



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										
Earth Science	8420102136		T=2	P=0	ECTS=3.18	7	July 19, 2024										
AUTHORIZATION	SP Developer		Course Cluster Coordinator			Study Program Coordinator											
			Prof. Dr. Erman, M.Pd.											
Learning model	Project Based Learning																
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	This course discusses ancient phenomena, especially those related to the earth (rocks, soil, minerals and water), climate/weather, hydrodynamics of waters (seas, rivers and lakes), structure and characteristics of mountains, and characteristics of planets in the solar system. Also discussed are natural disasters such as: tectonic earthquakes, tsunamis, landslides, floods, etc. Lectures are carried out with modeling, presentations, discussions, projects and reflections.																
References	Main :																
	1. Mc Dowell, D.M., B.A. Connor. 1997. Hydraulic Behaviour of Estuaries. The Mac Millan Press, Ltd. 2. Steward, R.H.2001.Physical Oceanography. Lecture Note, OCN6-608. Department of Oceanography, Texas A & M. University. 3. Von Schwind, J.j. 1980. Geophysical Fluids Dynamic for Oceanographer. New York : Prentice Hall, Englewood Cliffs																
	Supporters:																
Supporting lecturer	Tutut Nurita, S.Pd., M.Pd. An Nuril Maulida Fauziah, 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	Able to utilize science and technology in the field of earth (rocks, soil, minerals and water), to situations faced in solving problems. Master theoretical concepts in the field of earth (rocks, soil, minerals and water), formulate them in solving problems procedurally. Able to take decisions based on information and data analysis and providing guidance in choosing alternative solutions. Responsible for informing the results of information and data analysis both orally and in writing.	Able to analyze the important role of earth components (rocks, soil, minerals and water) in human life.	Criteria: 1.4 points if you present the material, ask questions and provide input according to the material discussed 2.3 points if you ask questions and provide input according to the material discussed 3.2 points if delivering discussion material 4.1 point if you only participate in the discussion (passive)	Lectures, discussions and using the 2 X 50 cooperative method			0%
2	Able to utilize science and technology in the field of earth (rocks, soil, minerals and water), to situations faced in solving problems. Master theoretical concepts in the field of earth (rocks, soil, minerals and water), formulate them in solving problems procedurally. Able to take decisions based on information and data analysis and providing guidance in choosing alternative solutions. Responsible for informing the results of information and data analysis both orally and in writing.	Able to analyze the important role of earth components (rocks, soil, minerals and water) in human life.	Criteria: 1.4 points if you present the material, ask questions and provide input according to the material discussed 2.3 points if you ask questions and provide input according to the material discussed 3.2 points if delivering discussion material 4.1 point if you only participate in the discussion (passive)	Lectures, discussions and using the 2 X 50 cooperative method			0%
3	Able to utilize science and technology in the field of earth (rocks, soil, minerals and water), to situations faced in solving problems. Master theoretical concepts in the field of earth (rocks, soil, minerals and water), formulate them in solving problems procedurally. Able to take decisions based on information and data analysis and providing guidance in choosing alternative solutions. Responsible for informing the results of information and data analysis both orally and in writing.	Able to analyze the important role of earth components (rocks, soil, minerals and water) in human life.	Criteria: 1.4 points if you present the material, ask questions and provide input according to the material discussed 2.3 points if you ask questions and provide input according to the material discussed 3.2 points if delivering discussion material 4.1 point if you only participate in the discussion (passive)	Lectures, discussions and using the 2 X 50 cooperative method			0%

