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

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
Philosophy of Science	8420302060		T=2	P=0	ECTS=3.18	4	July 17, 2024

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
	.....	.....	Mita Anggaryani, M.Pd., Ph.D.

Learning model	**Case Studies**
Program Learning Outcomes (PLO)	**PLO study program which 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	This Philosophy of Science course has four main parts, namely: Humans as thinking creatures; Scope of philosophy of science; Means of scientific thinking, and science; and the nature and use of knowledge. The first part discusses the advantages of humans with reason so that they have a curious nature and the ability to think that gives birth to knowledge. The second part discusses science as a philosophical study, the origins of science and the history of the development of science as well as the relationship between science and philosophy. The third part discusses the basics of knowledge which include reasoning, logic, as a way to find truth, criteria for truth, sources of knowledge and truth; the basics of science which include the object of knowledge study (ontology) as well as the interpretation of the nature of object reality, the laws of causality and regularity. The fourth section discusses the tools of scientific thinking which include language, mathematics and statistics, the role of mathematics in logic and the development of science, apart from that it also discusses aspects of logic, namely the role of symbols, systems and scientific theories, scientific explanations and finally it discusses the nature and use of science. . The lecture strategies used in this lecture are lecture methods, question and answer, discussion, assignments and presentations.
References	**Main :**
	1. 1. Kuhn, T., S., 2000. The Structure of Scientific Revolutions, Peran Paradigma dalam Revolusi Sains . Bandung: Remaja Rosdakarya. 2. Bakhtiar, A., 2006. Filsafat Ilmu . Jakarta: Raja Grafindo Persada. Campbell, N., 1953. What is Science ? New York: Dover Publications. 3. Roberts, R., M., 2004. Serendipity, Penemuan-penemuan Bidang Sains yang Tidak Disengaja . Bandung: Pakar Raya. 4. Kant, Immanuel, Metaphysical Foundations of Natural Science (Cambridge: Cambridge U. Press, 2004; ISBN-10:0521544750) 5 Hegel, G. W. F., Philosophy of Nature (Oxford: Oxford U. Press, 2004; ISBN: 0199272670) 6. https://archive.org/details/LectureCourseInPhilosophyOfScience
	Supporters:
Supporting lecturer	Dra. Suliyanah, M.Si. Dr. Dwikoranto, M.Pd. Setyo Admoko, S.Pd., M.Pd. Prof. Nadi Suprapto, S.Pd., M.Pd., Ph.D. Utama Alan Deta, S.Pd., M.Pd., M.Si.

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	Able to process information effectively in solving science-physics problems and adapting to situations faced through a science-physics philosophical approach.	1. Able to explain the relationship between humans, knowledge, knowledge, philosophy, technology and religion.2. Able to explain humans as thinking creatures and the advantages of humans compared to other creatures in their intelligence, curiosity and thinking.	**Criteria:** Words, methods and expressions, media and use of discussion in presentations. Weight 30%	Lectures, discussions and assignments 2 X 50			0%
2	Able to process information effectively in solving science-physics problems and adapting to situations faced through a science-physics philosophical approach.	1. Able to explain the relationship between humans, knowledge, knowledge, philosophy, technology and religion.2. Able to explain humans as thinking creatures and the advantages of humans compared to other creatures in their intelligence, curiosity and thinking.	**Criteria:** Words, methods and expressions, media and use of discussion in presentations. Weight 30%	Lectures, discussions and assignments 2 X 50			0%
3	Able to work together effectively in solving science-physics problems and adapting to the situations faced through a science-physics philosophical approach.	Able to make written and oral reports on one of the science and philosophy topics.	**Criteria:** Words, methods and expressions, media and use of discussion in presentations. Weight 30%	Presentation 2 X 50			0%
4	Able to process information effectively in solving science-physics problems and adapting to situations faced through a science-physics philosophical approach	1. Identifying science as an object of philosophical study and understanding the philosophy of science.2. Explain the history of the development of science from the Greek era and the Islamic era,	**Criteria:** Interview results and assessment of group work documents. Weight 30%	Lectures, discussions and assignments 2 X 50			0%
5	Able to process information effectively in solving science-physics problems and adapting to situations faced through a science-physics philosophical approach	1. Identifying science as an object of philosophical study and understanding the philosophy of science.2. Explain the history of the development of science from the Greek era and the Islamic era,	**Criteria:** Interview results and assessment of group work documents. Weight 30%	Lectures, discussions and assignments 2 X 50			0%

