COURSE LEARNING PLAN

	UNIVERSITY OF BRAWIJAYA FACULTY OF ANIMAL SCIENCE DEPARTMENT OF ANIMAL SCIENCE UNDERGRADUATE STUDY PROGRAM OF ANIMAL SCIENCE LEARNING PLAN OF RESEARCH METHODOLOGY AND SCIENTIFIC WRITING

Course	Code	Weight (credits)	Semester	Compilation Date
Research Methodology And Scientific Writing	PEF60005	3-0	Odd	27/08/2020

Authorization	Course Coordinator	Ka PS S1	Vice Dean 1
	Prof. Dr. Ir. Trinil Susilawati, MS, IPU, ASEAN Eng.	Dr. Herly Evanuarini, S.Pt., MP	Dr. Ir. M. Halim Natsir, S.Pt., MP, IPM, ASEAN Eng.

Learning Outcomes (LO)	PLO
	After taking this course, the graduates will: **LO 2.** Contribute to the improvement and advancement of the quality of life in society, nation, and state. **LO 5.** Able to examine the implications of the development or implementation of science and technology that consider and apply humanities values in accordance with their expertise based on scientific principles, procedures, and ethics to produce excellent solutions and ideas. **LO 9.** Able to communicate effectively the results of thoughts, concepts, implementation, and analysis orally and in writing in the environment, community, nation, state, and international world. **LO 12.** Able to design and conduct experiments, analyze and interpret data to make correct decisions in solving problems in the field of animal science, meet ethics, and have environmental insight.
	CLO
	After taking this course, the students will: 1. Explain the importance of integrity (honesty and ethics) in preparing research, reporting research results, and preparing scientific works. 2. Explain the conceptual background, theoretical framework/concept, literature review, experimental research methodology, survey, and qualitative aspects. 3. Implement the preparation of experimental research proposals theoretically and practically in the laboratory and the field, survey and qualitative research. 4. Conceptualize scientific articles and present scientific presentations properly.
Brief Course Description	This course includes comprehension in writing a research proposal, research reports, and scientific works in the field of animal science which include; writing a research background, problem identification and formulation, research objectives and benefits,

	hypotheses, literature review, framework/concept, research methods and research operational framework, selection of statistical designs and data analysis, presentation and interpretation of results and discussion, conclusions and suggestions, references and appendices, introduction to the types of scientific publications, and the principles and practices of scientific presentation in the form of seminar presentations.	
Topics	1. Definition of Scientific Research and Scientific Work, Utilization of Research Methodology and Scientific Work and the Relationship between Disciplines of Science 2. Selection of Research Topics and Preliminary Writing 3. How to Write a Literature Review 4. Definition and How to Write a Framework of Thinking 5. Meaning and Method of Preparation of Research Methodology and How to Select Methods according to the Research Topic 6. Writing Results and Discussion 7. Scientific Presentation Techniques 8. Writing Conclusions, Suggestions, and Attachments 9. Designing Literature Studies 10. Explanation of Scientific Works 11. Manuscript Preparation Techniques for Journals 12. Manuscript Preparation Practices for Journals 13. Practice of Proposal Seminar Presentations	
References	1. *Statistika dan Rancangan Percobaan Penerapan dalam Bidang Peternakan* (Herni Sudarwati et al., UB Press) 2. *Metode Penelitian (Metode Percobaan dan Karya Ilmiah)* (Yogi Sugito et al., UB Press) 3. *Metode penelitian (kupas Tuntas Mencapai Tujuan)* (Sri Kumala Ningsih, UB Press) 4. *Prinsip-Prinsip Menyusun Kuisioner* (Eko Nugroho, UB Press)	
Learning Media	Software	Hardware
	Software, PowerPoint, video	Laptop, projector, and screen
Teaching Team	1. Prof. Dr. Ir. Trinil Susilawati, MS, IPU, ASEAN Eng. 2. Dr. Ir. Bambang Ali Nugroho, DEA, IPM, ASEAN Eng. 3. Prof. Dr. Lilik Eka Radiati, MS, IPU 4. Prof. Dr. Budi Hartono, MS, IPU, ASEAN Eng. 5. Ir. Hari Dwi Utami, MS, M.Appl.Sc., Ph.D., IPM, ASEAN Eng. 6. Dr. Siti Azizah, S.Pt., M.Sos., M.Commun.	

