	Universitas Negeri Surabaya Faculty of Mathematics and Natural Sciences Bachelor of Science Education Study Program	Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
History and Philosophy of Science Education	8420102159		T=2	P=0	ECTS=3.18	0	July 19, 2024

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
	.....	.....	Prof. Dr. Erman, M.Pd.

Learning model	**Case Studies**
Program Learning Outcomes (PLO)	**PLO study program that is charged to the course**
	Program Objectives (PO)
	PLO-PO Matrix

	P.O

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

Short Course Description	Examining philosophy in the context of science and its learning through critical analysis of the thought process and discovery of science products by science philosophers/scientists including justification from various learning sources/media that have developed over time and their application in the context of science education based on the views of educational philosophy schools/understandings through critical analysis of science education and learning problems/issues/policies so that they can produce logical solutions and make appropriate and responsible decisions. Presented in the form of theory and practice.
References	**Main :**

1. Thomas J. Hickey, 2011, Introduction to phisophy of science. NewYork: Springer2.
2. Craigh Dilworth, 2006, The methaphysics of science: Boston studies in the philosophy of science, Netherland: Springer.
3. Cornel M. Hamm, 2005, Philosophycal Issues in Education: An introduction, London: Routledge.
4. James Ladyman, 2002, Understanding philosophy of science, London and New York: Roudledge
5. Anna Poedjiadi, 2001, Filsafat Ilmu Kependidikan, Bandung
6. Wilburg Applebaum, 2005, The scientific revolution and the foundation of modern science, London: Greenwood Press
7. Referensi lain yang relevan

	Supporters:
Supporting lecturer	Prof. Dr. Erman, M.Pd. Ahmad Qosyim, S.Si., M.Pd. Ernita Vika Aulia, S.Pd., M.Pd.

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	Explains the development of knowledge, science and philosophy through the study of ontology, epistemology and axiology	1. Explain the rational concept of deductive logic and its problems in the development of science 2. Explain the inductive concept and its problems in the development of science 3. Students can explain the concept of falsification and its problems in the development of science 4. Students can explain the concept of paradigm revolution in the development of science 5. Students can explain the concept of the scientific method and apply it in the context of science development	**Criteria:** 4: the description is correct 3: the description is generally correct but there is one aspect where the explanation is wrong 2: Half the description is correct 1: all the description is incorrect	Lectures and Q&A discussions 2 X 50			0%
2	Explain the development of the science philosophy that underlies the development of science	Briefly describe the stages of development of IPA	**Criteria:** 1.4: Describe science products from at least 3 philosophers accompanied by appropriate responses 2.3: Describe natural science products from at least 2 philosophers but with appropriate responses 3.2: Describe the science products of 2 philosophers correctly but there are 1 or more responses that are incorrect 4.1: Not describing the IPA product correctly	Make papers and discussions 2 X 50			0%
3	Explain the role of philosophy in developing science education activities/policies based on educational situations	1. Explain the role of philosophy in the development of educational activities/policies 2. Analyze educational activities/policies to determine the philosophical schools involved 3. Determine philosophical views that are suitable for the educational situation in Indonesia	**Criteria:** 4: describe science products from at least 3 philosophers accompanied by correct responses 3: describe science products from at least 2 philosophers but with correct responses 2: Describe science products from 2 philosophers correctly but there are 1 or more incorrect responses 1: Does not properly describe the IPA product	2 X 50 assignments and presentations			0%
4	Explain the role of philosophy in developing science education activities/policies based on educational situations	1. Explain the role of philosophy in the development of educational activities/policies 2. Analyze educational activities/policies to determine the philosophical schools involved 3. Determine philosophical views that are suitable for the educational situation in Indonesia	**Criteria:** 4: describe science products from at least 3 philosophers accompanied by correct responses 3: describe science products from at least 2 philosophers but with correct responses 2: Describe science products from 2 philosophers correctly but there are 1 or more incorrect responses 1: Does not properly describe the IPA product	2 X 50 assignments and presentations			0%

