



Universitas Negeri Surabaya
Faculty of Mathematics and Natural Sciences
Science Education Doctoral Study Program

Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
Philosophy of Science, and Science Technology and Society	8400102005	Compulsory Study Program Subjects	T=2	P=0	ECTS=5.04	1	June 20, 2022
AUTHORIZATION		SP Developer	Course Cluster Coordinator			Study Program Coordinator	
		Prof. Dr. Suyono, M.Pd.	Prof. Dr. Suyono, M.Pd.			Prof. Dr. Suyatno, M.Si.	

Learning model	Case Studies
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Program Learning Outcomes (PLO)	PLO study program which is charged to the course								
PLO-8	2. Able to prepare scientific arguments and solutions based on a critical view of facts, concepts, principles or theories that can be justified scientifically and academically, and communicate them through scientific publications in reputable international journals								
Program Objectives (PO)									
PO - 1	Develop knowledge to answer three scientific questions (ontology, epistemology, and axiology) in natural science (PA) so as to obtain a comprehensive understanding of the three scientific components (scientific products, scientific methods, and scientific attitudes) and their implementation in religious life.								
PO - 2	Changing the existing thinking paradigm to help solve in depth (through an inter or multidisciplinary approach) every problem faced in everyday life, especially problems related to science, technology and/or art.								
PO - 3	Manage and develop research based on correct and comprehensive reasoning, and utilize the tools of science (language, logic, mathematics and statistics) in obtaining scientific understanding (epistemology) with the ultimate target of wisdom or the benefit of humanity (axiological values).								
PLO-PO Matrix									
	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>P.O</td> <td>PLO-8</td> </tr> <tr> <td>PO-1</td> <td></td> </tr> <tr> <td>PO-2</td> <td></td> </tr> <tr> <td>PO-3</td> <td></td> </tr> </table>	P.O	PLO-8	PO-1		PO-2		PO-3	
P.O	PLO-8								
PO-1									
PO-2									
PO-3									

PO Matrix at the end of each learning stage (Sub-PO)																																																																																					
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Short Course Description	This course deepens understanding of general approaches to the philosophy of science, conceptualization and scientific methodology, as well as deeper and broader issues involving science, technology and society. In addition, this course is designed to provide an in-depth understanding of the ontology, epistemology and axiology of science, the characteristics and nature of science as a vehicle for broadening the vision of doctoral candidates so that it can trigger the ability to think reflectively and think critically in developing and applying science and science education. and its relationship with technology and society.
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References	<p>Main :</p> <ol style="list-style-type: none"> 1. Thomas J. Hickey, 2011, Introduction to philosophy of science. NewYork: Springer 2. Craigh Dilworth, 2006, The metaphysics of science: Boston studies in the philosophy of science, Netherland: Springer 3. Cornel M. Hamm, 2005, Philosophical 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. Herron, J. Dudley; Cantu, Luis L.; Ward, Richard; and Srinivasan, Venu. (1977). Problems Associated with Concept Analysis. Science Education 61 (2): 185-199. John Wiley & Sons, Inc 8. Tafsir, A. (2009). Filsafat Ilmu. Bandung: PT Remaja Rosda Karya. 9. Suriasumantri, J.S., 2013. Filsafat Ilmu; Sebuah Pengantar Populer, Jakarta: Pustaka Sinar Harapan, 2013. 10. Anderson, Lorin W. & Krathwohl, David R. 2001. A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives. Abridge Edition. New York: Longman, Inc.
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Supporters:							
1. Nadi Suprpto, 2021, Pelatihan Pembuatan Artikel Ilmiah Berbasis Literatur Review Secara Daring Bagi Mahasiswa Jurusan Fisika FMIPA Universitas Negeri Surabaya (Solusi bagi Mahasiswa Program Skripsi di masa Pandemi Covid 19), dalam Laporan Penelitian dan Pengabdian Masyarakat.							