	7. Dr. Ir. Kuswati, MS, IPM, ASEAN Eng. 8. Dr. Ir. Moch. Nasich, MS 9. Dr. Ir. Puguh Suryowardojo, MP 10. Dr. Ir. Umi Wisaptiningsih Suwandi, MS 11. Dr. Ir. Muharlien, MP 12. Dr. Ir. M. Halim Natsir, MP, IPM, ASEAN Eng.
Prerequisite Course	Applied Statistics and Experimental Design (PEF60003)

Week	Sub-CLO	Indicator	Learning Materials / Topics	Learning Methods	Criteria & Form of Assessment	Weighted Score (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	1. The students are able to explain the scope of the course 2. The students are able to explain the relationship between research and other disciplines 3. The students are able to explain the difference of objectives between field practice reports, theses, and scientific publications 4. The students are able to explain original work and writing ethics	1. The students are able to explain the scope of the course 2. The students are able to explain the relationship between research and other disciplines 3. The students are able to explain the difference of objectives between field practice reports, theses, and other scientific publications	Definition of Scientific Research and Scientific Work, Utilization of Research Methodology and Scientific Work and the Relationship between Disciplines of Science ● Types of scientific works: field practice reports, theses, and other scientific publications ● Comprehension of original scientific works and writing ethics	Tutorials and discussions	Student activeness	

		4. The students are able to explain the criteria of original work and various ethics in writing scientific works				
2	1. The students are able to determine research topics 2. The students are able to explain the state of the art and are able to conceptualize a plot written in the background to identify novelty 3. The students are able to conceptualize the benefits of research 4. The students are able to conceptualize research hypotheses	The students are able to make an introductory section on a proposal/report/thesis/scientific publication	Selection of Research Topics and Preliminary Writing ● How to make a research background ● Identification of problems ● Research objectives and benefits ● Research hypotheses	Presentations, tutorials, and discussions	Student activeness	
3	1. The students are able to conceptualize the literature review section 2. The students are able to choose the appropriate	The students are able to make the literature review section on the proposal/report/thesis	How to Write a Literature Review ● The role of the literature review in a scientific work ● Sources of references that can be used for thesis writing and	Presentations, tutorials, and discussions	Student activeness and quiz	

	literature for literature review 3. Students are able to write quotations correctly 4. Students Able to write references		scientific works ● Defining sub-chapters in the literature review ● How to write a quote ● How to write references			
4	The students are able to conceptualize a framework of thinking	The students are able to make a part of the framework of thinking on the proposal/report/thesis	Definition and How to Write a Framework of Thinking ● The meaning of the framework of thinking in a study ● How to arrange a research framework of thinking written in narrative and chart forms	Presentations, tutorials, and discussions	Student activeness	
5	1. The students are able to explain the difference between a survey and experimental research 2. The students are able to explain sampling techniques or key informant selection 3. The students are able to explain the functions and methods of making	The students are able to make a part of the research methodology on a proposal/report/thesis	Meaning and Method of Preparation of Research Methodology ● Survey and experimental research ● Sampling techniques and key informants How to Select Methods according to the Research Topic ● Preparation of research plans (for experimental	Presentations, tutorials, and discussions	Student activeness and quiz	

	research plans (for experimental research) 4. The students are able to select a proper experimental design for a study 5. The students are able to determine research variables 6. The students are able to conceptualize research data analysis techniques 7. The students are able to conceptualize operational framework/research stages		research) ● Ethics and permits in research ● Determining the research design to be used ● Determining the variables used ● Making experimental designs and data analysis ● Making an operational framework ● Types, sources, and how to obtain data			
6	The students are able to conceptualize the results and discussion sections	The students are able to make the results and discussion sections on reports/theses/scientific publications	Writing Results and Discussion ● Determining sub-chapters in the results and discussion ● How to present data and statistical analysis results ● How to discuss results	Presentations, tutorials, and discussions	Student activeness	

