	Universitas Negeri Surabaya Faculty of Mathematics and Natural Sciences Biology Undergraduate Study Program	Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
Biological Research Methodology	4620103124	Compulsory Study Program Subjects	T=3	P=0	ECTS=4.77	4	April 26, 2023

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
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Learning model	**Project Based Learning**	
Program Learning Outcomes (PLO)	**PLO study program that is charged to the course**	
	PLO-5	Able to communicate scientific ideas, both orally and in writing using appropriate communication media according to the target, as a means of lifelong learning for academic self-development.
	PLO-7	Able to work independently and collaboratively, as well as responsibly, in completing various tasks in class, in the laboratory and in the field.
	PLO-10	Able to design and conduct experiments in the field of biology, manage, analyze, interpret, document and store research data, to manage biological natural resources
	Program Objectives (PO)	
	PO - 1	Able to master Biology concepts and their applications to understand current scientific phenomena and issues and apply them in problem solving (CPL- 2)
	PO - 2	Able to apply the latest biological knowledge to support professional work as a research assistant in Biology (CPL- 3)
	PO - 3	Able to design experiments in the field of biology, manage, analyze, interpret, document, in the form of a research proposal (CPL-6)
	PO - 4	Able to communicate scientific ideas, both orally and in writing using appropriate communication media according to the target (CPL- 8)
	PO - 5	Able to work independently, responsibly, both as an individual and in a group, as well as being able to collaborate. (CPL-10)
	PLO-PO Matrix	

P.O	PLO-5	PLO-7	PLO-10
PO-1			
PO-2			
PO-3			
PO-4			
PO-5			

PO Matrix at the end of each learning stage (Sub-PO)

P.O	Week															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PO-1																
PO-2																
PO-3																
PO-4																
PO-5																

Short Course Description	The Research Methodology course discusses the nature of research, objectives, characteristics of quantitative and qualitative research that are relevant to biological research and equips students to be able to make decisions in applying research methods to find alternative solutions in solving problems in the field of biology. The study of research methodology also includes research paradigms, research steps starting from formulating problems, developing a theoretical basis, framework for thinking, formulating hypotheses, determining variables, population and samples, preparing research designs, research instruments, data collection techniques, analyzing data, concluding results. research and compiling research reports. The product or output of the research methodology course is a biological research proposal. This course is presented in the form of presentations, discussions and assignments.	
References	**Main :**	

1. Nazir, M. 2008. Metodologi Penelitian . Jakarta: Ghalia Indonesia.
2. Barten,G. 2010. Introduction to Scientific Research Project. New York: McGraw-Hill Companies, Inc.
3. Bungin, Burhan. 2020. Social Research Methods. Kuantitatif –Kualitatif -Mixed Methodes. Jakarta: Kencana
4. Croswell, John W.2014. Research Design: Qualitative, Quantitative and Mixed Methods Approaches 4th Edition.Sage Publication.Inc.
5. Kumar, R. 2011. Research Methodology: A Step-by-step Guide for Beginners. 3rd ed. London: Sage Publication. American Psychological Association
6. Sugiyono. 2019.Metode Penelitian Kuantitatif.Bandung: Alfabeta
7. Patak, A. A., Naim, H. A., & Hidayat, R. 2016. Taking Mendeley as multimedia-based application in academic writing. International Journal on Advanced Science, Engineering and Information Technology, 6(4), 557-560.

Supporters:

1. Tim Jurnal Unesa. 2012. Template e-journal unesa. www.ejournal.unesa.ac.id.
2. Artikel-artikel mutakhir (Jurnal Nasional dan Jurnal Internasional) yang memuat hasil penelitian di bidang Biologi.

Supporting lecturer	Prof. Dr. Fida Rachmadiarti, M.Kes. Prof. Dr. Yuliani, M.Si. Nur Qomariyah, S.Pd., M.Sc.

