COURSE LEARNING PLAN

UNIVERSITY OF BRAWIJAYA
FACULTY OF ANIMAL SCIENCE
DEPARTMENT OF ANIMAL SCIENCE
UNDERGRADUATE STUDY PROGRAM OF ANIMAL SCIENCE
LEARNING PLAN OF ANATOMY AND ANIMAL PHYSIOLOGY

Course	Code	Weight (credits)	Semester	Compilation Date
Anatomy & Animal Physiology	PEP4001	4 (2 – 2) credits	Even (2)	August 28, 2020

Authorization	Supervising Lecturer	Ka PS S1	Vice Dean 1
	Dr. Ir. Ita Wahyu Nursita, M.Sc	Dr. Herly Evanuarini, S.Pt, MP	Dr. Ir. Halim Natsir, S.Pt, MP, IPM, ASEAN Eng

Learning Outcomes (LO)

PLO

1. Demonstrate attitudes of friendly and caring about animal welfare and permissible *(halal)* consumption (LO 3)
2. Able to apply biological science, physiology, nutrition science, breeding science, animal raising management to comprehend the concept and implement it in the field of animal science (LO 6)
3. Able to involve themselves in the learning process and discussion on an ongoing basis (LO 10)

CLO

After completing this course, the students will be:

1. Able to determine and explain parts of animal anatomy and function of animal organs (LO 6 and LO 10)
2. Able to explain the physiological systems in the body of animals (LO 6 and LO 10)
3. Able to explain the production processes (growth, lactation, movement) of digestion, hormonal process, and reproduction (LO 6 and LO 10)
4. Understand the adaptation response to the environment to increase livestock productivity (LO 3)

Brief Course Description

This course explains the anatomy and function of organs, and the integumentary, skeletal, muscular, circulatory, digestive, respiration, nervous, urinary, endocrine, and lactation systems and environmental adaptation.

Sub-Course Learning Outcomes

1. Introduction to Anatomy and Physiology, lecture contract, RPKPS
2. Anatomy and the Integumentary System (Skin and Accessory Structures)
3. Anatomy and the Skeletal System (Skeleton)
4. Anatomy and the Muscular System (Muscle)
5. Anatomy and the Circulatory and Immune System (Cardiovascular and Blood)
6. Anatomy and the Digestive System
7. Anatomy and the Respiratory System
8. Anatomy and the Nervous System
9. Anatomy and the Urinary System

	10. Anatomy and the Endocrine System 11. Anatomy and the Reproductive System 12. Anatomy and the Lactation System 13. Environmental Adaptation System
References	1. Reece, W.O., H.H. Erickson, J.P. Goff, E.E. Uemura, 2015. Dukes' Physiology of Domestic Animals, 13th Edition. 2. Hafez, E.S.E. and B. Hafez, 2013. Reproduction in Farm Animals, 7th Edition.
Learning Media	Software: Film Video Hardware:
Teaching Team	1. Dr. Ir. Ita Wahju Nursita, M.Sc 2. Dr. Ir. Kuswati, MS, IPM, ASEAN Eng 3. Dr. Ir. Sri Minarti, MP 4. Dr. Ir. Tri Eko Susilorini, MS, IPM, ASEAN Eng 5. Prof. Dr. Ir. Siti Chuzaemi, MS. 6. Dr. Ir. Mashudi, MSc. 7. Dr. Ir. M. Nasich, MS. 8. Dr. Ir. Edhy Sudjarwo, MS. 9. Dr. Ir. Nurul Isnaini, MP. 10. Dr. Achadiah Rahmawati, S.Pt, M.Si 11. Aulia Puspita, A.Y., SPt., MP., MSc. 12. Wike Andre Septian, S Pt., MSi. 13. Aswah Ridhowi, S.Pt, MP, M.Sc
Prerequisite Course	Biology

Week	Sub-Course Learning Outcomes	Indicator	Learning Materials/ Topic	Learning Methods	Criteria & Form of Assessment	Weighted Score (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Introduction	Able to explain the description of Animal Anatomy and Physiology Course	- Lecture contract - RPS - Definition of anatomy and physiology	Face to face		0%
2	Anatomy and the Integumentary System (Skin and Accessory Structures)	Able to give examples of integumentary organs and their accessory structures and	- Integumentary Organs - Integumentary System	Face to face		5%