7	The students are able to explain the need to prepare presentation tools and conceptualize a good scientific presentation	The students are able to prepare scientific presentations	Scientific Presentation Techniques ● Techniques for making presentation tools (making PowerPoint and video presentations) ● Communication techniques, appearance, and attitude when presenting scientific presentations	Presentations, tutorials, and discussions	Student activeness	
MIDTERM EXAM						
8	1. The students are able to conceptualize research conclusions and suggestions 2. The students are able to conceptualize elements that need to be included as attachments	The students are able to make conclusions, suggestions, and attachments in reports/ theses/scientific publications	Writing Conclusions, Suggestions, and Attachments ● How to draw conclusions in accordance with the objectives and research hypotheses (if any) ● How to make research suggestions that match the benefits of the research ● Elements that need to be included as an attachment and how to write the attachment correctly	Presentations, tutorials, and discussions	Student activeness	

9	The students are able to conceptualize research of literature study	The students are able to design and make research of literature study	Designing Literature Studies	Presentations, tutorials, and discussions	Student activeness	
10	1. The students are able to distinguish various scientific articles 2. The students are able to adapt the style of writing scientific works	The students are able to identify differences in various types of scientific works and exemplify the style of writing scientific works	Explanation of Scientific Works ● Differences in theses, seminar papers, journal articles (original research articles, review articles, short communications/letters, case reports, methodologies), and book chapters ● Introduction to the scientific writing style	Presentations, tutorials, and discussions	Student activeness	
11	The students are able to adapt scientific article preparation techniques	The students are able to make abstracts and manuscript framework for journals	Manuscript Preparation Techniques for Journals ● Writing the manuscript in accordance with the intended journal writing style ● Information that needs to be written on the manuscript for journals ● Difference between abstract and summary	Presentations, tutorials, and discussions	Student activeness and structured assignments using journal manuscript templates managed by the Faculty of Animal Science of UB	

12	The students are able to simulate the preparation of scientific articles	The students are able to make draft manuscripts of research reports/theses	Manuscript Preparation Practices for Journals	Simulation and discussion	Student activeness and structured assignments	
13	The students are able to preset research proposal presentations well	The students are able to prepare and present research proposal seminar presentations	Practice of Proposal Seminar Presentations	Simulation and discussion	Student activeness and structured assignments	
14	The students are able to preset research proposal presentations well	The students are able to prepare and present research proposal seminar presentations	Practice of Proposal Seminar Presentations	Simulation and discussion	Student activeness and structured assignments	
FINAL EXAM						

Structured Assignments (100% CLO 4)	**Quiz (100% CLO 3)**
1. Research proposal draft 2. Journal manuscript draft 3. Simulation of research proposal presentation (PPT design and content, presentation techniques, and discussion skills)	1. 3rd meeting (Writing quotes and bibliography) 2. 5th meeting (Differences in the experimental, survey, and qualitative research methods)

ASSESSMENT RUBRIC

	UNIVERSITY OF BRAWIJAYA FACULTY OF ANIMAL SCIENCE DEPARTMENT OF ANIMAL SCIENCE UNDERGRADUATE STUDY PROGRAM OF ANIMAL SCIENCE		
Course	RESEARCH METHODOLOGY AND SCIENTIFIC WRITING (PEF60005)		
Score Level	PLO and CLO	Conversion	PLO Score
PLO 2: Contribute to the improvement and advancement of the quality of life in society, nation, and state. PLO 5: Able to examine the implications of the development or implementation of science and technology that consider and apply humanities values in accordance with their expertise based on scientific principles, procedures, and ethics to produce excellent solutions and ideas. CLO 1: The students are able to explain the importance of integrity (honesty and ethics) in preparing research, reporting research results, and preparing scientific works.			
Very Good (4)	Showing the ability to explain the importance of integrity (honesty and ethics) in preparing research, reporting research results, and preparing scientific works **very well** that includes: 1) Ethics of data collection 2) Ethics of data processing 3) Plagiarism 4) Acknowledgment and the role of the parties involved	80-100	1.00
Good (3)	Showing the ability to explain the importance of integrity (honesty and ethics) in preparing research, reporting research results, and preparing scientific works **well** that includes three of the four following aspects:	70-79	0.75

