

**PORTFOLIO FOR
EARTH PHYSICS COURSE**

SEMESTER 3 ACADEMIC YEAR 2020-2021



**Course Coordinator:
Prof. Tjipto Prastowo, Ph.D**

**Teaching Team:
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**PHYSICS DEPARTMENT
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
THE STATE UNIVERSITY OF SURABAYA
2021**

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A. SEMESTER LEARNING ACTIVITY PLAN

A.1 COURSE IDENTITY

Module Name	Earth Physics
Module Level	Bachelor Degree
Course Code	N/A
Subheading	N/A
Course contained	N/A
Semester/Year	3/2
Module Coordinator	Prof. Tjipto Prastowo, Ph.D
Lecturers	1. Prof. Tjipto Prastowo, Ph.D 2. Mita Anggaryani, Ph.D
Language	Bahasa Indonesia
Course Classification	Compulsory
Teaching format/ The number of hours per week during semester	A weekly meeting in class for 3 'hours' of teaching (1 'hour' of teaching = 50 minutes)
Course Load	1 Course Unit = 3 workhours per week or 170 minutes per week with various activities as follows: <ul style="list-style-type: none"> • Class Activity: 50 minutes • Structured Learning: 60 minutes • Independent Learning: 60 minutes 3 Course Units = 9 workhours per week = 510 minutes per week
Course Credit	3 Course Units
Pre-requisites	Basic Physics 1 and 2
Course Learning Outcome	<ol style="list-style-type: none"> 1. Demonstrating independent, creative and honest characters in doing student assignments, mid and final exams. 2. Understanding the roles of Earth as a physical system in human lives. 3. Understanding aspects of interdependence of Earth and mankind. 4. Understanding frequent Earth-related disasters including geological and hydro-meteorological hazards in Indonesia. 5. Applying personal awareness and responsiveness of living environment as well as alertness to possible Earth-related disasters.
Course Content	Earth Physics is a branch of physics focusing on issues related to Earth with class discussions involve understanding of interaction of mankind and nature; the roles of Earth (lands, seas, atmospheres and biospheres) in human lives; the impacts of human activities on the environment; some geohazards that frequently occur in Indonesia and the corresponding risk management; awareness of disaster-related science and

	preparedness for society resilience towards geohazards as part of mitigation study for disaster risk reduction, the application of local wisdom to hazard mitigation.
Attributed soft skill	<ol style="list-style-type: none"> 1. Oral communication skills in individual presentation 2. Collaborative work in a group of students
References and sources	<ol style="list-style-type: none"> 1. Prastowo, T. 2012. <i>Sains Kebumian</i>. Unpublished work. 2. Farndon, J. et al. 2003. <i>Planet Earth</i>. London, UK: Lorenz Books. 3. Robinson, A. 2002. <i>Earth Shock</i>. London, UK: Thames and Hudson Limited. 4. Scarth, A. 2001. <i>Savage Earth</i>. London, UK: Harper Collins Publishers. 5. Some power point files and/or course materials relevant to Earth Physics from the internet.

A.2 COURSE TOPICS

Class discussions involve the following learning materials:

1. Interdependence of Earth and mankind: the Earth, the impacts of human activities on the environment, climate change.
2. The vital roles of the Earth's components: the Earth as a dynamic system, the land as a provider for human basic needs, the atmosphere as a life-supporting system, the ocean as a climate regulator.
3. The possible cause of tsunami: volcanic eruption, the impacts of eruption, eruption that leads to tsunami generation, tsunami.
4. The possible cause of tsunami: tectonic earthquake, seismic waves, types of fault, the impacts of earthquake, tectonic movement, tsunami.
5. Hazard mitigation study: hydro-meteorological hazards (floods, droughts, forest fires), geohazard mitigation, efforts for disaster risk reduction, awareness of disaster-related science, preparedness for society resilience towards reduced vulnerability at minimum risks to geohazard potential.
6. Video clips presentation on poster sessions.