4	<p>Able to utilize science and technology in the fields of climate/weather, hydrodynamics of waters (seas, rivers and lakes), to situations faced in solving problems. Master the theoretical concepts of climate/weather, hydrodynamics of waters (seas, rivers and lakes) in depth and formulate them in solving problems procedurally. Able to make decisions based on analysis of information and data and provide guidance in choosing alternative solutions. Responsible for informing the results of information and data analysis both verbally and in writing.</p>	<p>Able to analyze the important role of climate/weather, hydrodynamics of waters (seas, rivers and lakes) in human life.</p>	<p>Criteria:</p> <p>1.4 points if you present the material, ask questions and provide input according to the material discussed</p> <p>2.3 points if you ask questions and provide input according to the material discussed</p> <p>3.2 points if delivering discussion material</p> <p>4.1 point if you only participate in the discussion (passive)</p>	<p>Lectures, discussions and using the 2 X 50 cooperative method</p>			0%
5	<p>Able to utilize science and technology in the fields of climate/weather, hydrodynamics of waters (seas, rivers and lakes), to situations faced in solving problems. Master the theoretical concepts of climate/weather, hydrodynamics of waters (seas, rivers and lakes) in depth and formulate them in solving problems procedurally. Able to make decisions based on analysis of information and data and provide guidance in choosing alternative solutions. Responsible for informing the results of information and data analysis both verbally and in writing.</p>	<p>Able to analyze the important role of climate/weather, hydrodynamics of waters (seas, rivers and lakes) in human life.</p>	<p>Criteria:</p> <p>1.4 points if you present the material, ask questions and provide input according to the material discussed</p> <p>2.3 points if you ask questions and provide input according to the material discussed</p> <p>3.2 points if delivering discussion material</p> <p>4.1 point if you only participate in the discussion (passive)</p>	<p>Lectures, discussions and using the 2 X 50 cooperative method</p>			0%

6	<p>Able to utilize science and technology in the fields of climate/weather, hydrodynamics of waters (seas, rivers and lakes), to situations faced in solving problems. Master the theoretical concepts of climate/weather, hydrodynamics of waters (seas, rivers and lakes) in depth and formulate them in solving problems procedurally. Able to make decisions based on analysis of information and data and provide guidance in choosing alternative solutions. Responsible for informing the results of information and data analysis both verbally and in writing.</p>	<p>Able to analyze the important role of climate/weather, hydrodynamics of waters (seas, rivers and lakes) in human life.</p>	<p>Criteria:</p> <p>1.4 points if you present the material, ask questions and provide input according to the material discussed</p> <p>2.3 points if you ask questions and provide input according to the material discussed</p> <p>3.2 points if delivering discussion material</p> <p>4.1 point if you only participate in the discussion (passive)</p>	<p>Lectures, discussions and using the 2 X 50 cooperative method</p>			0%
7	<p>Able to utilize science and technology in the fields of climate/weather, hydrodynamics of waters (seas, rivers and lakes), to situations faced in solving problems. Master the theoretical concepts of climate/weather, hydrodynamics of waters (seas, rivers and lakes) in depth and formulate them in solving problems procedurally. Able to make decisions based on analysis of information and data and provide guidance in choosing alternative solutions. Responsible for informing the results of information and data analysis both verbally and in writing.</p>	<p>Able to analyze the important role of climate/weather, hydrodynamics of waters (seas, rivers and lakes) in human life.</p>	<p>Criteria:</p> <p>1.4 points if you present the material, ask questions and provide input according to the material discussed</p> <p>2.3 points if you ask questions and provide input according to the material discussed</p> <p>3.2 points if delivering discussion material</p> <p>4.1 point if you only participate in the discussion (passive)</p>	<p>Lectures, discussions and using the 2 X 50 cooperative method</p>			0%