	1) Ethics of data collection 2) Ethics of data processing 3) Plagiarism 4) Acknowledgment and the role of the parties involved		
Moderate (2)	Showing the ability to explain the importance of integrity (honesty and ethics) in preparing research, reporting research results, and preparing scientific works **limitedly** that includes **two** of the four following aspects: 1) Ethics of data collection 2) Ethics of data processing 3) Plagiarism 4) Acknowledgment and the role of the parties involved	60-69	0.5
Poor (1)	Showing the ability to explain the importance of integrity (honesty and ethics) in preparing research, reporting research results, and preparing scientific works **very limitedly** that includes **one** of the four following aspects: 1) Ethics of data collection 2) Ethics of data processing 3) Plagiarism 4) Acknowledgment and the role of the parties involved	<60	0.25
Score Level	PLO and CLO	Conversion	PLO Score
PLO 5: Able to examine the implications of the development or implementation of science and technology that consider and apply humanities values in accordance with their expertise based on scientific principles, procedures, and ethics to produce excellent solutions and ideas.			

PLO 9: Able to communicate effectively the results of thoughts, concepts, implementation, and analysis orally and in writing in the environment, community, nation, state, and international world. CLO 2: The students are able to explain the sections of the background, theoretical framework/concept, references, literature review, experimental research methodology, survey, and qualitative aspects			
Very Good (4)	Showing the ability to explain **all** the following sections **well and comprehensively**: 1. Background 2) Conceptual framework 3) Literature review 4) Experimental, survey, and qualitative research methodologies	80-100	1.00
Good (3)	Showing the ability to explain **three** of the four following sections **well**: 1. Background 2) Conceptual framework 3) Literature review 4) Experimental, survey, and qualitative research methodologies	70-79	0.75
Moderate (2)	Showing the ability to explain **two** of the four following sections **limitedly**: 1. Background 2) Conceptual framework 3) Literature review 4) Experimental, survey, and qualitative research methodologies	60-69	0.50
Poor (1)	Showing the ability to explain **one** of the four following sections **very limitedly**: 1. Background 2) Conceptual framework 3) Literature review	<60	0.25

	4) Experimental, survey, and qualitative research methodologies		
Score Level	PLO and CLO	Conversion	PLO Score
PLO 9: Able to communicate effectively the results of thoughts, concepts, implementation, and analysis orally and in writing in the environment, community, nation, state, and international world. PLO 12: Able to design and conduct experiments, analyze and interpret data to make correct decisions in solving problems in the field of animal science, meet ethics, and have environmental insight. CLO 3: Able to implement the preparation of experimental research proposals theoretically and practically in the laboratory and the field, survey and qualitative research.			
Very Good (4)	Showing the ability to implement the preparation of experimental research proposals theoretically and practically in the laboratory and the field, survey and qualitative research **well and comprehensively** that includes **all** of the following sections: 1. Background 2) Conceptual framework 3) Literature review 4) Methodology	80-100	1.00
Good (3)	Showing the ability to implement the preparation of experimental research proposals theoretically and practically in the laboratory and the field, survey and qualitative research **well** that includes **three** of the four following sections: 1. Background 2) Conceptual framework 3) Literature review 4) Methodology	70-79	0.75

