7	<ul style="list-style-type: none"> • Understanding the meaning of breeding program schemes for various livestock commodities • Having the ability to design breeding program schemes 	<ul style="list-style-type: none"> • Able to explain Nucleus breeding on various commodities • Able to distinguish between breeding program schemes with open and closed systems 	Scheme of breeding program: <ul style="list-style-type: none"> • Open nucleus breeding system in various commodities 	<ul style="list-style-type: none"> • Lecture • Discussion 	<ul style="list-style-type: none"> • Papers • Presentation • Activeness in 	5%

	for various livestock commodities	<ul style="list-style-type: none"> • Able to design breeding program schemes in livestock 	<ul style="list-style-type: none"> • Close nucleus breeding system in various commodities 		discussion	
8	<ul style="list-style-type: none"> • Able to understand ruminant breeding programs in improving the genetic quality of livestock in the tropical area 	<ul style="list-style-type: none"> • Able to explain the comparison of the application of ruminant breeding programs in improving the genetic quality of livestock in the tropics 	Ruminant Breeding Program in the Tropical area	<ul style="list-style-type: none"> • Lecture • Discussion 	<ul style="list-style-type: none"> • Pro-active and responsive to questions related to the topic 	5%
9	<ul style="list-style-type: none"> • Able to understand ruminant breeding programs in improving the genetic quality of livestock in temperate areas 	<ul style="list-style-type: none"> • Able to explain the comparison of the application of ruminant breeding programs in improving the genetic quality of livestock in temperate areas 	Ruminant Breeding Program in Temperate Areas	<ul style="list-style-type: none"> • Lecture • Discussion 	<ul style="list-style-type: none"> • Pro-active and responsive to questions related to the topic • Quiz 	10%
10	<ul style="list-style-type: none"> • Able to understand non-ruminant livestock breeding programs in improving the genetic quality of livestock in the tropical area 	<ul style="list-style-type: none"> • Able to explain the comparison of the application of non-ruminant livestock breeding programs in improving the genetic quality of livestock in the tropical area 	Non-Ruminant Livestock Breeding Program in Tropical Areas	<ul style="list-style-type: none"> • Lecture • Discussion 	<ul style="list-style-type: none"> • Pro-active and responsive to questions related to the topic 	10%
11	<ul style="list-style-type: none"> • Able to understand non-ruminant livestock breeding programs in improving the genetic quality 	<ul style="list-style-type: none"> • Able to explain the comparison of the application of non-ruminant livestock breeding programs to increase the 	Non-Ruminant Livestock Breeding Program in Temperate Areas	<ul style="list-style-type: none"> • Lecture • Group Discussion 	<ul style="list-style-type: none"> • Papers • Presentation 	10%

	of livestock in temperate areas	genetic quality of livestock in temperate areas.			<ul style="list-style-type: none"> ● Active ness in discussion 	
12	<ul style="list-style-type: none"> ● Able to understand indigenous and local Indonesian livestock conservation programs 	<ul style="list-style-type: none"> ● Able to explain indigenous and local Indonesian livestock conservation programs 	Genetic Conservation (ex situ, in situ, laboratory)	<ul style="list-style-type: none"> ● Lecture ● Discussion 	<ul style="list-style-type: none"> ● Pro-active and responsive to questions related to the topic 	10%
13	<ul style="list-style-type: none"> ● Able to understand the formation of a new breed of ruminant and non-ruminant livestock 	<ul style="list-style-type: none"> ● Able to explain the method of forming a new breed of ruminant and non-ruminant livestock 	New breed formation in livestock	<ul style="list-style-type: none"> ● Lecture ● Discussion 	<ul style="list-style-type: none"> ● Pro-active and responsive to questions related to the topic 	5%
14	<ul style="list-style-type: none"> ● Able to understand the application of biotechnology in livestock genetic advancement 	<ul style="list-style-type: none"> ● Able to explain several biotechnology applications in the genetic advancement of livestock 	Biotechnology Applications in Livestock Breeding	<ul style="list-style-type: none"> ● Lecture ● Discussion 	<ul style="list-style-type: none"> ● Pro-active and responsive to questions related to the topic ● Quiz 	5%