Supporting lecturer		Prof. Dr. Suyono, M.Pd. Dr. Zainul Arifin Imam Supardi, 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	Mastering philosophical/philosophical ways of thinking as a basis for the development of science which includes: the final target of philosophical studies, thinking about thinking so that it is comprehensive (deep & broad), and three schools of thought (rationalism, empiricism, and pragmatism)	<ol style="list-style-type: none"> 1.Presents examples and non-examples of wisdom as the ultimate target of philosophical thinking in the field of science 2.Presents examples of ratification of Rene Descartes and Socrates' advice to achieve comprehensiveness in the study of science. 3.Produce short writing examples of science concept studies based on three scientific questions 	Criteria: Based on the assessment rubric that has been created by the teaching lecturer Form of Assessment : Participatory Activities	Lectures and literacy assignments about the rift between philosophy, science and technology (Information literacy assignments) 2 x 50 minutes		Material: 1. Einstein's letter to President Roosevelt [Ref: web]. References: Material: 2. Rene Descartes' philosophical advice Literature: Material: 3. Socrates' philosophical advice. References: Material: 4. Three scientific questions (ontology, epistemology, and axiology) [Ref 8] References: <i>Tafsir, A. (2009). Science phylosophy. Bandung: PT Teen Rosda Karya.</i>	5%

2	Mastering three scientific components (scientific product, scientific method, and scientific attitude) and tools of science.	<p>1. Produce a short narrative about the implementation of the scientific method in science learning.</p> <p>2. Produce a short narrative about the implementation of a scientific attitude in science learning</p>	<p>Criteria: Based on the assessment rubric that has been created by the teaching lecturer</p> <p>Form of Assessment : Participatory Activities, Portfolio Assessment</p>		<p>Assignments and PPT Presentations (Information Literacy Assignments) 2 x 50 minutes</p>	<p>Material: Reference Nos. 1-3 and 7</p> <p>Bibliography: <i>Thomas J. Hickey, 2011, Introduction to philosophy of science. New York: Springer</i></p> <hr/> <p>Material: Reference Nos. 1-3 and 7</p> <p>Bibliography: <i>Cornel M. Hamm, 2005, Philosophical Issues in Education: An introduction, London: Routledge</i></p> <hr/> <p>Material: Reference Nos. 1-3 and 7</p> <p>Bibliography: <i>Herron, J. Dudley; Cantu, Luis L.; Ward, Richard; and Srinivasan, Venu. (1977). Problems Associated with Concept Analysis. Science Education 61 (2): 185-199. John Wiley & Sons, Inc</i></p>	5%
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3	Mastering three scientific components (scientific product, scientific method, and scientific attitude) and tools of science.	Produce presentation materials to explain the hierarchical relationship between scientific products (facts, concepts, principles, laws and theories).	<p>Criteria: Based on the assessment rubric that has been created by the teaching lecturer</p> <p>Form of Assessment : Participatory Activities, Portfolio Assessment</p>	Assignment and presentation of project results. (PjBL_01.1) 2 x 50 minutes		<p>Material: Reference Nos. 1-3 and 7</p> <p>Bibliography: <i>Thomas J. Hickey, 2011, Introduction to philosophy of science. New York: Springer</i></p> <hr/> <p>Material: Reference Nos. 1-3 and 7</p> <p>Bibliography: <i>Craigh Dilworth, 2006, The metaphysics of science: Boston studies in the philosophy of science, Netherlands: Springer</i></p> <hr/> <p>Material: Reference Nos. 1-3 and 7</p> <p>Bibliography: <i>Cornel M. Hamm, 2005, Philosophical Issues in Education: An introduction, London: Routledge</i></p> <hr/> <p>Material: Reference Nos. 1-3 and 7</p> <p>Bibliography: <i>Herron, J. Dudley; Cantu, Luis L.; Ward, Richard; and Srinivasan, Venu. (1977). Problems Associated with Concept Analysis. Science Education 61 (2): 185-199. John Wiley & Sons, Inc</i></p>	5%