A.3 COURSE PROGRAM



THE STATE UNIVERSITY OF SURABAYA FACULTY OF MATHEMATICS AND NATURAL SCIENCES PHYSICS STUDY PROGRAM

Document Code

SEMESTER LESSON PLAN

NAME OF COURSE		COURSE CODE	DISCIPLINE	COURSE UNIT		SEMESTER	DATE CREATED
EARTH PHYSICS			EARTH PHYSICS	T= 3 units	P = ?	3 (three)	1 August 2020
AUTHORISATION		AUTHOR	COURSE COORDINATOR		HEAD OF PHYSICS STUDY PROGRAM		
PHYSICS DEPARTMENT		Prof. Tjipto Prastowo, Ph.D.	Prof. Tjipto Prastowo, Ph.D.		Prof. Dr. Munasir, M.Si.		
Learning Achievement	Program Learning Outcome (PLO)						
	PLO1	Students are able to demonstrate knowledge of Classical Physics and Modern Physics.					
	PLO6	Students are able to improve their knowledge and continue their study in a higher education.					
	PLO7	Students are able to communicate their ideas and/or research results through academic writing and speaking effectively.					
	PLO10	Students are able to demonstrate good scientist manners, critical thinking and innovation skills in research and professional fields.					
	Course Learning Outcome (CLO)						
	CLO-1	Demonstrating independent, creative and honest characters in doing student assignments, mid and final exams.					
	CLO-2	Understanding the roles of Earth as a physical system in human lives.					
	CLO-3	Understanding aspects of interdependence of Earth and mankind.					
	CLO-4	Understanding frequent Earth-related disasters including geological and hydro-meteorological hazards in Indonesia.					
	CLO-5	Applying personal awareness and responsiveness of living environment as well as alertness to possible Earth-related disasters.					
	Final competence in each step of learning (Sub-CLO)						
	Sub-CLO1	Being able to understand the effects of human activities on the environment.					
	Sub-CLO2	Being able to understand the important roles of lands, seas, atmospheres, and biospheres in human lives.					
	Sub-CLO3	Being able to understand precursors of and potential for volcano and tsunami hazards.					
	Sub-CLO4	Being able to understand precursors of and potential for earthquake and tsunami hazards.					
Sub-CLO5	Being able to understand geohazard potential associated with conditions on local, regional and global climates.						
Sub-CLO6	Being able to create a poster relevant to Earth Physics course materials and the environment.						
Course Content		Earth Physics is a branch of physics focusing on issues related to Earth with class discussions involve understanding of interaction of mankind and nature; the roles of Earth (lands, seas, atmospheres and biospheres) in human lives; the impacts of human activities on the environment;					

	some geohazards that frequently occur in Indonesia and the corresponding risk management; awareness of disaster-related science and preparedness for society resilience towards geohazards as part of mitigation study for disaster risk reduction, the application of local wisdom to hazard mitigation.						
Topic Discussions: Learning Materials	<ol style="list-style-type: none"> 1. Interdependence of Earth and mankind: the Earth, the impacts of human activities on the environment, climate change 2. The vital roles of the Earth's components: the Earth as a dynamic system, the land as a provider for human basic needs, the atmosphere as a life-supporting system, the ocean as a climate regulator 3. The possible cause of tsunami: volcanic eruption, the impacts of eruption, eruption that leads to tsunami generation, tsunami 4. The possible cause of tsunami: tectonic earthquake, seismic waves, types of fault, the impacts of earthquake, tectonic movement, tsunami 5. Hazard mitigation study: hydro-meteorological hazards (floods, droughts, forest fires), geohazard mitigation, efforts for disaster risk reduction, awareness of disaster-related science, preparedness for society resilience towards reduced vulnerability at minimum risks to geohazard potential 6. Video clips presentation on poster sessions 						
References	Primary:						
	<ol style="list-style-type: none"> 1. Prastowo, T. 2012. <i>Sains Kebumihan</i>. Unpublished work. 2. Farndon, J. et al. 2003. <i>Planet Earth</i>. London, UK: Lorenz Books. 3. Robinson, A. 2002. <i>Earth Shock</i>. London, UK: Thames and Hudson Limited. 4. Scarth, A. 2001. <i>Savage Earth</i>. London, UK: Harper Collins Publishers. 						
	Secondary:						
	Some power point files and/or course materials relevant to Earth Physics from the internet						
Lecturers	<ol style="list-style-type: none"> 1. Prof. Tjipto Prastowo, Ph.D. 2. Mita Anggaryani, Ph.D. 						
Pre-requisites	Basic Physics 1 and Basic Physics 2						
Week	Final competence in each learning step (Sub-CLO)	Assessment		Learning Format, Methods, Instruction, (Time Allocation)		Learning Materials	Proportion (%)
		Indicator	Criteria & Format	offline	online		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Being able to understand the effects of human activities on the environment	Students can explain the effects of human activities on the			Contextual Learning Discussion Q & A	<ul style="list-style-type: none"> • Planet of the Earth • Climate change • The effects of human activities on the 	