		explain each function, especially in body heat balance				
3	Anatomy and the Skeletal System (Skeleton)	Able to show skeletal organs and explain their respective functions	- Skeletal Anatomy - Skeletal System (Skeleton)	Face to face		5%
4	Anatomy and the Muscular System (Muscle)	Able to show muscular organs and explain their respective functions	- Muscular Anatomy (Muscle) - Muscular System (Muscle)	Face to face, Practicum		5%
5	Anatomy and the Circulatory and Immune System (Cardiovascular and Blood)	Able to show the circulatory organs and explain their respective functions	- Circulatory and Immune Anatomy (Cardiovascular and blood) - Circulatory and Immune System (Cardiovascular and blood)	Face to face, Practicum		5%
6	Anatomy and the Digestive System	Able to show digestive organs and explain their respective functions	- Ruminant and Non-Ruminant Digestive Anatomy - Ruminant and Non-Ruminant Digestive System	Face to face, Practicum	Online quiz	5%
7	Anatomy and the Respiratory System	Able to show respiratory organs and explain their respective functions	- Respiratory Anatomy - Respiratory System	Face to face, Practicum		5%
8	MIDTERM EXAM				30%	

9	Anatomy and the Nervous System	Able to show nervous organs and explain their respective functions	- Nervous Anatomy - Nervous System	Face to face & Simulation, Practicum		4%
10	Anatomy and the Urinary System	Able to show urinary organs and explain their respective functions	- Urinary Anatomy - Urinary System	Face to face		4%
11	Anatomy and the Endocrine System	Able to show endocrine organs and explain their respective functions	- Endocrine Anatomy - Endocrine System	Face to face, Practicum		5%
12	Anatomy and the Male Reproductive System	Able to show the male reproductive organs and their accessory structures and explain their respective functions	- Male Reproductive Anatomy - Male Reproductive System	Face to face		4%
13	Anatomy and the Female Animal Reproductive System	Able to show the female reproductive organs and their accessory structures explain their respective functions	- Female Reproductive Anatomy - Female Reproductive System	Face to face		5%
14	Anatomy and the Lactation System	Able to show lactation organs and explain their respective functions	- Udder Anatomy - Lactation System	Face to face		4%
15	Environmental Adaptation System	Able to explain the function of the	- Environmental Physiology	Face to face, Practicum	Online quiz	4%

		environmental adaptation system	Adaptation System			
16	FINAL EXAMS				30%	

ASSESMENT RUBRIC

	UNIVERSITY OF BRAWIJAYA FACULTY OF ANIMAL SCIENCE DEPARTMENT OF ANIMAL SCIENCE UNDERGRADUATE STUDY PROGRAM OF ANIMAL SCIENCE
Course	**ANATOMY AND ANIMAL PHYSIOLOGY**
PLO & CLO Matrix	

(CLO)	Program Learning Outcome (PLO)		
	3	6	10
CLO 1		x	x
CLO 2		x	x
CLO 3		x	x
CLO 4	x		

PLO Score Calculation: $\frac{Level\ Skor}{\sum Level\ skor} \times \frac{\sum CLO}{\sum PLO}$

Score Level	CLO and PLO	Conversion	PLO Score
PLO 6	Able to apply biological science, physiology, nutrition science, breeding science, animal raising management to comprehend the concept and implement it in the field of animal science (LO6)		
PLO 10	Able to involve themselves in the learning process and discussion on an ongoing basis (LO10)		
CLO 1	Able to show and explain parts of animal anatomy and function of animal organs		
Very Good (4)	Able to show and explain **comprehensively** parts of animal anatomy and function of animal organs	>80-100	0.5
Good (3)	Able to show and explain **well** parts of animal anatomy and function of animal organs	>70-80	0.375
Moderate (2)	Able to show and explain **limitedly** parts of animal anatomy and function of animal organs	>60-70	0.25
Poor (1)	Able to show and explain **very limitedly** parts of animal anatomy and function of animal organs	≤60	0.125
Score Level	CLO and PLO	Conversion	PLO Score
PLO 6	Able to apply biological science, physiology, nutrition science, breeding science, animal raising management to comprehend the concept and implement it in the field of animal science (CP6)		
PLO 10	Able to involve themselves in the learning process and discussion on an ongoing basis (CP10)		
CLO 2	Able to explain the physiological systems in animals		
Very Good (4)	Able to explain **comprehensively** the physiological systems in animals	>80-100	0.5
Good (3)	Able to explain **well** the physiological systems in animals	>70-80	0.375