8	<p>Able to utilize science and technology in studying the relationship between the earth (rocks, soil, minerals and water), as well as climate/weather, water hydrodynamics (seas, rivers and lakes) faced in solving problems. Mastering theoretical concepts of the relationship between the earth (rocks, soil, minerals, and water), as well as climate/weather, hydrodynamics of waters (seas, rivers and lakes) in depth and formulating them in solving problems procedurally. Able to make decisions based on analysis of information and data and provide guidance in choosing alternative solutions. Responsible for informing results of information and data analysis both verbally and in writing</p>	<p>Analyzing the relationship between the earth (rocks, soil, minerals and water), as well as climate/weather, water hydrodynamics (seas, rivers and lakes) in human life.</p>	<p>Criteria:</p> <ol style="list-style-type: none"> 1. Score 4 if the answer meets the criteria for a correct answer with all components complete 2. Score 3 if the answer meets the criteria for a correct answer with 3 complete components 3. Score 2 if the answer meets the criteria for a correct answer with 2 complete components 4. Score 1 if the answer meets the criteria for a correct answer with 1 complete component 	<p>Watching videos (natural phenomena and the natural components involved in them) and cooperative methods, discussions. 2 X 50</p>		0%
9	<p>Able to utilize science and technology in studying the relationship between the earth (rocks, soil, minerals and water), as well as climate/weather, water hydrodynamics (seas, rivers and lakes) faced in solving problems. Mastering theoretical concepts of the relationship between the earth (rocks, soil, minerals, and water), as well as climate/weather, hydrodynamics of waters (seas, rivers and lakes) in depth and formulating them in solving problems procedurally. Able to make decisions based on analysis of information and data and provide guidance in choosing alternative solutions. Responsible for informing results of information and data analysis both verbally and in writing</p>	<p>Analyzing the relationship between the earth (rocks, soil, minerals and water), as well as climate/weather, water hydrodynamics (seas, rivers and lakes) in human life.</p>	<p>Criteria:</p> <ol style="list-style-type: none"> 1. 4 marks for delivering material, asking questions and giving input according to the material discussed. 3 marks for asking questions and giving input according to the material discussed 2. 2 points if you present discussion material 3. Score 1 if you only participate in the discussion (passive) 	<p>Watching videos (natural phenomena and the natural components involved in them) and cooperative methods, discussions. 2 X 50</p>		0%

10	<p>Able to utilize science and technology in studying the relationship between the earth (rocks, soil, minerals and water), as well as climate/weather, water hydrodynamics (seas, rivers and lakes) faced in solving problems. Mastering theoretical concepts of the relationship between the earth (rocks, soil, minerals, and water), as well as climate/weather, hydrodynamics of waters (seas, rivers and lakes) in depth and formulating them in solving problems procedurally. Able to make decisions based on analysis of information and data and provide guidance in choosing alternative solutions. Responsible for informing results of information and data analysis both verbally and in writing</p>	<p>Analyzing the relationship between the earth (rocks, soil, minerals and water), as well as climate/weather, water hydrodynamics (seas, rivers and lakes) in human life.</p>	<p>Criteria: 1.4 marks for delivering material, asking questions and giving input according to the material discussed. 3 marks for asking questions and giving input according to the material discussed 2.2 points if you present discussion material 3.Score 1 if you only participate in the discussion (passive)</p>	<p>Watching videos (natural phenomena and the natural components involved in them) and cooperative methods, discussions. 2 X 50</p>		0%
11	<p>Able to utilize science and technology in the field of mountain structure and characteristics and able to adapt to situations faced in solving problems. Master the theoretical concepts of mountain structure and characteristics in depth and formulate them in procedural problem solving. Able to make decisions based on analysis of information and data and provide guidance in choosing alternative solutions. Responsible for informing the results of information and data analysis both orally and in writing.</p>	<p>1.Analyze the structure and characteristics of mountains on earth. 2.Understand the structure and characteristics of mountains on earth.</p>	<p>Criteria: 1.4 points if you present the material, ask questions and provide input according to the material discussed 2.Score 3 if you ask questions and provide input according to the material discussed 3.2 points if you present discussion material 4.Score 1 if you only participate in the discussion (passive)</p>	<p>Lectures, discussions and cooperative methods. 2 X 50</p>		0%