Week-	Final abilities of each learning stage (Sub-PO)	Evaluation		Help Learning, Learning methods, Student Assignments, [Estimated time]		Learning materials [References]	Assessment Weight (%)
		Indicator	Criteria & Form	Offline (*offline*)	Online (*online*)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Understanding the Nature of Research	1.Explain the nature of research 2.Compare different research approaches 3.Explain the various types of research	**Criteria:** 1.20% participation is obtained from attendance, questions and answers, and activeness in discussions. 2.30% of assignments are obtained from assignments and practical activities every week. 3.UTS 20% is obtained from the mid-semester exam, 4.UAS 30% is obtained from the proposal grades collected at the end of the semester. **Form of Assessment** : Participatory Activities, Portfolio Assessment	Discuss various aspects of research and their types based on 3x50 lecturer presentations	Discuss various aspects of research and their types based on lecturer presentations via LMS 3x50	**Material:** Introduction, Nature of Research, Basics of Research, Research Approach, Types of Research **References:** *Nazir, M. 2008. Research Methodology. Jakarta: Ghalia Indonesia.*	5%
2	Understanding the Nature of Research	1.Identify things that need to be written in the thesis introduction 2.Identify the background characteristics of the problem 3.Skilled in writing the background framework/research introduction	**Criteria:** 1.20% participation is obtained from attendance, questions and answers, and activeness in discussions. 2.30% of assignments are obtained from assignments and practical activities every week. 3.UTS 20% is obtained from the mid-semester exam, 4.UAS 30% is obtained from the proposal grades collected at the end of the semester. **Form of Assessment** : Participatory Activities	Discuss the introduction to the thesis and the background and types based on the lecturer's presentation 3x50	Discuss the introduction to the thesis and the background and types based on the lecturer's presentation via LMS 3x50	**Material:** Review of the introductory chapter of the thesis, Background characteristics of the problem **References:** *Barten, G. 2010. Introduction to Scientific Research Projects. New York: McGraw-Hill Companies, Inc.*	5%

3	Understanding Research Problems	1. Identify the characteristics of a good problem formulation 2. Compare the problem formulation with the research questions	**Criteria:** 1. 20% participation is obtained from attendance, questions and answers, and activeness in discussions. 2. 30% of assignments are obtained from assignments and practical activities every week. 3. UTS 20% is obtained from the mid-semester exam, 4. UAS 20% is obtained from the proposal grades collected at the end of the semester. **Forms of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment	Discuss problem formulation and various types of problem formulation criteria based on lecturer presentations and 3x50 discussions	Discussing problem formulation and various types of problem formulation criteria based on lecturer presentations and discussions via LMS 3x50	**Material:** Characteristics of a good problem formulation, Comparison of problem formulation and research questions, Criteria for research problem formulation. **References:** *Barten, G. 2010. Introduction to Scientific Research Projects. New York: McGraw-Hill Companies, Inc.*	5%
4	Able to determine the relationship between literature review and problem formulation in research	Skilled in connecting literature studies with problem formulation	**Criteria:** 1. 20% participation is obtained from attendance, questions and answers, and activeness in discussions. 2. 30% of assignments are obtained from assignments and practical activities every week. 3. UTS 20% is obtained from the mid-semester exam, 4. UAS 20% is obtained from the proposal grades collected at the end of the semester. **Form of Assessment** : Participatory Activities, Portfolio Assessment	Discuss the relationship between literature review and problem formulation based on lecturer presentations and 3x50 discussions	Discuss the relationship between literature review and problem formulation based on lecturer presentations and discussions via LMS 3x50	**Material:** • Correlation of literature review with problem formulation/research title, content of literature study, creation of sub-chapters for material from literature review, development of **library thinking framework:** *Kumar, R. 2011. Research Methodology: A Step-by-step Guide for Beginners. 3rd ed. London: Sage Publications. American Psychological Association*	5%

5	Skilled in conducting literature reviews	1. Determine the types of library sources 2. Skilled in making citations	**Criteria:** 1. 20% participation is obtained from attendance, questions and answers, and activeness in discussions. 2. 30% of assignments are obtained from assignments and practical activities every week. 3. UTS 20% is obtained from the mid-semester exam, 4. UAS 20% is obtained from the proposal grades collected at the end of the semester. **Form of Assessment** : Participatory Activities, Portfolio Assessment	Discuss various aspects of research results based on the 3x50 research proposal	Discuss various aspects of research results based on research proposals via LMS 3x50	**Material:** Various library sources, Mendeley literature review techniques, etc., How to cite and write **library source books:** *Kumar, R. 2011. Research Methodology: A Step-by-step Guide for Beginners. 3rd ed. London: Sage Publications. American Psychological Association* **Material:** Literature review techniques from Mendeley, etc., How to cite and write **library source books:** *Patak, AA, Naim, HA, & Hidayat, R. 2016. Taking Mendeley as multimedia-based application in academic writing. International Journal on Advanced Science, Engineering and Information Technology, 6(4), 557-560.*	5%
6	Skilled in conducting literature reviews	1. Skilled at identifying variables 2. Skilled at identifying variables operationally 3. Skilled in formulating research hypotheses	**Criteria:** 1. 20% participation is obtained from attendance, questions and answers, and activeness in discussions. 2. 30% of assignments are obtained from assignments and practical activities every week. 3. UTS 20% is obtained from the mid-semester exam, 4. UAS 20% is obtained from the proposal grades collected at the end of the semester. **Form of Assessment** : Participatory Activities, Portfolio Assessment	Discuss research hypotheses and how to create hypotheses according to the 3x50 research plan	Discuss research hypotheses and how to create hypotheses according to the research plan via LMS 3x50	**Material:** Definition of hypothesis, Types of hypotheses, How to make a hypothesis and its correlation with problem formulation, Examples of hypotheses **Reference:** *Croswell, John W. 2014. Research Design: Qualitative, Quantitative and Mixed Methods Approaches 4th Edition.Sage Publication.Inc.*	5%