		environment as attitudes towards awareness of and preparedness for green environment develops				environment	
2	Being able to understand the vital roles of the Earth's components (lands, oceans, atmospheres, biospheres) in human lives	Students can explain the vital roles of the Earth's components (lands, oceans, atmospheres, biospheres) in human lives	Description on student assignments: 1. Short article (in a group) describing the fragile Earth, geohazard mitigation, 2. Corresponding poster (in a group) 3. Individual presentation on relevant poster		Contextual Learning Discussion Q & A	<ul style="list-style-type: none"> • The Earth as a dynamic system • The ocean as a climate regulator • The atmosphere as a life-supporting system 	
3	Being able to understand the vital roles of the Earth's components (lands, oceans, atmospheres, biospheres) in human lives	Students can explain the vital roles of the Earth's components (lands, oceans, atmospheres, biospheres) in human lives			Contextual Learning Discussion Q & A	<ul style="list-style-type: none"> • The Earth as a dynamic system • The ocean as a climate regulator • The atmosphere as a life-supporting system 	
4	Being able to understand the vital roles of the Earth's components (lands, oceans,	Students can explain the vital roles of the Earth's			Contextual Learning Discussion Q & A	<ul style="list-style-type: none"> • The Earth as a dynamic system • The ocean as a climate regulator 	

	atmospheres, biospheres) in human lives	components (lands, oceans, atmospheres, biospheres) in human lives; can exchange views between classmates during class discussions				<ul style="list-style-type: none"> • The atmosphere as a life-supporting system 	
5	Being able to understand potential geohazard threats from volcanic eruption and possible tsunami	Students can explain potential geohazard threats from volcanic eruption and possible tsunami			Contextual Learning Discussion Q & A	<ul style="list-style-type: none"> • Types of volcanos and their possible eruption • Impacts of eruption • Volcanic tsunami • Tsunami 	
6	Being able to understand potential geohazard threats from volcanic eruption and possible tsunami	Students can explain potential geohazard threats from volcanic eruption and possible tsunami	Student assignment 1 (short article): handed in Criteria for assessment are available		Contextual Learning Discussion Q & A	<ul style="list-style-type: none"> • Types of volcanos and their possible eruption • Impacts of eruption • Volcanic tsunami • Tsunami 	15%
7	Being able to understand potential geohazard threats from volcanic eruption and possible tsunami	Students can explain potential geohazard threats from volcanic			Contextual Learning Discussion Q & A	<ul style="list-style-type: none"> • Types of volcanos and their possible eruption • Impacts of eruption • Volcanic tsunami 	