ASSESEMENT RUBRIC

	UNIVERSITY OF BRAWIJAYA FACULTY OF ANIMAL SCIENCE DEPARTMENT OF ANIMAL SCIENCE UNDERGRADUATE STUDY PROGRAM OF ANIMAL SCIENCE		
Course	Animal Breeding Management		
Score Level	CLO and PLO	Conversion	PLO Score
PLO3: Demonstrate attitudes of friendly and caring about animal welfare and permissible (halal) consumption CLO1: Able to understand the principles of Livestock Breeding Management			
Very Good (4)	Showing a very good conceptual understanding of Livestock Breeding Management principles	>80-100	1
Good (3)	Showing a good conceptual understanding of Livestock Breeding Management principles	>70-80	0.75
Moderate (2)	Showing a moderate conceptual understanding of Livestock Breeding Management principles	>60-70	0.5
Poor (1)	Showing a poor conceptual understanding of Livestock Breeding Management principles	<60	0.25
Score Level	CLO and PLO	Conversion	PLO Score
PLO13: Able to apply animal technology that is oriented towards improving production, efficiency, quality, and sustainability based on mastery of animal science including breeding, feed, processing of products, marketing management and organizing a sustainable animal production system, and applying entrepreneurial concepts CLO 2: Able to make calculations/analysis on the problems of livestock breeding, especially in Indonesia compared to the conditions of livestock in the world			
Very Good (4)	Showing a very good understanding of concepts related to calculation/analysis of livestock breeding problems, especially in Indonesia compared to the conditions of livestock in the world	>80-100	1
Good (3)	Showing a good understanding of concepts related to calculation/analysis of livestock breeding problems, especially in Indonesia compared to the conditions of livestock in the world	>70-80	0.75
Moderate (2)	Showing a moderate understanding of concepts related to calculation/analysis of livestock breeding problems, especially in Indonesia compared to the conditions of livestock in the world	>60-70	0.5

Poor (1)	Showing a poor understanding of concepts related to calculation/analysis of livestock breeding problems, especially in Indonesia compared to the conditions of livestock in the world	<60	0.25
Score Level	CLO and PLO	Conversion	PLO Score
PLO13: Able to apply animal technology that is oriented towards improving production, efficiency, quality, and sustainability based on mastery of animal science including breeding, feed, processing of products, marketing management and organizing a sustainable animal production system, and applying entrepreneurial concepts CLO3: Able to develop and evaluate the implementation of breeding programs in Indonesia			
Very Good (4)	Showing a very good ability to evaluate and develop breeding programs in Indonesia	>80-100	1
Good (3)	Showing a good ability to evaluate and develop breeding programs in Indonesia	>70-80	0.75
Moderate (2)	Showing a moderate ability to evaluate and develop breeding programs in Indonesia	>60-70	0.5
Poor (1)	Showing a poor ability to evaluate and develop breeding programs in Indonesia	<60	0.25

CLO Score Calculation

Assessed components	Component Weights	CLO Weight on the Score		
		CLO 1	CLO 2	CLO 3
Midterm Exam	0.35	0.5	0.5	
Final exam	0.35	0.5	0.5	
Group assignment	0.15	0.25	0.25	0.5
Structured individual assignments and Quiz	0.15	0.25	0.25	0.5
Weight of CLO				

The orange color must be fulfilled by the lecture

Steps to fulfill:

1. Assessment component = components that will be assessed in one course (for example midterm exam, final exam, quizzes percentage, etc.)

2. Component weight = Determine the weight of each component in which the total of all components is 1
3. CLO weight on the score
 - a. Show the number of CLO in each subject (for example, the subject of the Animal Feed Industry has 4 CLOs).
 - b. Determine the components of the assessment with the aim of reaching the CLO number
 - c. The total weight of the CLO values for each component is 1

PLO Score Calculation


CLO	CLO Score	CLO Weight	PLO	
			PLO 3	PLO 13
CLO 1			1	
CLO 2				1
CLO 3				1

The orange color must be fulfilled by the lecture

Steps to fulfill:

1. CLO = write down the number of CLO in each course (refer to the previous table)
2. PLO = Write down the number of PLO for each course based on the RPS
3. Weight of PLO
 - a. Show the number of PLO in each course (for example, the Animal Feed Industry course has 3 PLOs).
 - b. Determine the components of the assessment aimed at achieving any PLO number
 - c. The total weight of the PLO score for each component is 1

Lecture Portfolio

		UNIVERSITY OF BRAWIJAYA FACULTY OF ANIMAL SCIENCE DEPARTMENT OF ANIMAL SCIENCE		
Course: Animal Breeding Management		Code: PEP 4014	RMK:	Semester: 6
Lecturers	Prof.Dr.Ir.Luqman Hakim,MS. Prof. Dr.Ir.Sucik Maylinda,MS. Prof.Dr.Ir.V.M.Ani Nurgiartiningsih,MSc. Prof.Dr.Ir.Gatot Ciptadi,DESS. IPU, ASEAN Eng. Dr.Ir.Agus Budiarto,MS. Dr Ahmad Furqon, SPt.			
Introduction (Describe the explanation needed about this course, experiences that have been done) The course consists of understanding the concept of genetic and environmental interactions, data correction, animal superiority test, breeding programs, animal genetic conservation, and the application of biotechnology in livestock breeding.				
1	Objectives (Describe general or specific course objectives) <div><div>1. Able to understand the principles of Livestock Breeding Management</div><div>2. Able to make calculations/analysis on the problems of livestock breeding, especially in Indonesia compared to the conditions of livestock in the world</div><div>3. Able to develop and evaluate the implementation of breeding programs in Indonesia</div></div>			
2	Learning Strategy (Describe the strategies used to achieve course objectives - CLO) The learning strategy is conducted by giving lectures, discussions, quizzes, individual structured assignments, group assignments, Midterm Exam and Final Exam			
3	Lecture Management (Describe the management of lectures: lectures, tutorials, practicum, assignments, major assignments, etc.) <div><div>1. The lectures are conducted for 2x50 minutes for 14 meetings (offline) or the lectures are conducted for 1x50 minutes for 14 meetings (Online)</div><div>2. Self-structured assignments</div><div>3. Quiz</div><div>4. Group assignment</div></div>			
4	Lecture Contents (explain the suitability with the applicable curriculum) INTRODUCTION Genetic and Environment Interactions Recording Correction of Quantitative Data for Ruminants and Non-Ruminants Livestock Superiority Test Breeding Program Scheme			

	Ruminant Breeding Program in Tropical and Temperate Areas Non-Ruminant Livestock Breeding Program in Tropical and Temperate Areas Genetic Conservation New Breed Formation Biotechnology Applications in Livestock Breeding
5	Lecture Participants (provide an overview of the lecture participants) The lecture participants are students of the Faculty of Animal Science who have passed the Prerequisite Course of Genetics, Statistics and Livestock Breeding
6	Attendance Percentage (% attendance of lecturers; % attendance of students) Lecturer attendance percentage: 100% Student attendance percentage: at least 80%
7	Evaluation System (explain homework, quizzes, group assignments, practicum, etc.) 1. Quiz is held once before and after Midterm Exam 2. Independent structured assignments are carried out once before and after Midterm Exam 3. Group assignments are given once before and after the Midterm Exam 4. Midterm Exam 5. Final Exam
8	Class Observation (explain important and interesting things encountered during the lecture)
9	Learning Outcomes (explain the achievement of the goals that have been set including learning achievements that can be explained) LO3: Demonstrate attitudes of friendly and caring about animal welfare and permissible (<i>halal</i>) consumption LO13: Able to apply animal technology that is oriented towards improving production, efficiency, quality, and sustainability based on mastery of animal science including breeding, feed, processing of products, marketing management and organizing a sustainable animal production system, and applying entrepreneurial concepts
10	Obstacles (give an overview of the main obstacles in learning)
11	Score Distribution (give the score distribution following the learning outcome of this course) Midterm Test: 35% Final Exam: 35% Structured individual assignments and quizzes: 15% Group assignment: 15%
12	Conclusion
13	Improvement Recommendations
	Appendices: 1. 2. etc.