7	Understand the nature of research variables	1. Skilled at identifying variables 2. Skilled at identifying variables operationally 3. Skilled in writing operational definitions of variables based on research examples/snippets	**Criteria:** 1. 20% participation is obtained from attendance, questions and answers, and activeness in discussions. 2. 30% of assignments are obtained from assignments and practical activities every week. 3. UTS 20% is obtained from the mid-semester exam, 4. UAS 20% is obtained from the proposal grades collected at the end of the semester. **Form of Assessment** : Portfolio Assessment	Discuss research variables, types of research variables and definitions of research variables based on each student's thesis research proposal via LMS 3x50	Discuss research variables, types of research variables and definitions of research variables based on each student's thesis research proposal via LMS 3x50	**Material:** Definition of variables, Types of variables, Examples of variables, How to define variables operationally **Reference:** *Croswell, John W. 2014. Research Design: Qualitative, Quantitative and Mixed Methods Approaches 4th Edition.Sage Publication.Inc.*	5%
8		UTS 20%	**Form of Assessment** : Test	UTS			10%
9		1. Explain the meaning of sample and sampling 2. Skilled in determining sampling methods for exploratory or experimental research	**Criteria:** 1. 20% participation is obtained from attendance, questions and answers, and activeness in discussions. 2. UTS 20% is obtained from the mid-semester exam 3. 30% of assignments are obtained from assignments and practical activities every week. **Forms of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment	Discuss various sampling methods based on lecturer presentations	Discuss various sampling methods based on lecturer presentations via LMS	**Material:** Understanding Sampling, Sampling Methods **Library:** *Sugiyono. 2019. Quantitative Research Methods. Bandung: Alfabeta*	0%
10		1. Explain the meaning of sample and sampling 2. Skilled in determining sampling methods for exploratory or experimental research	**Criteria:** 1. 20% participation is obtained from attendance, questions and answers, and activeness in discussions. 2. UTS 20% is obtained from the mid-semester exam 3. 30% of assignments are obtained from assignments and practical activities every week. **Forms of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment	Discuss various types of research designs according to the type of research based on each student's research proposal/plan	Discuss various types of research designs according to the type of research based on each student's research proposal/plan through the LMS	**Material:** Understanding Sampling, Sampling Methods **Library:** *Sugiyono. 2019. Quantitative Research Methods. Bandung: Alfabeta*	0%

11		1. Explain the meaning of sample and sampling 2. Skilled in determining sampling methods for exploratory or experimental research	**Criteria:** 1. 20% participation is obtained from attendance, questions and answers, and activeness in discussions. 2. UTS 20% is obtained from the mid-semester exam 3. 30% of assignments are obtained from assignments and practical activities every week. **Form of Assessment** : Project Results Assessment / Product Assessment	Discuss various types of research designs according to the type of research based on each student's research proposal/plan	Discuss various types of research designs according to the type of research based on each student's research proposal/plan through the LMS	**Material:** Understanding Sampling, Sampling Methods **Library:** *Sugiyono. 2019. Quantitative Research Methods. Bandung: Alfabeta*	10%
12	Understand data analysis	Determine analysis techniques	**Criteria:** 1. 20% participation is obtained from attendance, questions and answers, and activeness in discussions. 2. UTS 20% is obtained from the mid-semester exam 3. 30% of assignments are obtained from assignments and practical activities every week. **Form of Assessment** : Project Results Assessment / Product Assessment	Discuss various research data analysis methods according to the type of research based on each student's research proposal/plan	Discuss various research data analysis methods according to the type of research based on each student's research proposal/plan via LMS	**Material:** Understanding Sampling, Sampling Methods **Library:** *Sugiyono. 2019. Quantitative Research Methods. Bandung: Alfabeta* **Material:** Data Analysis **Bibliography:** *Croswell, John W. 2014. Research Design: Qualitative, Quantitative and Mixed Methods Approaches 4th Edition.Sage Publication.Inc.*	5%
13	Skilled in writing research proposals properly and correctly based on Unesa Thesis guidelines	Practice writing research proposals and presentations	**Criteria:** 1. 20% participation is obtained from attendance, questions and answers, and activeness in discussions. 2. 30% of assignments are obtained from assignments and practical activities every week. 3. UAS 20% is obtained from the proposal grades collected at the end of the semester. **Form of Assessment** : Project Results Assessment / Product Assessment	Lectures, making research proposals based on previously taught material according to each student's interests		**Material:** Understanding Sampling, Sampling Methods **Library:** *Sugiyono. 2019. Quantitative Research Methods. Bandung: Alfabeta* **Material:** Data Analysis **Bibliography:** *Croswell, John W. 2014. Research Design: Qualitative, Quantitative and Mixed Methods Approaches 4th Edition.Sage Publication.Inc.*	10%