		eruption and possible tsunami				<ul style="list-style-type: none"> • Tsunami 	
8	Mid Semester Exam						30%
9	Being able to understand potential geohazard threats from tectonic earthquake and possible tsunami	Students can explain potential geohazard threats from tectonic earthquake and possible tsunami			Contextual Learning Discussion Q & A	<ul style="list-style-type: none"> • Tectonic earthquake • Types of fault • Seismic waves • Impacts of earthquake • Tectonic movement • Tsunami 	
10	Being able to understand potential geohazard threats from tectonic earthquake and possible tsunami	Students can explain potential geohazard threats from tectonic earthquake and possible tsunami	Student assignment 2 (relevant posters): handed in Criteria for assessment are available		Contextual Learning Discussion Q & A	<ul style="list-style-type: none"> • Tectonic earthquake • Types of fault • Seismic waves • Impacts of earthquake • Tectonic movement • Tsunami 	15%
11	Being able to understand potential geohazard threats from tectonic earthquake and possible tsunami	Students can explain potential geohazard threats from tectonic earthquake and possible tsunami; having awareness of science and preparedness			Contextual Learning Discussion Q & A	<ul style="list-style-type: none"> • Tectonic earthquake • Types of fault • Seismic waves • Impacts of earthquake • Tectonic movement • Tsunami 	

		towards geohazards and decision-making skills based on science-based analysis and objective consideration					
12	Being able to understand potential geohazard threats from local, regional and global conditions of climate	Students can explain potential geohazard threats from local, regional and global conditions of climate; having awareness of science associated with green environment and preparedness towards hydro-meteorological hazards			Contextual Learning Discussion Q & A	<ul style="list-style-type: none"> • Hydro-meteorological • Floods, droughts • Forest fires • Hazard mitigation • Disaster risk reduction • Society resilience towards geohazards 	
13	Being able to create a poster relevant to Earth Physics course materials and the green environment	Students can create a poster in a group relevant to Earth Physics course materials and the green			Preparation for Poster Presentation for Project-Based Learning Discussion Q & A	Demo Poster on Earth Physics (with lecturers take the lead for the class demo)	

		environment and present it individually; having good characters: independent, creative and honest in creating posters and in doing individual presentation					
14	Being able to create a poster relevant to Earth Physics course materials and the green environment	Students can create a poster in a group relevant to Earth Physics course materials and the green environment and present it individually; having good characters: independent, creative and honest in creating posters and in doing individual presentation	Student assignment 3 (relevant clips): handed in Criteria for assessment are available		Poster Presentation for Project-Based Learning Discussion Q & A	Poster Presentation on Earth Physics (with students being active for class presentation)	
15	Being able to create a poster relevant to Earth Physics course materials	Students can create a poster in a group	Student assignment 3 (relevant clips): handed in		Poster Presentation for Project-Based Learning	Poster Presentation on Earth Physics (with students being	

	and the green environment	relevant to Earth Physics course materials and the green environment and present it individually; having good characters: independent, creative and honest in creating posters and in doing individual presentation	Criteria for assessment are available		Discussion Q & A	active for class presentation)	
16	Final Exam						40%

A.4 MAPPING OF LEARNING OUTCOME-COURSE OUTCOME

A.4.1 Program Learning Outcome (PLO) of UPP

Competency of SSC-ASIIN	Component	Code	Programme Learning Outcome (PLO)
Specific competences	Knowledge	KNO-1 (PLO1)	Able to demonstrate knowledge of Classical Physics and Modern Physics
		KNO-2 (PLO2)	Able to formulate a physical systems as physical model by using mathematics
		KNO-3 (PLO3)	Able to solve problems in physical systems comprehensively by using mathematics and computational tools
	Skill	SKI-1 (PLO4)	Able to analyze a physical system by applying mathematics and computational tools/ICT
		SKI-2 (PLO5)	Able to design and conduct experiments in learning physics by applying the scientific methods
		SKI-3 (PLO6)	Able to improve their knowledge and be able to continue their study in a higher education
		SKI-4 (PLO7)	Able to communicate their ideas and/or research results in academic writing and speaking effectively
Social and attitude competences	Social	SOC-1 (PLO8)	Able to make a decision based on the data and information in order to fulfil and evaluate their task responsibility
		SOC-2 (PLO9)	Able to work as an individual as well as a team effectively, have entrepreneurship skill and awareness of environmental issues
	Attitude	ATT-1 (PLO10)	Able to demonstrate good scientist's manners , critical thinking and innovation skills in research and professional fields; and willing to do lifelong learning
		ATT-2 (PLO11)	Able to demonstrate the appreciation of religious values, and nationalism as citizens as well as conducting their tasks professionally