Moderate (2)	Able to explain **limitedly** the physiological systems in animals	>60-70	0.25
Poor (1)	Able to explain **very limitedly** the physiological systems in animals	≤60	0.125
Score Level	CLO and PLO	Conversion	PLO Score
PLO 5	Able to apply biological science, physiology, nutrition science, breeding science, animal raising management to comprehend the concept and implement it in the field of animal science (CP6)		
	Able to involve themselves in the learning process and discussion on an ongoing basis (CP10)		
CLO 3	Able to explain the production processes (growth, lactation, movement) of digestion, hormonal, and reproduction		
Very Good (4)	Able to explain **comprehensively** the production processes (growth, lactation, movement) of digestion, hormonal, and reproduction	>80-100	0.5
Good (3)	Able to explain **well** the production processes (growth, lactation, movement) of digestion, hormonal, and reproduction	>70-80	0.375
Moderate (2)	Able to explain **limitedly** the production processes (growth, lactation, movement) of digestion, hormonal, and reproduction	>60-70	0.25
Poor (1)	Able to explain **very limitedly** the production processes (growth, lactation, movement) of digestion, hormonal, and reproduction	≤60	0.125
Score Level	CLO and PLO	Conversion	PLO Score
PLO 10	Demonstrate attitudes of friendly and caring about animal welfare and permissible *(halal)* consumption (CP3)		
CLO 4	Able to explain the adaptation response to the environment to increase animal productivity		
Very Good (4)	Able to explain **comprehensively** the adaptation response to the environment to increase animal productivity	>80-100	1
Good (3)	Able to explain **well** the adaptation response to the environment to increase animal productivity	>70-80	0.75
Moderate (2)	Able to explain **limitedly** the adaptation response to the environment to increase animal productivity	>60-70	0.5
Poor (1)	Able to explain **very limitedly** the adaptation response to the environment to increase animal productivity	≤60	0.25

	UNIVERSITY OF BRAWIJAYA **FACULTY OF ANIMAL SCIENCE** **STUDY PROGRAM OF ANIMAL SCIENCE** **PORTFOLIO OF ANIMAL ANATOMY AND PHYSIOLOGY**		
Animal Anatomy and Physiology	Code: PEP4001	RMK:	Semester: 2
Lecturers	1. Dr. Ir. Ita Wahju Nursita, M.Sc 2. Dr. Ir. Kuswati, MS, IPM, ASEAN Eng 3. Dr. Ir. Sri Minarti, MP 4. Dr. Ir. Tri Eko Susilorini, MS, IPM, ASEAN Eng 5. Prof. Dr. Ir. Siti Chuzaemi, MS. 6. Dr. Ir. Mashudi, MSc. 7. Dr. Ir. M. Nasich, MS. 8. Dr. Ir. Edhy Sudjarwo, MS. 9. Dr. Ir. Nurul Isnaini, MP. 10. Dr. Achadiah Rahmawati, S.Pt, M.Si 11. Aulia Puspita, A.Y., SPt., MP., MSc. 12. Wike Andre Septian, S Pt., MSi. 13. Aswah Ridhowi, S.Pt, MP, M.Sc		

Introduction (Tell the explanation needed about this course, experiences that have been done)
This course prepares a curriculum for the undergraduate study program of Animal Science. Animal Anatomy and Physiology are compulsory courses in the even semester

1	**Objectives** (Describe the objectives of general and specific course)
	General purpose: 5. Students can show and explain the anatomy of animal and the function of animal organs 6. Students can understand the physiological systems that occur in animals 7. Students can explain the production processes (growth, lactation, movement) of digestion, hormones, and reproduction. 8. Students understand the response of adaptation to the environment to increase animal productivity.
2	**Learning Strategies** (Describe the strategies used to achieve course objectives - CLO)
	Strategies to achieve CLO is through: a. Transfer of knowledge from lecturers to students in face-to-face activities (tutorials), b. Independent learning is carried out by students to increase knowledge from various reference sources (e-books, journals, etc.) c. Students carry out a structured assignment given by the course lecturer d. Students perform practices in the laboratory,
3	**Lecture Management** (Describe the management of lectures: lectures, tutorials, practicum, assignments, big assignments, etc)
	Lectures are managed by carrying out several Teaching and Learning Process (PBM) activities, namely: a. Lecture/Face to Face/Tutorial: 100 minutes/week/semester