14	Skilled in writing research proposals properly and correctly based on Unesa Thesis guidelines	Practice writing research proposals and presentations	**Criteria:** 1.20% participation is obtained from attendance, questions and answers, and activeness in discussions. 2.30% of assignments are obtained from assignments and practical activities every week. 3.UAS 20% is obtained from the proposal grades collected at the end of the semester. **Form of Assessment** : Portfolio Assessment	Lectures, making research proposals based on previously taught material according to each student's interests		**Material:** Understanding Sampling, Sampling Methods **Library:** *Sugiyono. 2019. Quantitative Research Methods. Bandung: Alfabeta* **Material:** Data Analysis **Bibliography:** *Croswell, John W. 2014. Research Design: Qualitative, Quantitative and Mixed Methods Approaches 4th Edition.Sage Publication.Inc.*	0%
15	Skilled in writing research proposals properly and correctly based on Unesa Thesis guidelines	Practice writing research proposals and presentations	**Criteria:** 1.20% participation is obtained from attendance, questions and answers, and activeness in discussions. 2.30% of assignments are obtained from assignments and practical activities every week. 3.UAS 20% is obtained from the proposal grades collected at the end of the semester. **Form of Assessment** : Participatory Activities, Portfolio Assessment	Lectures, making research proposals based on previously taught material according to each student's interests		**Material:** Understanding Sampling, Sampling Methods **Library:** *Sugiyono. 2019. Quantitative Research Methods. Bandung: Alfabeta* **Material:** Data Analysis **Bibliography:** *Croswell, John W. 2014. Research Design: Qualitative, Quantitative and Mixed Methods Approaches 4th Edition.Sage Publication.Inc.*	5%
16			**Form of Assessment** : Project Results Assessment / Product Assessment	UAS			25%

Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
1.	Participatory Activities	20%
2.	Project Results Assessment / Product Assessment	52.5%
3.	Portfolio Assessment	17.5%
4.	Test	10%
		100%

Notes

1. **Learning Outcomes of Study Program Graduates (PLO - Study Program)** are the abilities possessed by each Study Program graduate which are the internalization of attitudes, mastery of knowledge and skills according to the level of their study program obtained through the learning process.
2. **The PLO imposed on courses** are several learning outcomes of study program graduates (CPL-Study Program) which are used for the formation/development of a course consisting of aspects of attitude, general skills, special skills and knowledge.
3. **Program Objectives (PO)** are abilities that are specifically described from the PLO assigned to a course, and are specific to the study material or learning materials for that course.
4. **Subject Sub-PO (Sub-PO)** is a capability that is specifically described from the PO that can be measured or observed and is the final ability that is planned at each learning stage, and is specific to the learning material of the course.
5. **Indicators for assessing** ability 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.
6. **Assessment Criteria** are benchmarks used as a measure or measure of learning achievement in assessments based on predetermined indicators. Assessment criteria are guidelines for assessors so that assessments are consistent and unbiased. Criteria can be quantitative or qualitative.
7. **Forms of assessment:** test and non-test.

8. **Forms of learning:** Lecture, Response, 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 which can be presented in the form of several main points and sub-topics.
11. **The assessment weight** is the percentage of assessment of each sub-PO achievement whose size is proportional to the level of difficulty of achieving that sub-PO, and the total is 100%.
12. TM=Face to face, PT=Structured assignments, BM=Independent study.