A.4.2 Program Educational Objective (PEO) of UPP

1. Produce Bachelor of Physics who are able to use physics knowledge and methodology to solve problems in their work field.
2. Produce Bachelor of Physics who have a strong commitment to developing knowledge, whether by studying in a higher-level degree working in a formal institution and entrepreneurs.
3. Produce Bachelor of Physics who master the scientific method to observe, analyze and understand physical phenomena, and produce scientific work and contribute according to their expertise.
4. Produce Bachelor of Physics who masteries physics that is able to apply their knowledge, expertise in various fields of work, and develop themselves in their career environment.
5. Produce Bachelor of Physics who can communicate orally and/ in writing effectively, creatively, innovatively, and collaboratively, as well as working in teams.

A.4.3 Mapping of PLO-PEO

Outcomes	Objectives				
	Produce Bachelor of Physics who are able to use physics knowledge and methodology to solve problems in their work field.	Produce Bachelor of Physics who have a strong commitment to developing knowledge, whether by studying in a higher-level degree working in a formal institution and entrepreneurs.	Produce Bachelor of Physics who master the scientific method to observe, analyze and understand physical phenomena, and produce scientific work and contribute according to their expertise.	Produce Bachelor of Physics who masteries physics that is able to apply their knowledge, expertise in various fields of work, and develop themselves in their career environment.	Produce Bachelor of Physics who can communicate orally and/ in writing effectively, creatively, innovatively, and collaboratively, as well as working in teams.
PLO-1	S	S	S	S	S
PLO-2	S	S	S	S	S
PLO-3	S	S	S	S	S
PLO-4	S	S	S	S	S
PLO-5	S	M	S	M	S
PLO-6	S	M	S	S	M
PLO-7	S	S	S	M	S
PLO-8	S	M	S	M	S
PLO-9	S	M	S	M	S
PLO-10	M	M	M	M	S
PLO-11	M	M	M	S	S

Notes:

S = Strong, M = Moderate, L = Low

B. COURSE ASSESSMENT

B.1 ASSESSMENT RUBRICS

Notice that evaluation of student performances is taken from three student assignments, including a short article (assignment 1), a thematic poster (assignment 2), and an individual presentation (assignment 3), mid and final exams. These student assignments are assessed using the separate rubric for each.

The following rubric is used for assessing student assignment 1.

No	Aspects of Assessment	Scoring Scale			
		1	2	3	4
1	Formatted text				
2	Originality				
3	Writing ideas				
4	Sources				
5	Alternative solution				
Presentation Grade					

The following rubric is used for assessing student assignment 2.

No	Aspects of Assessment	Scoring Scale			
		1	2	3	4
1	Poster design				
2	Placement of photos or pictures				
3	Poster content				
4	Relevance				
5	Importance				
Presentation Grade					

The following rubric is used for assessing student assignment 3.

Course : _____ Name of Student : _____
Course Unit : _____ Study Group : _____

No	Aspects of Assessment	Scoring Scale			
		1	2	3	4
1	Attitude				
2	Continuity				

3	Content				
4	Time Management				
5	Responsive Talk				
Presentation Grade					

Scoring Scale:

1 = inadequate

2 = adequate

3 = good

4 = very good

Presentation Grade = Total score obtained for each student × 5

B.2 ASSESSMENT SYSTEM

Final grade for each student is obtained from each component of assessment below,

Assignments 1 and 2 : 30%

Mid Exam : 30%

Final Exam (Assignment 3) : 40%

B.3 WEIGHT DISTRIBUTION OF ASSESSMENT

Component	CLO-1	CLO-2	CLO-3	CLO-4	CLO-5	TOTAL
Assignments 1 and 2	20.0	20.0	20.0	20.0	20.0	100
Mid Exam	34.0	16.5	16.5	16.5	16.5	100
Final Exam	20.0	20.0	20.0	20.0	20.0	100

Notice that all numerical data in the above table are given in per cent.