12	<p>Able to utilize science and technology in the field of mountain structure and characteristics and able to adapt to situations faced in solving problems. Master the theoretical concepts of mountain structure and characteristics in depth and formulate them in procedural problem solving. Able to make decisions based on analysis of information and data and provide guidance in choosing alternative solutions. Responsible for informing the results of information and data analysis both orally and in writing.</p>	<ol style="list-style-type: none"> 1. Analyze the structure and characteristics of mountains on earth. 2. Understand the structure and characteristics of mountains on earth. 	<p>Criteria:</p> <ol style="list-style-type: none"> 1. 4 points if you present the material, ask questions and provide input according to the material discussed 2. Score 3 if you ask questions and provide input according to the material discussed 3. 2 points if you present discussion material 4. Score 1 if you only participate in the discussion (passive) 	<p>Lectures, discussions and cooperative methods. 2 X 50</p>			0%
13	<p>Able to utilize science and technology in natural disasters, tectonic earthquakes, tsunamis and able to adapt to situations faced in solving problems. Master theoretical concepts about natural disasters, tectonic earthquakes, tsunamis, in depth and formulate them in solving problems procedurally. Able to make decisions based on information analysis and data as well as providing guidance in selecting alternative solutions. Responsible for informing the results of information and data analysis both orally and in writing.</p>	<ol style="list-style-type: none"> 1. Analyzing the causes of natural disasters, tectonic earthquakes, tsunamis. 2. Analyzing disaster mitigation related to tectonic earthquakes, tsunamis. 3. Analyze how to overcome disasters related to tectonic earthquakes, tsunamis. 	<p>Criteria:</p> <ol style="list-style-type: none"> 1. 4 points if you present the material, ask questions and provide input according to the material discussed 2. Score 3 if you ask questions and provide input according to the material discussed 3. 2 points if you present discussion material 4. Score 1 if you only participate in the discussion (passive) 	<p>Making projects in the form of articles and posters, cooperatives, 2 X 50 discussions</p>			0%
14	<p>Able to utilize science and technology in natural disasters, tectonic earthquakes, tsunamis and able to adapt to situations faced in solving problems. Master theoretical concepts about natural disasters, tectonic earthquakes, tsunamis, in depth and formulate them in solving problems procedurally. Able to make decisions based on information analysis and data as well as providing guidance in selecting alternative solutions. Responsible for informing the results of information and data analysis both orally and in writing.</p>	<ol style="list-style-type: none"> 1. Analyzing the causes of natural disasters, tectonic earthquakes, tsunamis. 2. Analyzing disaster mitigation related to tectonic earthquakes, tsunamis. 3. Analyze how to overcome disasters related to tectonic earthquakes, tsunamis. 	<p>Criteria:</p> <ol style="list-style-type: none"> 1. 4 points if you present the material, ask questions and provide input according to the material discussed 2. Score 3 if you ask questions and provide input according to the material discussed 3. 2 points if you present discussion material 4. Score 1 if you only participate in the discussion (passive) 	<p>Making projects in the form of articles and posters, cooperatives, 2 X 50 discussions</p>			0%

15	Able to utilize science and technology in natural disasters, tectonic earthquakes, tsunamis and able to adapt to situations faced in solving problems. Master theoretical concepts about natural disasters, tectonic earthquakes, tsunamis, in depth and formulate them in solving problems procedurally. Able to make decisions based on information analysis and data as well as providing guidance in selecting alternative solutions. Responsible for informing the results of information and data analysis both orally and in writing.	1.Analyzing the causes of natural disasters, tectonic earthquakes, tsunamis. 2.Analyzing disaster mitigation related to tectonic earthquakes, tsunamis. 3.Analyze how to overcome disasters related to tectonic earthquakes, tsunamis.	Criteria: 1.4 points if you present the material, ask questions and provide input according to the material discussed 2.Score 3 if you ask questions and provide input according to the material discussed 3.2 points if you present discussion related to material 4.Score 1 if you only participate in the discussion (passive)	Making projects in the form of articles and posters, cooperatives, 2 X 50 discussions			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** 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.
- 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.