



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

Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight	SEMESTER	Compilation Date
Physiography	4520103053	Compulsory Study Program Subjects	T=3 P=0 ECTS=4.77	3	July 17, 2024
AUTHORIZATION	SP Developer		Course Cluster Coordinator	Study Program Coordinator	
	Prof. Tjipto Prastowo, Ph.D.		Prof. Tjipto Prastowo, Ph.D.	Prof. Dr. Munasir, S.Si., M.Si.	

Learning model	Project Based Learning
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Program Learning Outcomes (PLO)	PLO study program which is charged to the course																																																																																																																																					
	PLO-7	Communicate their ideas and/or research results in academic writing and speaking effectively.																																																																																																																																				
	PLO-12	Have the ability to improve their knowledge and be able to continue their studies to a higher level.																																																																																																																																				
	PLO-13	Demonstrate knowledge of Classical Physics and Modern Physics																																																																																																																																				
	Program Objectives (PO)																																																																																																																																					
	PO - 1	Realizing an independent, creative and honest character in carrying out lecture assignments, UTS and UAS Earth Physics.																																																																																																																																				
	PO - 2	Mastering a structured study of the role of the earth as a complex physical system in human life.																																																																																																																																				
	PO - 3	Mastering the dynamic aspects of interdependence between earth and humans.																																																																																																																																				
	PO - 4	Understanding various potential earth disasters including geological and hydro-meteorological disasters in Indonesia.																																																																																																																																				
	PO - 5	Implement an environmentally conscious and responsive attitude and be prepared for earth disasters.																																																																																																																																				
	PLO-PO Matrix																																																																																																																																					
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PO Matrix at the end of each learning stage (Sub-PO)																																																																																																																																						
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Short Course Description	Earth Physics contains the study of earth science with class discussion topics including understanding interactions between humans and nature; the role of the earth, oceans and atmosphere in human life; the impact of human activities on nature and the environment; several types of natural disasters that frequently occur in Indonesia and their management; Disaster awareness and preparedness as part of disaster mitigation education to reduce disaster risk.
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References	Main :
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1. Madlazim. 2016. Fisika Bumi . Surabaya: Unesa Press.
2. Poirier, J. P. 2006 . Introduction to the Physics of the Earth's Interior. Cambridge: Cambridge Uni Press.
3. Prastowo, T. 2012. Sains Kebumian . Unpublished work.
4. Robinson, A. 2002. Earth Shock . London, UK: Thames-Hudson Ltd.
5. Scarth, A. 2001. Savage Earth . London, UK: Harper-Collins Pub.

Supporters:

1. Beberapa file ppt dan gambar yang relevan dengan Fisika Bumi dari internet

Supporting lecturer

Prof. Dr. Madlazim, M.Si.
Arie Realita, M.Si.
Muhammad Nurul Fahmi, S.Si., 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 understand the influence of human activities on nature and the environment	Students can explain the influence of human activities on nature and the environment because an environmentally conscious and responsive attitude has been formed	Criteria: quantitative Form of Assessment : Participatory Activities	Contextual Learning Discussion Question and answer 3 x 50 minutes		Material: Planet Earth, Climate change, Impact of human activities on nature and the environment Reference: Poirier, JP 2006 . Introduction to the Physics of the Earth's Interior. Cambridge: Cambridge Union Press.	2%
2	Able to understand the important role of the earth's components (land, ocean, atmosphere and biosphere) in human life	Students can explain the important role of the earth's components (land, ocean, atmosphere and biosphere) in human life	Criteria: Assignment of short articles and scientific posters related to earth physics (earth disasters, disaster mitigation) Form of Assessment : Participatory Activities	Contextual Learning Discussion Question and answer 3 x 50 minutes		Material: Earth as a dynamic physical system, Ocean as a physical system that regulates climate, Atmosphere as a physical system that supports life. Reference: Madlazim. 2016. Earth Physics. Surabaya: Unesa Press.	2%
3	Able to understand the important role of the earth's components (land, ocean, atmosphere and biosphere) in human life	Students can explain the important role of the earth's components (land, ocean, atmosphere and biosphere) in human life	Criteria: quantitative Form of Assessment : Participatory Activities	Contextual Learning Discussion Question and answer 3 x 50 minutes		Material: Earth as a dynamic physical system, Ocean as a physical system that regulates climate, Atmosphere as a physical system that supports life References: Prastowo, T. 2012. Earth Science. Unpublished work.	2%