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4	Able to analyze facts, concepts, principles, laws and theories on science content selected and determined as material for developing a planned dissertation literature review	Presenting the results of analysis of facts, concepts and principles in science content selected and determined as material for developing the planned dissertation literature review	<p>Criteria: Based on the assessment rubric that has been created by the teaching lecturer</p> <p>Form of Assessment : Participatory Activities</p>	Assignment and presentation of project results. (PjBL_01.2) 2 x 50 minutes		<p>Material: References No. 1-5 and 7</p> <p>References: Thomas J. Hickey, 2011, <i>Introduction to philosophy of science</i>. New York: Springer</p> <hr/> <p>Material: Reference Nos. 1-5 and 7</p> <p>Bibliography: Craig Dilworth, 2006, <i>The metaphysics of science: Boston studies in the philosophy of science</i>, Netherlands: Springer</p> <hr/> <p>Material: Reference Nos. 1-5 and 7</p> <p>Bibliography: Cornel M. Hamm, 2005, <i>Philosophical Issues in Education: An introduction</i>, London: Routledge</p> <hr/> <p>Material: Reference Nos. 1-5 and 7</p> <p>Bibliography: James Ladyman, 2002, <i>Understanding philosophy of science</i>, London and New York: Roudledge</p> <hr/> <p>Material: Reference Nos. 1-5 and 7</p> <p>Bibliography: Anna Poedjiadi, 2001., <i>Philosophy of Education</i>, Bandung</p> <hr/> <p>Material: Reference Nos. 1-5 and 7</p> <p>Bibliography: Herron, J. Dudley; Cantu, Luis L.; Ward, Richard; and Srinivasan, Venu. (1977). <i>Problems Associated with Concept Analysis</i>. <i>Science Education</i> 61 (2): 185-199. John Wiley & Sons, Inc</p>	5%
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5	Able to analyze facts, concepts, principles, laws and theories on science content selected and determined as material for developing a planned dissertation literature review.	Presenting the results of legal and theoretical analysis of science content selected and determined as material for developing the planned dissertation literature review.	<p>Criteria: Based on the assessment rubric that has been created by the teaching lecturer</p> <p>Form of Assessment : Participatory Activities, Portfolio Assessment</p>	Assignment and presentation of project results. (PjBL_01.3) 2 x 50 minutes		<p>Material: References No. 1-5 and 7</p> <p>References: Thomas J. Hickey, 2011, <i>Introduction to philosophy of science</i>. New York: Springer</p> <hr/> <p>Material: Reference Nos. 1-5 and 7</p> <p>Bibliography: Craig Dilworth, 2006, <i>The metaphysics of science</i>: Boston studies in the philosophy of science, Netherlands: Springer</p> <hr/> <p>Material: Reference Nos. 1-5 and 7</p> <p>Bibliography: Cornel M. Hamm, 2005, <i>Philosophical Issues in Education: An introduction</i>, London: Routledge</p> <hr/> <p>Material: Reference Nos. 1-5 and 7</p> <p>Bibliography: James Ladyman, 2002, <i>Understanding philosophy of science</i>, London and New York: Roudledge</p> <hr/> <p>Material: Reference Nos. 1-5 and 7</p> <p>Bibliography: Anna Poedjiadi, 2001., <i>Philosophy of Education</i>, Bandung</p> <hr/> <p>Material: Reference Nos. 1-5 and 7</p> <p>Bibliography: Herron, J. Dudley; Cantu, Luis L.; Ward, Richard; and Srinivasan, Venu. (1977). <i>Problems Associated with Concept Analysis</i>. Science Education 61 (2): 185-199. John Wiley & Sons, Inc</p>	5%
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6	Able to plan learning (scenarios & supporting tools) according to certain competencies by utilizing the results of analysis of facts, concepts, principles, laws and theories on science content selected and determined in the context of preparing a dissertation.	Presents a conception of a science learning plan characterized by an inductive or deductive approach according to the hierarchy of relationships between scientific products.	Criteria: Based on the assessment rubric that has been created by the teaching lecturer Form of Assessment : Participatory Activities, Portfolio Assessment	Assignment and presentation of project results. (PjBL_02.1) 2 x 50 minutes		Material: Reference No. 10 Bibliography: Anderson, Lorin W. & Krathwohl, David R. 2001. <i>A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives. Abridge Edition. New York: Longman, Inc.</i>	5%
