



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																																		
Philosophy of Natural Science	4620102068		T=2 P=0 ECTS=3.18	3	July 17, 2024																																		
AUTHORIZATION	SP Developer		Course Cluster Coordinator		Study Program Coordinator																																		
		Dr. H. Sunu Kuntjoro, S.Si., M.Si.																																		
Learning model	Project Based Learning																																						
Program Learning Outcomes (PLO)	PLO study program that is charged to the course																																						
	Program Objectives (PO)																																						
	PLO-PO Matrix																																						
		<table border="1" style="margin: auto;"> <tr><td style="width: 50px; height: 20px;">P.O</td></tr> </table>					P.O																																
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	PO Matrix at the end of each learning stage (Sub-PO)																																						
	<table border="1" style="margin: auto;"> <tr> <td style="width: 30px; height: 20px;">P.O</td> <td colspan="16" style="text-align: center;">Week</td> </tr> <tr> <td></td> <td style="width: 20px;">1</td><td style="width: 20px;">2</td><td style="width: 20px;">3</td><td style="width: 20px;">4</td><td style="width: 20px;">5</td><td style="width: 20px;">6</td><td style="width: 20px;">7</td><td style="width: 20px;">8</td><td style="width: 20px;">9</td><td style="width: 20px;">10</td><td style="width: 20px;">11</td><td style="width: 20px;">12</td><td style="width: 20px;">13</td><td style="width: 20px;">14</td><td style="width: 20px;">15</td><td style="width: 20px;">16</td> </tr> </table>					P.O	Week																	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
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	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16																							
Short Course Description	This course studies the philosophical basis, ontological foundations, epistemology and axiology of science as well as the principles and concepts of scientific methodology as a means of thinking to obtain correct knowledge including reasoning, logic, criteria of truth, assumptions, opportunities, limitations of science, scientific method, deductive thinking- inductive, scientific language, the role of science in culture, interpretation of analysis results, and scientific writing. The material is delivered using a student-centered approach in presentation and discussion activities discussing material about the philosophy of science and reviewing articles related to the material honestly and independently.																																						
References	Main :																																						
	1. Surajiyo, 2005. Ilmu Filsafat Suatu Pengantar. Jakarta: PT Bumi Aksara Suriasumantri, JS. 1987. Filsafat Ilmu Sebuah Pengantar Populer. Jakarta. Pustaka Sinar Harapan.																																						
	Supporters:																																						
Supporting lecturer	Dr. H. Sunu Kuntjoro, S.Si., M.Si. Reni Ambarwati, S.Si., 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							0%																																

2	Communicate understanding of the basics of knowledge, reasoning, logic and criteria of truth	1. Explain the meaning of reasoning 2. Explain the meaning of logic 3. Give examples of sources of knowledge 4. Explain the criteria for truth	Criteria: TASK with a weight of 30%. UTS weight is 20%. Students' activities and responses during learning activities are assessed as participation, with a weight of 20%. UAS weight is 30%. Essay questions are assessed together at the UAS	Student Centered Approach/Presentation and Discussion 2 X 50			0%
3	Communicating the nature of science studies/fields of study (Science Ontology)	1. Explain the meaning of metaphysics 2. Explain the meaning of assumption 3. Explain the meaning of opportunity 4. Explains some of the assumptions in IPA5. Explain boundaries	Criteria: TASK with a weight of 30%. UTS weight is 20%. Students' activities and responses during learning activities are assessed as participation, with a weight of 20%. UAS weight is 30%. Essay questions are assessed together at the UAS	Student Centered Approach/Presentation and Discussion 2 X 50			0%
4	Students are able to communicate understanding of how to obtain correct knowledge (science epistemology)	1. Explain how to get the right knowledge. Explain the meaning of knowledge 3. Explain the steps of the scientific method 4. Explain the structure of scientific knowledge	Criteria: TASK with a weight of 30%. UTS weight is 20%. Students' activities and responses during learning activities are assessed as participation, with a weight of 20%. UAS weight is 30%. Essay questions are assessed together at the UAS	Student Centered Approach/Presentation and Discussion 2 X 50			0%
5	Communicate an understanding of the tools of scientific thinking	1. Explain the tools for scientific thinking 2. Distinguish between means of scientific thinking, which include language, mathematics, and statistics.	Criteria: TASK with a weight of 30%. UTS weight is 20%. Students' activities and responses during learning activities are assessed as participation, with a weight of 20%. UAS weight is 30%. Essay questions are assessed together at the UAS	Student Centered Approach/Presentation and Discussion 2 X 50			0%
6	Understanding the use of IPA (Axiology of Science)	1. Explain the axiology (use) of IPA2. Analyze the relationship between science and morals.3. Analyzing the social responsibilities of scientists	Criteria: TASK with a weight of 30%. UTS weight is 20%. Students' activities and responses during learning activities are assessed as participation, with a weight of 20%. UAS weight is 30%. Essay questions are assessed together at the UAS	Student Centered Approach/Presentation and Discussion 2 X 50			0%
7	Communicate understanding of the relationship between science and culture	Analyzing the relationship between science and culture	Criteria: TASK with a weight of 30%. UTS weight is 20%. Students' activities and responses during learning activities are assessed as participation, with a weight of 20%. UAS weight is 30%. Essay questions are assessed together at the UAS	Student Centered Approach/Presentation and Discussion 2 X 50			0%
8	Midterm Exam (UTS)	Midterm Exam (UTS)	Criteria: Midterm Exam (UTS)	Midterm Exam (UTS) 2 X 50			0%