Moderate (2)	Showing the ability to implement the preparation of experimental research proposals theoretically and practically in the laboratory and the field, survey and qualitative research **limitedly** that includes **two** of the four following sections: 1. Background 2) Conceptual framework 3) Literature review 4) Methodology	60-69	0.50
Poor (1)	Showing the ability to implement the preparation of experimental research proposals theoretically and practically in the laboratory and the field, survey and qualitative research **very limitedly** that includes **one** of the four following sections: 1. Background 2) Conceptual framework 3) Literature review 4) Methodology	<60	0.25
Score Level	PLO and CLO	Conversion	PLO Score
PLO 9: Able to communicate effectively the results of thoughts, concepts, implementation, and analysis orally and in writing in the environment, community, nation, state, and international world. PLO 12: Able to design and conduct experiments, analyze and interpret data to make correct decisions in solving problems in the field of animal science, meet ethics, and have environmental insight. PLO 4: The students are able to conceptualize scientific articles and present scientific presentations properly.			
Very Good (4)	Showing the ability to conceptualize scientific articles and present scientific presentations **very well** that includes **all** of the following sections:	80-100	1.00

	1) Abstract and Introduction 2) Materials and Methods 3) Results and Discussion 4) Conclusions and References		
Good (3)	Showing the ability to conceptualize scientific articles and present scientific presentations **well** that includes **three** of the four following sections: 1) Abstract and Introduction 2) Materials and Methods 3) Results and Discussion 4) Conclusions and References	70-79	0.75
Moderate (2)	Showing the ability to conceptualize scientific articles and present scientific presentations **well** that includes **two** of the four following sections: 1) Abstract and Introduction 2) Materials and Methods 3) Results and Discussion 4) Conclusions and References	60-69	0.50
Poor (1)	Showing the ability to conceptualize scientific articles and present scientific presentations **well** that includes **one** of the four following sections: 1) Abstract and Introduction 2) Materials and Methods 3) Results and Discussion 4) Conclusions and References	<60	0.25

Formula to Calculate PLO Score: $\frac{Level\ Skor}{\sum level\ skor} \times \frac{\sum CP-MK}{\sum CP-PS}$

CLO Score Calculation

Assessed components	Component Weights	CLO Weight on the Score			
		CLO 1	CLO 2	CLO 3	CLO 4
Midterm Exam	0.30	0.33	0.33	0.33	
Final exam	0.40		0.33	0.33	0.33
Structured assignments	0.10				1.00
Quiz	0.10			1.00	
Activeness/discipline	0.10	0.25	0.25	0.25	0.25

PLO Score Calculation

CLO	CLO Score	CLO Weight	PLO			
			PLO 2	PLO 5	PLO 10	PLO 12
CLO 1			0.50	0.50		
CLO 2				0.30	0.70	
CLO 3					0.70	0.30
CLO 4					0.30	0.70

LECTURE PORTFOLIO

	**UNIVERSITY OF BRAWIJAYA** **FACULTY OF ANIMAL SCIENCE** **DEPARTMENT OF ANIMAL SCIENCE** **UNDERGRADUATE STUDY PROGRAM OF ANIMAL SCIENCE**

Course: RESEARCH METHODOLOGY AND SCIENTIFIC WRITING	Code: PEF60005	RMK: Compulsory Course in University	Semester: 5

Lecturers	1. Prof. Dr. Ir. Trinil Susilawati, MS, IPU, ASEAN Eng. 2. Prof. Dr. Budi Hartono, MS, IPU, ASEAN Eng. 3. Prof. Dr. Lilik Eka Radiati, MS, IPU 4. Dr. Ir. Bambang Ali Nugroho, DEA, IPM, ASEAN Eng. 5. Ir. Hari Dwi Utami, MS, M.Appl.Sc., Ph.D., IPM, ASEAN Eng. 6. Dr. Siti Azizah, S.Pt., M.Sos., M.Commun. 7. Dr. Ir. Kuswati, MS, IPM, ASEAN Eng. 8. Dr. Ir. Moch. Nasich, MS 9. Dr. Ir. Puguh Suryowardojo, MP 10. Dr. Ir. Umi Wisaptiningsih Suwandi, MS 11. Dr. Ir. Muharlien, MP 12. Dr. Ir. M. Halim Natsir, MP, IPM, ASEAN Eng.