4	Able to understand the important role of the earth's components (land, ocean, atmosphere and biosphere) in human life	Students can explain the important role of the earth's components (land, ocean, atmosphere and biosphere) in human life; can express one's own opinion and accept the opinions of others	Criteria: quantitative Form of Assessment : Participatory Activities	Contextual Learning Discussion Question and answer 3 x 50 minutes		Material: Earth as a dynamic physical system, Ocean as a physical system that regulates climate, Atmosphere as a physical system that supports life References: <i>Robinson, A. 2002. Earth Shock. London, UK: Thames-Hudson Ltd.</i>	2%
5	Able to understand the symptoms and potential threats of volcanic eruptions and tsunami disasters	Students can explain the symptoms and potential threats of volcanic eruptions and tsunami disasters	Criteria: quantitative Form of Assessment : Participatory Activities	Contextual Learning Discussion Question and answer 3 x 50 minutes		Material: Types and eruptions of volcanoes, Impact of volcanic eruptions, Volcanic eruptions trigger tsunamis, Tsunamis Reference: <i>Robinson, A. 2002. Earth Shock. London, UK: Thames-Hudson Ltd.</i>	2%
6	Able to understand the symptoms and potential threats of volcanic eruptions and tsunami disasters	Students can explain the symptoms and potential threats of volcanic eruptions and tsunami disasters	Criteria: 1.Collection of short articles about earth physics (earth disasters, disaster mitigation) 2.Group article assessment rubric 3.Group marks are given when articles are collected Form of Assessment : Project Results Assessment / Product Assessment	Contextual Learning Discussion Question and answer 3 x 50 minutes		Material: Types and eruptions of volcanoes, Impact of volcanic eruptions, Volcanic eruptions trigger tsunamis, Tsunamis Reference: <i>Poirier, JP 2006. Introduction to the Physics of the Earth's Interior. Cambridge: Cambridge Union Press.</i>	13%
7	Able to understand the symptoms and potential threats of volcanic eruptions and tsunami disasters	Students can explain the symptoms and potential threats of volcanic eruptions and tsunami disasters; forming an alert attitude towards earth disasters and being brave in the decision-making process based on objective information analysis	Criteria: quantitative Form of Assessment : Participatory Activities	Contextual Learning Discussion Question and answer 3 x 50 minutes		Material: Types and eruptions of volcanoes, Impact of volcanic eruptions, Volcanic eruptions trigger tsunamis, Tsunamis Reference: <i>Scarth, A. 2001. Savage Earth. London, UK: Harper-Collins Pub.</i>	2%
8	Able to understand USS questions well	Score 100 if the USS question is answered well and correctly	Criteria: quantitative Form of Assessment : Portfolio Assessment	Open book written test Discussion of questions 100 minutes		Material: Midterm Exam Literature:	20%