B.4 STUDENT GRADE SYSTEM

Final grade for each student is classified below according to a total score obtained,

Excellent : if a total score is greater than or equal to 80

Good : if a total score is greater than or equal to 70

Satisfactory : if a total score is greater than or equal to 55

Failed : if a total score is less than 55

Grade	Interval
A	$85 \leq A < 100$
A-	$80 \leq A- < 85$
B+	$75 \leq B+ < 80$
B	$70 \leq B < 75$
B-	$65 \leq B- < 70$
C+	$60 \leq C+ < 65$
C	$55 \leq C < 60$
D	$40 \leq D < 55$
E	$0 \leq E < 40$

C. COURSE DEVELOPMENT

C.1 A BRIEF REPORT FOR CLASS RESULTS

The following table reports student academic achievement during the course.

Parameter	N	N in per cent
The number of students taking the subject	25	100
The number of students who has passed the course during a normal time	25	100
The number of students who has passed the course by a remedial treatment	-	-
The number of students who has failed the course after taking a remedial treatment	-	-

C.2 ANALYSIS OF CLASS PROBLEMS

Class achievement is recorded very successful with all the student scored greater than 80, classified as excellent except one student only had 59.3 for his final grade due to his absence in the final exam. The final score remained considering satisfactory. This student did not hand in his video clip for showing his presentation.

C.3 STRATEGY FOR ALTERNATIF SOLUTIONS

To prevent such a situation, where only one student got a low mark relatively compared to other students in class then additional requirement may be required for students who are allowed to pass the course, i.e., the students must hand all the assignments in to the lecturers before semester ends. When a student does not meet the requirement, he or she is subject to penalty, meaning that he or she does not pass the course, even if his or her score may achieve greater than or equal to 55, a minimum score classified as satisfactory.

D. APPENDICES

D.1 DOCUMENTS OF CLASS ACTIVITIES

D.1.1 Weekly Journal

7/17/2021

SIKADU: Cetak Jurnal Perkuliahan



KEMENTERIAN RISET, TEKNOLOGI, DAN PENDIDIKAN TINGGI
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Aktivitas Perkuliahan

Nama Matakuliah : Fisika Bumi

Dosen :

TJIPTO PRASTOWO (196702031995021001)

Kelas : 2019E

MITA ANGGARYANI (198202022006042002)

Jadwal & Ruang : C03.03.07 (07.00 - 09.30) R.

No.	Tanggal	Pertemuan	Topik	Peserta	Status	Dosen
1	14-09-2020	Pertemuan ke 1	1. Penjelasan RPS Fisika Bumi 2. Penjelasan tugas, sistem evaluasi dan asesmen perkuliahan Fisika Bumi 3. Pendahuluan perkuliahan Fisika Bumi 4. Bumi sebagai sistem fisis 5. Pemanasan global dan perubahan iklim 6. Pengaruh aktivitas manusia terhadap alam dan lingkungan	25	Terjadwal	Tjipto Prastowo
2	21-09-2020	Pertemuan ke 2	1. Penjelasan detail tema artikel pendek dan penyusunan poster 2. Bumi sebagai sistem fisis yang kompleks 3. Proses-proses fisis yang melibatkan kekuatan alam dalam rentang waktu geologi 4. Bentuk bentang alam dan proxy records on geologic time scale	25	Terjadwal	Tjipto Prastowo
3	28-09-2020	Pertemuan ke 3	1. Bab 2 dan Bab 3 buku Sains Kebumian 2. Fenomena efek rumah kaca dalam konteks perubahan iklim global 3. Bukti perubahan iklim global	25	Terjadwal	Tjipto Prastowo

https://siakadu.unesa.ac.id/fa834aca-137e-367b-ab94-07c65399f6ed.aspx?id=a84dd221-4b54-32a7-a227-ff0e2bccb316&cetak_jurnal=1