5	Explain the role of philosophy in developing science education activities/policies based on educational situations	1. Explain the role of philosophy in the development of educational activities/policies 2. Analyze educational activities/policies to determine the philosophical schools involved 3. Determine philosophical views that are suitable for the educational situation in Indonesia	**Criteria:** 4: describe science products from at least 3 philosophers accompanied by correct responses 3: describe science products from at least 2 philosophers but with correct responses 2: Describe science products from 2 philosophers correctly but there are 1 or more incorrect responses 1: Does not properly describe the IPA product	2 X 50 assignments and presentations			0%
6	deductive logic, inductive, falsification, revolution and scientific method	1. Explain the rational concept of deductive logic and its problems in the development of science 2. Explain the inductive concept and its problems in the development of science 3. Students can explain the concept of falsification and its problems in the development of science 4. Students can explain the concept of scientific revolution in the development of science 5. Students can explain the concept of the scientific method and apply it in the context of science development	**Criteria:** 4: explains all methods of thinking/discovery in science with a correct description of the problem 3: explains all methods of thinking/discovering in science but there is 1 description of the problem incorrectly 2: Only explains half of the methods of thinking/discovery in science with a description of the problem correctly 1: Description does not Correct	Questions and answers and discussion 2 X 50			0%
7	deductive logic, inductive, falsification, revolution and scientific method	1. Explain the rational concept of deductive logic and its problems in the development of science 2. Explain the inductive concept and its problems in the development of science 3. Students can explain the concept of falsification and its problems in the development of science 4. Students can explain the concept of scientific revolution in the development of science 5. Students can explain the concept of the scientific method and apply it in the context of science development	**Criteria:** 4: explains all methods of thinking/discovery in science with a correct description of the problem 3: explains all methods of thinking/discovering in science but there is 1 description of the problem incorrectly 2: Only explains half of the methods of thinking/discovery in science with a description of the problem correctly 1: Description does not Correct	Questions and answers and discussion 2 X 50			0%
8	All final abilities for pert 1-7	All indicators for pert. 1-7	**Criteria:** all test assessment criteria for pert 1-7	UTS 2 X 50			0%
9	Explains the views of realism and antirealism, as well as the principle of undertermination in science education	1. Explain the views of realism and antirealism regarding the nature of science objects 2. Explain the differences between realism and antirealism and their implementation in the development of science 3. Explain the principle of underdetermination, its implications for science	**Criteria:** 4: the description is correct 3: the description is generally correct but there is one aspect where the explanation is wrong 2: Half the description is correct 1: all the description is incorrect	Questions and answers and discussion 2 X 50			0%

10	Explains the views of realism and antirealism, as well as the principle of undertermination in science education	1. Explain the views of realism and antirealism regarding the nature of science objects 2. Explain the differences between realism and antirealism and their implementation in the development of science 3. Explain the principle of underdetermination, its implications for science	**Criteria:** 4: analysis is correct and determines the school of philosophy correctly 3: analysis is correct but there is still one aspect of the school which is not properly explained 2: analysis is correct but more than 2 aspects are not explained correctly 1: analysis is not correct	Questions and answers and discussion 2 X 50			0%
11	Explains the views of realism and antirealism, as well as the principle of undertermination in science education	1. Explain the views of realism and antirealism regarding the nature of science objects 2. Explain the differences between realism and antirealism and their implementation in the development of science 3. Explain the principle of underdetermination, its implications for science	**Criteria:** 4: the description is correct 3: the description is generally correct but there is one aspect where the explanation is wrong 2: Half the description is correct 1: all the description is incorrect	Questions and answers and discussion 2 X 50			0%
12	Critically analyze the implementation and role of several philosophical views in science education to support one's professional duties as a science teacher	1. Explain the role of philosophy in developing educational policy 2. Analyze educational policy activities to determine philosophical schools 3. Determine the philosophical view of the educational situation in Indonesia	**Criteria:** 4: analysis is correct and determines the school of philosophy correctly 3: analysis is correct but there is still one aspect of the school which is not properly explained 2: analysis is correct but more than 2 aspects are not explained correctly 1: analysis is not correct	Assignment (product) 2 X 50			0%
13	Critically analyze the implementation and role of several philosophical views in science education to support one's professional duties as a science teacher	1. Explain the role of philosophy in developing educational policy 2. Analyze educational policy activities to determine philosophical schools 3. Determine the philosophical view of the educational situation in Indonesia	**Criteria:** 4: analysis is correct and determines the school of philosophy correctly 3: analysis is correct but there is still one aspect of the school which is not properly explained 2: analysis is correct but more than 2 aspects are not explained correctly 1: analysis is not correct	Assignment (product) 2 X 50			0%
14	Critically analyze the implementation and role of several philosophical views in science education to support one's professional duties as a science teacher	1. Explain the role of philosophy in developing educational policy 2. Analyze educational policy activities to determine philosophical schools 3. Determine the philosophical view of the educational situation in Indonesia	**Criteria:** 4: analysis is correct and determines the school of philosophy correctly 3: analysis is correct but there is still one aspect of the school which is not properly explained 2: analysis is correct but more than 2 aspects are not explained correctly 1: analysis is not correct	Assignment (product) 2 X 50			0%
15	Critically analyze the implementation and role of several philosophical views in science education to support one's professional duties as a science teacher	1. Explain the role of philosophy in developing educational policy 2. Analyze educational policy activities to determine philosophical schools 3. Determine the philosophical view of the educational situation in Indonesia	**Criteria:** 4: analysis is correct and determines the school of philosophy correctly 3: analysis is correct but there is still one aspect of the school which is not properly explained 2: analysis is correct but more than 2 aspects are not explained correctly 1: analysis is not correct	Assignment (product) 2 X 50			0%

16	Critically analyze the implementation and role of several philosophical views in science education to support one's professional duties as a science teacher	1. Explain the role of philosophy in developing educational policy 2. Analyze educational policy activities to determine philosophical schools 3. Determine the philosophical view of the educational situation in Indonesia	**Criteria:** 4: analysis is correct and determines the school of philosophy correctly 3: analysis is correct but there is still one aspect of the school which is not properly explained 2: analysis is correct but more than 2 aspects are not explained correctly 1: analysis is not correct	Assignment (product) 2 X 50			0%

Evaluation Percentage Recap: Case Study

No	Evaluation	Percentage
		0%

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** abilities in the process and student learning outcomes are specific and measurable statements that identify the abilities 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.