9	Able to understand the symptoms and potential threats of earthquakes and tsunami disasters	Students can explain the symptoms and potential threats of earthquakes and tsunami disasters	<p>Criteria: quantitative</p> <p>Form of Assessment : Participatory Activities</p>	Contextual Learning Discussion Question and answer 3 x 50 minutes		<p>Material: Tectonic earthquakes, types of faults, seismic waves, earthquake impacts, plate shifts that trigger tsunamis, tsunamis</p> <p>Reference: <i>Robinson, A. 2002. Earth Shock. London, UK: Thames-Hudson Ltd.</i></p>	2%
10	Able to understand the symptoms and potential threats of earthquakes and tsunami disasters	Students can explain the symptoms and potential threats of earthquakes and tsunami disasters	<p>Criteria: 1.Collection of scientific posters about earth physics (earth disasters, disaster mitigation) 2.Group poster assessment rubric 3.Group marks are given when posters are collected</p> <p>Form of Assessment : Project Results Assessment / Product Assessment</p>	Contextual Learning Discussion Question and answer 3 x 50 minutes		<p>Material: Tectonic earthquakes, types of faults, seismic waves, earthquake impacts, plate shifts that trigger tsunamis, tsunamis.</p> <p>Reference: <i>Scarth, A. 2001. Savage Earth. London, UK: Harper-Collins Pub.</i></p>	13%
11	Able to understand the symptoms and potential threats of earthquakes and tsunami disasters	Students can explain the symptoms and potential threats of earthquakes and tsunami disasters; forming an alert attitude towards earth disasters and being brave in the decision-making process based on objective information analysis	<p>Criteria: quantitative</p> <p>Form of Assessment : Participatory Activities</p>	Contextual Learning Discussion Question and answer 3 x 50 minutes		<p>Material: Tectonic earthquakes, types of faults, seismic waves, earthquake impacts, plate shifts that trigger tsunamis, tsunamis</p> <p>Reference: <i>Prastowo, T. 2012. Earth Science. Unpublished work.</i></p>	2%
12	Able to understand potential disaster threats related to local, regional and global climate conditions	Students can explain potential disaster threats related to local, regional and global climate conditions; a conscious and responsive attitude towards the environment is formed and prepared for hydro-meteorological disasters	<p>Criteria: quantitative</p> <p>Form of Assessment : Participatory Activities</p>	Contextual Learning Discussion Question and answer 3 x 50 minutes		<p>Material: Disasters triggered by hydro-meteorological factors Floods, drought, forest fires, Disaster mitigation, Disaster risk reduction efforts Disaster preparedness</p> <p>References: <i>Scarth, A. 2001. Savage Earth. London, UK: Harper-Collins Pub.</i></p>	2%

13	Able to create posters that are relevant to environmental issues	Students can make posters that are relevant to environmental issues and present them well; have an independent and honest character in carrying out the tasks of making posters and presenting Earth Physics lectures	Criteria: quantitative Form of Assessment : Participatory Activities	Preparation of Poster Presentation for Project-Based Learning Discussion Question and answer 3 x 50 minutes		Material: Earth Physics Poster Demo Reference: Prastowo, T. 2012. <i>Earth Science. Unpublished work.</i>	2%
14	Able to create posters that are relevant to environmental issues	Students can make posters that are relevant to environmental issues and present them well; have an independent and honest character in carrying out the tasks of making posters and presenting Earth Physics lectures	Criteria: 1.Collection of videos of scientific poster presentations about earth physics (earth disasters, disaster mitigation) 2.Group poster presentation video assessment rubric 3.Individual marks are given when video presentations are collected Form of Assessment : Participatory Activities, Project Results Assessment / Product Assessment	Project-Based Learning Poster Presentation Discussion Java Questions 3 x 50 minutes		Material: Earth Physics Poster Library: Madlazim. 2016. <i>Earth Physics. Surabaya: Unesa Press.</i>	2%
15	Able to create posters that are relevant to environmental issues	Students can make posters that are relevant to environmental issues and present them well; have an independent and honest character in carrying out the tasks of making posters and presenting Earth Physics lectures	Criteria: 1.Collection of videos of scientific poster presentations about earth physics (earth disasters, disaster mitigation) 2.Group poster presentation video assessment rubric 3.Individual marks are given when video presentations are collected Form of Assessment : Participatory Activities, Project Results Assessment / Product Assessment	Project-Based Learning Poster Presentation Discussion Question and answer 3 x 50 minutes		Material: Earth Physics poster presentation Reference: Prastowo, T. 2012. <i>Earth Science. Unpublished work.</i>	2%

16	Able to understand UAS projects well	Students can make posters that are relevant to environmental issues and present them well; have an independent and honest character in carrying out the tasks of making posters and presenting Earth Physics lectures	Criteria: 1. Collection of videos of scientific poster presentations about earth physics (earth disasters, disaster mitigation) 2. Group poster presentation video assessment rubric 3. Individual marks are given when video presentations are collected Form of Assessment : Project Results Assessment / Product Assessment	Project-Based Learning Poster Presentation Discussion Question and answer 100 minutes		Material: Final Semester Exam Literature:	30%
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Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
1.	Participatory Activities	22%
2.	Project Results Assessment / Product Assessment	58%
3.	Portfolio Assessment	20%
		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** 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.