7	Able to plan learning (scenarios & supporting tools) according to certain competencies by utilizing the results of analysis of facts, concepts, principles, laws and theories on science content selected and determined in the context of preparing a dissertation	Present a science learning plan that is defined and written based on the results of competency analysis and content/material analysis.	Criteria: Based on the assessment rubric that has been created by the teaching lecturer Form of Assessment : Participatory Activities, Portfolio Assessment		Assignment and presentation of project results. (PjBL_02.2) 2 x 50 minutes	Material: Reference No. 10 Bibliography: Anderson, Lorin W. & Krathwohl, David R. 2001. <i>A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives. Abridge Edition. New York: Longman, Inc.</i>	5%
8	Final Capabilities from TM-1 to TM-7	TM-1 indicators up to TM-7 indicators	Criteria: Based on the assessment rubric that has been created by the teaching lecturer Form of Assessment : Project Results Assessment / Product Assessment, Portfolio Assessment	Written test or giving substitute assignments for UTS 2 x 50 minutes		Material: Learning topics from TM-1 to TM-7 Library:	5%

9	Able to evaluate science learning plans based on educational messages contained in the scientific method and scientific attitude.	Presenting the results of evaluation of learning plans that have been defined and written based on educational messages contained in the scientific method.	<p>Criteria: Based on the assessment rubric that has been created by the teaching lecturer</p> <p>Form of Assessment : Participatory Activities, Portfolio Assessment</p>	Assignments, and presentation of project results. (PjBL_02.3) 2 x 50 minutes		<p>Material: References No. 8, 9, and 10</p> <p>References: <i>Tafsir, A. (2009). Science phylosophy. Bandung: PT Teen Rosda Karya.</i></p> <hr/> <p>Material: Reference Nos. 8, 9, and 10</p> <p>Bibliography: <i>Suriasumantri, JS, 2013. Philosophy of Science; A Popular Introduction, Jakarta: Pustaka Sinar Harapan, 2013.</i></p> <hr/> <p>Material: Reference Nos. 8, 9, and 10</p> <p>Bibliography: <i>Anderson, Lorin W. & Krathwohl, David R. 2001. A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives. Abridge Edition. New York: Longman, Inc.</i></p>	5%
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10	Able to evaluate science learning plans based on educational messages contained in the scientific method and scientific attitude.	Presenting the results of evaluation of learning plans that have been defined and written based on educational messages contained in the scientific method.	<p>Criteria: Based on the assessment rubric that has been created by the teaching lecturer</p> <p>Form of Assessment : Participatory Activities, Portfolio Assessment</p>		Assignments, and presentation of project results. (PjBL_02.4) 2 x 50 minutes	<p>Material: References No. 8, 9, and 10</p> <p>References: <i>Tafsir, A. (2009). Science phylosophy. Bandung: PT Teen Rosda Karya.</i></p> <hr/> <p>Material: Reference Nos. 8, 9, and 10</p> <p>Bibliography: <i>Suriasumantri, JS, 2013. Philosophy of Science; A Popular Introduction, Jakarta: Pustaka Sinar Harapan, 2013.</i></p> <hr/> <p>Material: Reference Nos. 8, 9, and 10</p> <p>Bibliography: <i>Anderson, Lorin W. & Krathwohl, David R. 2001. A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives. Abridge Edition. New York: Longman, Inc.</i></p>	7%