6	1. Able to communicate effectively in solving science-physics problems and adapting to the situations faced through a science-physics philosophical approach.2. Able to process information effectively in solving science-physics problems and adapting to situations faced through a science-physics philosophical approach.	1. Able to explain the renaissance and modern.2. Explain the progress of contemporary science.	**Criteria:** Interview results and assessment of group work documents. Weight 30%	1. Presentation2. Lectures, discussions and assignments 2 X 50			0%
7	1. Able to communicate effectively in solving science-physics problems and adapting to the situations faced through a science-physics philosophical approach.2. Able to process information effectively in solving science-physics problems and adapting to situations faced through a science-physics philosophical approach.	1. Able to explain the renaissance and modern.2. Explain the progress of contemporary science.	**Criteria:** Interview results and assessment of group work documents. Weight 30%	1. Presentation2. Lectures, discussions and assignments 2 X 50			0%
8	Understand all the material that has been taught from the 1st to the 7th meeting.	Students can solve the problems given in the mid-semester exam session correctly.	**Criteria:** Written test results and observations as well as paper documents. Weight, 30%	Midterm exam 2 X 50			0%
9	Able to communicate effectively in solving science-physics problems and adapting to situations faced through a science-physics philosophical approach.	Explains the basics of knowledge which are composed of: reasoning, logic, sources of knowledge and criteria of truth.	**Criteria:** Interview results and assessment of group work documents. Weight 30%	Presentation 2 X 50			0%
10	Able to process information effectively in solving science-physics problems and adapting to situations faced through a science-physics philosophical approach.	1. Explain the basics of science consisting of: Introduction to Ontology, Epistemology and Axiology 2. Analyzing Ontology: metaphysics, assumptions, opportunities, some assumptions in science, the limits of scientific exploration.	**Criteria:** Interview results and assessment of group work documents.	Lectures, discussions and assignments 2 X 50			0%

11	Able to process information effectively in solving science-physics problems and adapting to situations faced through a science-physics philosophical approach.	1. Explain the basics of science consisting of: Introduction to Ontology, Epistemology and Axiology 2. Analyzing Ontology: metaphysics, assumptions, opportunities, some assumptions in science, the limits of scientific exploration.	**Criteria:** Interview results and assessment of group work documents.	Lectures, discussions and assignments 2 X 50			0%
12	Able to communicate effectively in solving science-physics problems and adapting to situations faced through a science-physics philosophical approach.	Explains the epistemology of knowledge, scientific methods and the structure of scientific knowledge	**Criteria:** Results of interviews and documents resulting from extracting information and interpreting and synthesizing natural science philosophy information.	Presentation 2 X 50			0%
13	Able to process information effectively in solving science-physics problems and adapting to situations faced through a science-physics philosophical approach.	1. Explain the axiology of science and morals (nuclear, etc.) 2. Identifying scientific concept methods, scientific explanations, and science.	**Criteria:** Written test results and observations as well as paper documents	Lectures, discussions and assignments 2 X 50			0%
14	Able to process information effectively in solving science-physics problems and adapting to situations faced through a science-physics philosophical approach.	1. Explain the axiology of science and morals (nuclear, etc.) 2. Identifying scientific concept methods, scientific explanations, and science.	**Criteria:** Written test results and observations as well as paper documents	Lectures, discussions and assignments 2 X 50			0%
15	Able to think at a high level (complex) effectively in solving science-physics problems and adapting to situations faced through a science-physics philosophical approach.	Able to determine the nature and usefulness of knowledge	**Criteria:** Written test results and observations as well as paper documents.	Presentation 2 X 50			0%
16							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.