9	Explain and analyze the role of science in culture	1. Analyze the role of IPA2. Explain cultural patterns	Criteria: TASK with a weight of 30%. UTS weight is 20%. Students' activities and responses during learning activities are assessed as participation, with a weight of 20%. UAS weight is 30%. Essay questions are assessed together at the UAS	Student Centered Approach/Presentation and Discussion 2 X 50			0%
10	Understand the relationship between science and language	1. Explain the relationship between science and language2. Explain science terminology	Criteria: TASK with a weight of 30%. UTS weight is 20%. Students' activities and responses during learning activities are assessed as participation, with a weight of 20%. UAS weight is 30%. Essay questions are assessed together at the UAS	Student Centered Approach/Presentation and Discussion 2 X 50			0%
11	Understand the nature of research and scientific writing	1. Explain the research structure 2. Explain the criteria for a good problem formulation 3. Create a research problem formulation based on the illustrations provided	Criteria: TASK with a weight of 30%. UTS weight is 20%. Students' activities and responses during learning activities are assessed as participation, with a weight of 20%. UAS weight is 30%. Essay questions are assessed together at the UAS	Student Centered Approach/Presentation and Discussion/review of 2 X 50 articles			0%
12	Understand the nature of research and scientific writing	1. Explain the steps in preparing a theoretical framework2. Explain the procedure for submitting a hypothesis3. Create a hypothesis based on the problem formulation that has been created	Criteria: TASK with a weight of 30%. UTS weight is 20%. Students' activities and responses during learning activities are assessed as participation, with a weight of 20%. UAS weight is 30%. Essay questions are assessed together at the UAS	Student Centered Approach/Presentation and Discussion/review of 2 X 50 articles			0%
13	Understand research methodology	1. Explain the relationship between the variables studied2. Explain the techniques for preparing research methods 3. Explain data collection techniques	Criteria: TASK with a weight of 30%. UTS weight is 20%. Students' activities and responses during learning activities are assessed as participation, with a weight of 20%. UAS weight is 30%. Essay questions are assessed together at the UAS	Student Centered Approach/Presentation and Discussion/review of 2 X 50 articles			0%
14	Communicate research results	1. Analyze how to write research data 2. Analyze how to write data analysis3. Explain the interpretation of the results of data analysis	Criteria: TASK with a weight of 30%. UTS weight is 20%. Students' activities and responses during learning activities are assessed as participation, with a weight of 20%. UAS weight is 30%. Essay questions are assessed together at the UAS	Student Centered Approach/Presentation and Discussion/review of 2 X 50 articles			0%

15	Apply scientific writing techniques	1. Explain scientific writing techniques 2. Explain scientific notation techniques 3. Review scientific writing based on scientific writing techniques	Criteria: TASK with a weight of 30%. UTS weight is 20%. Students' activities and responses during learning activities are assessed as participation, with a weight of 20%. UAS weight is 30%. Essay questions are assessed together at the UAS	Student Centered Approach/Presentation and Discussion/review of 2 X 50 articles			0%
16							0%

Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
		0%

Notes

- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- Forms of assessment:** test and non-test.
- 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.
- 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.
- Learning materials** are details or descriptions of study materials which can be presented in the form of several main points and sub-topics.
- 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%.
- TM=Face to face, PT=Structured assignments, BM=Independent study.