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11	Able to evaluate the thinking framework (KB) for science learning research as a paradigm for solving science learning problems, from the ontology dimension	Presenting the results of the evaluation of the thinking framework (KB) of science learning research as a paradigm for solving science learning problems, from the ontology dimension.	<p>Criteria: Based on the assessment rubric that has been created by the teaching lecturer</p> <p>Form of Assessment : Participatory Activities, Portfolio Assessment</p>	Assignments, and Presentation of evaluation results. (Case Method 01.1) 2 x 50 minutes		<p>Material: Reference No. 1-6, and 9</p> <p>References: <i>Thomas J. Hickey, 2011, Introduction to philosophy of science. New York: Springer</i></p> <hr/> <p>Material: Reference No. 1-6, and 9</p> <p>Bibliography: <i>Craigh Dilworth, 2006, The metaphysics of science: Boston studies in the philosophy of science, Netherland: Springer</i></p> <hr/> <p>Material: Reference No. 1-6, and 9</p> <p>Bibliography: <i>Cornel M. Hamm, 2005, Philosophical Issues in Education: An introduction, London: Routledge</i></p> <hr/> <p>Material: Reference No. 1-6, and 9</p> <p>Bibliography: <i>James Ladyman, 2002, Understanding philosophy of science, London and New York: Roudledge</i></p> <hr/> <p>Material: Reference No. 1-6, and 9</p> <p>Bibliography: <i>Anna Poedjjadi, 2001., Philosophy of Education, Bandung</i></p> <hr/> <p>Material: Reference No. 1-6, and 9</p> <p>Bibliography: <i>Wilburg Applebaum, 2005, The scientific revolution and the foundation of modern science, London: Greenwood Press</i></p> <hr/> <p>Material: Reference No. 1-6, and 9</p> <p>References: <i>Suriasumantri, JS, 2013. Philosophy of Science; A Popular Introduction, Jakarta: Pustaka Sinar Harapan, 2013.</i></p>	7%
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12	Able to evaluate the thinking framework (KB) for science learning research as a paradigm for solving science learning problems, from the epistemological dimension	Presents the results of evaluating the thinking framework (KB) for science learning research as a paradigm for solving science learning problems, from the epistemological dimension.	<p>Criteria: Based on the assessment rubric that has been created by the teaching lecturer</p> <p>Form of Assessment : Participatory Activities</p>		Assignments, and Presentation of evaluation results. (Case Method 01.2) 2 x 50 minutes	<p>Material: Reference No. 1-6, and 9</p> <p>References: <i>Thomas J. Hickey, 2011, Introduction to philosophy of science. New York: Springer</i></p> <hr/> <p>Material: Reference No. 1-6, and 9</p> <p>Bibliography: <i>Craigh Dilworth, 2006, The metaphysics of science: Boston studies in the philosophy of science, Netherland: Springer</i></p> <hr/> <p>Material: Reference No. 1-6, and 9</p> <p>Bibliography: <i>Cornel M. Hamm, 2005, Philosophical Issues in Education: An introduction, London: Routledge</i></p> <hr/> <p>Material: Reference No. 1-6, and 9</p> <p>Bibliography: <i>James Ladyman, 2002, Understanding philosophy of science, London and New York: Roudledge</i></p> <hr/> <p>Material: Reference No. 1-6, and 9</p> <p>Bibliography: <i>Anna Poedjjadi, 2001., Philosophy of Education, Bandung</i></p> <hr/> <p>Material: Reference No. 1-6, and 9</p> <p>Bibliography: <i>Wilburg Applebaum, 2005, The scientific revolution and the foundation of modern science, London: Greenwood Press</i></p> <hr/> <p>Material: Reference No. 1-6, and 9</p> <p>References: <i>Suriasumantri, JS, 2013. Philosophy of Science; A Popular Introduction, Jakarta: Pustaka Sinar Harapan, 2013.</i></p>	7%
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13	Able to evaluate the thinking framework (KB) for science learning research as a paradigm for solving science learning problems, from the axiological dimension	Presents the results of evaluating the thinking framework (KB) of science learning research as a paradigm for solving science learning problems, from the axiological dimension.	<p>Criteria: Based on the assessment rubric that has been created by the teaching lecturer</p> <p>Form of Assessment : Participatory Activities, Portfolio Assessment</p>		Assignments, and Presentation of evaluation results. (Case Method 01.3) 2 x 50 minutes	<p>Material: Reference No. 1-6, and 9</p> <p>References: <i>Thomas J. Hickey, 2011, Introduction to philosophy of science. New York: Springer</i></p> <hr/> <p>Material: Reference No. 1-6, and 9</p> <p>Bibliography: <i>Craigh Dilworth, 2006, The metaphysics of science: Boston studies in the philosophy of science, Netherland: Springer</i></p> <hr/> <p>Material: Reference No. 1-6, and 