	b. Structured Assignment: 50 minutes/week/semester c. Independent Study: 50 minutes/week/semester d. Practicum: 100 minutes/week/semester
4	**Lecture Contents** (explain their suitability with the applicable curriculum)
	The lecture material consists of the following topics: 1. Introduction to Anatomy and Physiology, course contracts, Semester Course Outline and Introduction to Anatomy and Physiology, course contracts, Semester Course Outline and Lesson Plan (RPKPS) 2. Anatomy and Integumentary System (Skin and Accessories) 3. Anatomy and the Skeletal System (Skeleton) 4. Anatomy and Muscular System (Muscle) 5. Anatomy and Circulatory System and Immune (Cardiovascular and blood) 6. Anatomy and Digestive System 7. Anatomy and Respiratory System 8. Anatomy and Nervous System 9. Anatomy and Urinary System 10. Anatomy and the Endocrine System 11. Anatomy and Reproductive System 12. Anatomy and the Lactation System 13. Adaptation to Environmental System
5	**Lecture Participants** (describe the participants)
	The participants are the second semester students of the undergraduate study program of Animal Science with a total of 40 students/class.
6	**Percentage of Attendance** (% attendance of lecturers;% attendance of students)
	The attendance requirement for students to be able to participate in the teaching and learning evaluation process (PBM) is ≥ 80% (referring to the 2016/2017 Academic Guidelines for the Faculty of Animal Sciences, Universitas Brawijaya)
7	**Evaluation System** (explain homework, quizzes, group assignments, practicum, etc.)
	The teaching and learning evaluation process (PBM) refers to the 2016/2017 Academic Guidelines for the Faculty of Animal Sciences, Universitas Brawijaya, with the assessment components including Midterm Exam, Final Exam, Practicum, and Structured Assignments, with the weight of each component as follows: a. Midterm Exam30% b. Final Exam 30% c. Practicum 20% d. Structured Assignments 10% e. Quizzes 10% Instrument keterpaian CP MK. IPTU terlampir (Rubrik Penilaian)
8	**Class Observation** (explain important and interesting things encountered during the lecture)
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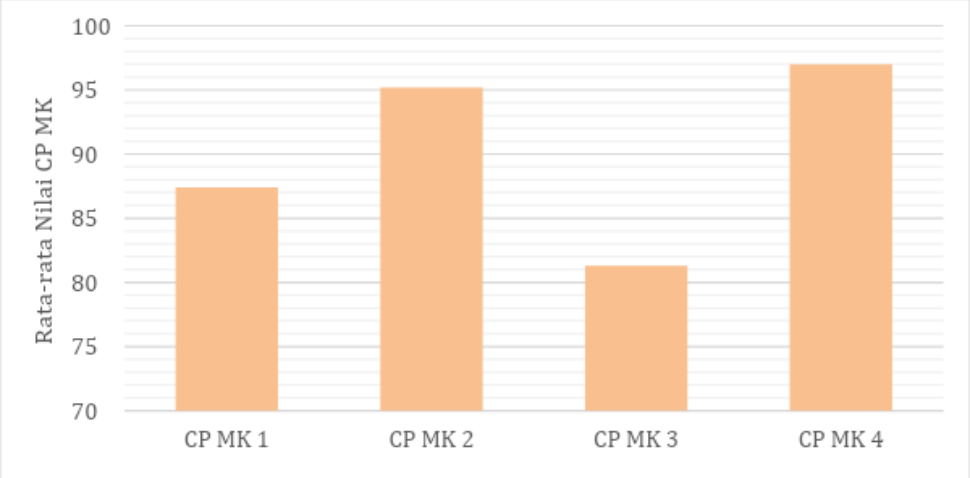
9	**Learning Outcomes** (explain the achievement of the objectives that have been set and include the learning outcomes that can be explained)

	1. Demonstrate attitudes of friendly and caring about animal welfare and permissible (halal) consumption. 2. Able to apply biological science, physiology, nutrition science, breeding science, animal raising management to comprehend the concept and implement it in the field of animal science. 3. Able to involve themselves in the learning process and discussion on an ongoing basis.
10	**Obstacles** (describe the main barriers to learning)
	a. The minimum number of learning media for practicum activities b. Laboratory facilities and infrastructure are not sufficient for the needs of students practicum c. Delay in the disbursement of practicum funds
11	**Distribution of score** (provide the distribution of score following the learning outcomes of this course)
	The average CLO Score for Anatomy and Physiology of Animals in even semester 2019/2020 school year for A class as follows:  Distribution Graph of CLO for Anatomy and Physiology of Animals in even semester 2019/2020 school year for A class
12	**Conclusion**
	In general, the implementation of the Anatomy and Physiology of Animals course learning can run very well according to plan, but it is necessary to improve laboratory facilities and funding to support practicum activities.
13	**Recommended Improvement**
	1. Improve laboratory facilities and infrastructure to meet the needs of practicum 2. It is recommended that practicum funds be disbursed at the beginning of the semester
	Appendices:
	1. Rubrics for Assessment

	2. Midterm Exam Questions, Final Exam Questions 3. Structured Assignment Paper 4. Practicum Report 5. Records of Quality Score of Teaching and Learning Evaluation (PBM) Etc