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			4. Arus Lintas Indonesia (Arlindo) atau Indonesian Through-Flow (ITF)			
4	05-10-2020	Pertemuan ke 4	1. Inter relasi antara bumi, tanah, lautan dan atmosfer 2. Siklus Hidrologi 3. Pembahasan tugas esai pendek tentang Siklus Hidrologi dalam diskusi virtual	25	Terjadwal	Tjipto Prastowo
5	12-10-2020	Pertemuan ke 5	1. Jenis dan letusan gunung api 2. Dampak letusan gunung api 3. Case study: Gunung Bromo, letusan tahun 2010 dan 2016 4. Mitigasi bencana letusan gunung api 5. Indikator letusan gunung api dan instrumen terkait 6. Pembentukan kaldera gunung api, inflasi dan deflasi 7. Metode monitoring aktivitas vulkanik dan instrumen terkait	25	Terjadwal	Tjipto Prastowo
6	19-10-2020	Pertemuan ke 6	1. Review Pembelajaran Gunung Api 2. Proses kelahiran dan pembentukan gunung api 3. Aktivitas magmatik dan erupsi 4. Kandungan fluida magma	25	Terjadwal	Tjipto Prastowo
7	26-10-2020	Pertemuan ke 7	1. Review Pembelajaran Gunung Api 2. Erupsi Gunung Api 3. Mitigasi Bencana Erupsi Gunung Api 4. Persiapan UTS	25	Terjadwal	Tjipto Prastowo
8	02-11-2020	Pertemuan ke 8	UTS	25	Terjadwal	Tjipto Prastowo
9	09-11-2020	Pertemuan ke 9	1. Gempa bumi 2. Jenis patahan bumi 3.	25	Terjadwal	Mita Anggaryani

			Gelombang seismik4. Dampak gempa bumi5. Pergeseran lempeng bumi pemicu tsunami6. Tsunami			
10	16-11-2020	Pertemuan ke 10	1. Gempa bumi2. Jenis patahan bumi3. Gelombang seismik4. Dampak gempa bumi5. Pergeseran lempeng bumi pemicu tsunami6. Tsunami	25	Terjadwal	Mita Anggaryani
11	23-11-2020	Pertemuan ke 11	1. Bencana alam yang dipicu oleh faktor hidro-meteorologi2. Banjir, kekeringan, kebakaran hutan3. Mitigasi bencana alam4. Upaya pengurangan resiko bencana alam5. Kesiagaan bencana	25	Terjadwal	Mita Anggaryani
12	30-11-2020	Pertemuan ke 12	1. Bencana alam yang dipicu oleh faktor hidro-meteorologi2. Banjir, kekeringan, kebakaran hutan3. Mitigasi bencana alam4. Upaya pengurangan resiko bencana alam5. Kesiagaan bencana	25	Terjadwal	Mita Anggaryani
13	07-12-2020	Pertemuan ke 13	Demo Poster Kebumian	25	Terjadwal	Mita Anggaryani
14	14-12-2020	Pertemuan ke 14	Demo Poster Kebumian	25	Terjadwal	Mita Anggaryani
15	21-12-2020	Pertemuan ke 15	Demo Poster Kebumian	25	Terjadwal	Mita Anggaryani

D.1.2 Student Attendance

7/17/2021

SIAKAD : Absen



KEMENTERIAN PENDIDIKAN DAN KEBUDAYAAN

UNIVERSITAS NEGERI SURABAYA

Jl. Lidah Wetan, Surabaya - 60213

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Faksimile : +6231-99424932

e-mail : bakpk@unesa.ac.id

PRESENSI KULIAH Periode 2020/2021 Gasal

Mata Kuliah : Fisika Bumi
Kelas : 2019E
Prodi : S1 Fisika

Dosen : Prof. Tjipto Prastowo, Ph.D.
Mita Anggaryani, M.Pd., Ph.D.