Introduction

This course includes comprehension in writing a research proposal, research reports, and scientific works in the field of animal science which include; writing a research background, problem identification and formulation, research objectives and benefits, hypotheses, literature review, framework/concept, research methods and research operational framework, selection of statistical designs and data analysis, presentation and interpretation of results and discussion, conclusions and suggestions, references and appendices, introduction to the types of scientific publications and research output, and the principles and practices of scientific presentation in the form of seminar presentations.

1	**Objectives**
	After taking this course, the students will: 1. Explain the importance of integrity (honesty and ethics) in preparing research, reporting research results, and preparing scientific works. 2. Explain the conceptual background, theoretical framework/concept, literature review, experimental research methodology, survey, and qualitative aspects. 3. Implement the preparation of experimental research proposals theoretically and practically in the laboratory and the field, survey and qualitative research. 4. Conceptualize scientific articles and present scientific presentations properly.
2	**Learning Strategies**
	The learning strategies carried out in the lectures include lectures, discussions, structured assignments, quizzes, group presentations
3	**Lecture Management**
	1) Lecture: 100 minutes/meeting (14 meetings) 2) Structured assignments/quizzes/activeness 3) Attendance: 80% of total attendance The role of the lecturers: providing lectures, facilitating discussions, providing assignment instructions, giving assessment for quizzes and exams The role of the students: attending lectures and practicum, doing assignments, discussing, being the moderator of the discussion and evaluating the presentation of their friends
4	**Lecture Contents**
	1. Definition of Scientific Research and Scientific Work, Utilization of Research Methodology and Scientific Work and the Relationship between Disciplines of Science 2. Selection of Research Topics and Preliminary Writing 3. How to Write a Literature Review 4. Definition and How to Write a Framework of Thinking 5. Meaning and Method of Preparation of Research Methodology and How to Select Methods according to the Research Topic 6. Writing Results and Discussion 7. Scientific Presentation Techniques 8. Writing Conclusions, Suggestions, and Attachments

	9. Designing Literature Studies 10. Explanation of Scientific Works 11. Manuscript Preparation Techniques for Journals 12. Manuscript Preparation Practices for Journals 13. Practice of Proposal Seminar Presentations
5	**Lecture Participants**
	The course participants are 5th semester students who have passed the course of Applied Statistics and Experimental Design (PEF60003)
6	**Attendance Percentage**
	Lecturer attendance percentage: 100% Student attendance percentage: min. 80%
7	**Evaluation System**
	Midterm exams: 30% Final exams: 40% Structured assignments: 10% Quiz: 10% Activeness/Discipline: 10%
8	**Class Observation** (explain important and interesting things that were encountered during the lecture)
	Example: *1. 100% of students attended and followed the quiz using Google Form at the 3rd meeting (proof of response attached)* *2. 5 students (Name and NIM) answered the lecturer questions correctly as a reflection of the lectures at each meeting (proof of student's name and NIM attached)* *3. Distribution (graph) of student feedback (pre-test: student interest in the topic/method of lectures and post-test)* *3. etc.*
9	**Learning Outcomes** (explain the achievement of the objectives that have been set, also include the learning achievements that can be explained)
	A narrative explanation of the actual achievement
10	**Obstacles** (provide an overview of the main obstacles in the learning process)
	Example: *1. When the course material was delivered online, some students had difficulty accessing the internet.*

	2. The size of the lecture delivery recording was too large because the lecture duration was too long.
11	**Score Distribution** (provide the score distribution following the learning achievements of this course)
	Example: Graph of the distribution of final scores (the number of students obtaining A, B, C D…) Graph of CLO and PLO scores achieved
12	**Conclusion**
	Narrate about the success of facilitating students to achieve learning outcomes
13	**Improvement Recommendations**
	Example: LO-x was difficult to achieve so it needs to be revised
	Appendices:
	1. Student assignments and records of the evaluation process 2. Attendance list 3. PowerPoint assignments, documentation of presentation implementation and assessment form etc.