9</p> <p>Bibliography: <i>Cornel M. Hamm, 2005, Philosophical Issues in Education: An introduction, London: Routledge</i></p> <hr/> <p>Material: Reference No. 1-6, and 9</p> <p>Bibliography: <i>James Ladyman, 2002, Understanding philosophy of science, London and New York: Roudledge</i></p> <hr/> <p>Material: Reference No. 1-6, and 9</p> <p>Bibliography: <i>Anna Poedjjadi, 2001., Philosophy of Education, Bandung</i></p> <hr/> <p>Material: Reference No. 1-6, and 9</p> <p>Bibliography: <i>Wilburg Applebaum, 2005, The scientific revolution and the foundation of modern science, London: Greenwood Press</i></p> <hr/> <p>Material: Reference No. 1-6, and 9</p> <p>References: <i>Suriasumantri, JS, 2013. Philosophy of Science; A Popular Introduction, Jakarta: Pustaka Sinar Harapan, 2013.</i></p>	7%
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14	Able to develop a framework for thinking in order to solve science learning problems.	Produce an initial draft of a framework for thinking in order to solve science learning problems.	<p>Criteria: Based on the assessment rubric that has been created by the teaching lecturer</p> <p>Form of Assessment : Participatory Activities, Portfolio Assessment</p>	Assignments, and presentation of project results. (PjBL 03.1) 2 x 50 minutes		<p>Material: Reference No. 8, 9, and 10 References: <i>Tafsir, A. (2009). Science phylosophy. Bandung: PT Teen Rosda Karya.</i></p> <hr/> <p>Material: Reference No. 8, 9, and 10 References: <i>Suriasumantri, JS, 2013. Philosophy of Science; A Popular Introduction, Jakarta: Pustaka Sinar Harapan, 2013.</i></p> <hr/> <p>Material: Reference No. 8, 9, and 10 Bibliography: <i>Anderson, Lorin W. & Krathwohl, David R. 2001. A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives. Abridge Edition. New York: Longman, Inc.</i></p>	7%
15	Able to develop a framework for thinking in order to solve science learning problems.	Produce a final draft of a framework for thinking in order to solve science learning problems which is ready to be submitted to a scientific journal.	<p>Criteria: Based on the assessment rubric that has been created by the teaching lecturer</p> <p>Form of Assessment : Participatory Activities, Portfolio Assessment</p>	Assignments, and presentation of project results. (PjBL 03.1) 2 x 50 minutes		<p>Material: Reference No. 8, 9, 10 and supporting literature (Suprpto, 2021) Reference: <i>Tafsir, A. (2009). Science phylosophy. Bandung: PT Teen Rosda Karya.</i></p> <hr/> <p>Material: Reference No. 8, 9, 10 and supporting literature (Suprpto, 2021) References: <i>Suriasumantri, JS, 2013. Philosophy of Science; A Popular Introduction, Jakarta: Pustaka Sinar Harapan, 2013.</i></p> <hr/> <p>Material: Reference No. 8, 9, 10 and supporting literature (Suprpto, 2021) References: <i>Anderson, Lorin W. & Krathwohl, David R.</i></p>	10%

						<p>2001. A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives. Abridge Edition. New York: Longman, Inc.</p> <p>Material: Reference No. 8, 9, 10 and supporting literature (Suprpto, 2021)</p> <p>Reference: Nadi Suprpto, 2021, Training in Writing Scientific Articles Based on Online Review Literature for Students of the Physics Department, FMIPA State University of Surabaya (Solution for Thesis Program Students during the Covid 19 Pandemic), in the Research and Community Service Report.</p>	
16	Final Capabilities from TM-9 to TM-15	TM-9 indicators up to TM-15 indicators	<p>Criteria: Based on the assessment rubric that has been created by the teaching lecturer</p> <p>Form of Assessment : Project Results Assessment / Product Assessment, Portfolio Assessment</p>	Written test or giving substitute assignments for UAS 2 x 50 minutes		<p>Material: Learning topics from TM-9 to TM-15</p> <p>Library:</p>	10%

Evaluation Percentage Recap: Case Study

No	Evaluation	Percentage
1.	Participatory Activities	51%
2.	Project Results Assessment / Product Assessment	7.5%
3.	Portfolio Assessment	41.5%
		100%

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** 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.
- 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.