No	NIM	Nama Mahasiswa	Pertemuan Ke															%
			1 14 Sep 20	2 21 Sep 20	3 28 Sep 20	4 05 Oct 20	5 12 Oct 20	6 19 Oct 20	7 26 Oct 20	8 02 Nov 20	9 09 Nov 20	10 16 Nov 20	11 23 Nov 20	12 30 Nov 20	13 07 Dec 20	14 14 Dec 20	15 21 Dec 20	
1.	19030224022	MOHAMMAD ARIF RAHMATULLOH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
2.	19030224023	BUDIMAN ZEBUA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
3.	19030224024	DALILAH SALSABILA ESTU	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
4.	19030224026	JHULINDA NIZAR WATI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
5.	19030224027	NOVIAN AKBAR PRATAMA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
6.	19030224028	STEVEN DAFA ARNANDO	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
7.	19030224029	CORNELIA FEBRIANI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
8.	19030224030	FRISELLYA DIRGANTARI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
9.	19030224031	MUHAMMAD FIKRI ZULFY FARDHANY	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
10.	19030224034	ZUHA IKHLASHUL AMIEN	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
11.	19030224035	SEFRINA PUTRI TRISNANTI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
12.	19030224036	ILHAM RAHMATULLAH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
13.	19030224037	DWI MAULIDIA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
14.	19030224038	PRAMESTI REGITA ARIYANTI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
15.	19030224040	MUHAMMAD NAUFAL ABIYU	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
16.	19030224053	ADINDA NUR NATASYA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
17.	19030224054	NABILA ARIS MUHAMMAD	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
18.	19030224055	ARIFA INSANI NAVALIA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
19.	19030224056	IRIN FAGIANTI RIAS PRATIWI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
20.	19030224057	FINANDA RAHMANITA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
21.	19030224058	BIM MAULANA RUSDI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
22.	19030224059	NOVTANTIAN ERLINDA PUTRI RAMADHANI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
23.	19030224060	KHANSA ZANADIA ULFA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
24.	19030224062	DHENATRA RIFQY PRASETYO	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
25.	19030224063	RYAN YUSRIZAL	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
Tanda Tangan Dosen / Asisten																		

D.2 DOCUMENTS OF EXAMS

D.2.1 Mid Exam



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MID-SEMESTER EXAM SEMESTER ODD YEAR 2020/2021

Course : Earth Physics
Lecturer : Tjipto Prastowo, Ph.D
Mita Anggaryani, M.Pd
Study Programme / Class : S-1 Physics / 2019E
Date : Monday, 2 November 2020
Duration / Time : 100 minutes / 07.00 – 08.40 am
Test Format : Open-Book

HINTS: Please write carefully your answers to the following questions using all possible sources of study (your notes on weekly discussion on course materials, Lecture Notes on Earth Sciences, relevant files, internet).

1. **50 point.** As many scientists have argued that human-induced global warming plays a crucial role in controlling the world climate, this (along with the crucial roles of the oceans and atmosphere in the climate system) warns us about what is necessary to handle the critical problem with care. Explore and elaborate your ideas to discuss this issue. (CLO 1, 2, 3)
2. **50 point.** In terms of Earth-related hazardous disasters, which frequently occurred in Indonesia, recent facts show that hydro-meteorological disastrous events, such as floods, landslides, and atmospheric storms in any scale have influenced different regions in the country. These, due to their potential destructions, need to be well managed in order to reduce disaster risks to a minimum level. (CLO 1, 4, 5)
 - (a) What do you think about this problem ?
 - (b) What kind of contributions can you take part in solving this problem ?

D.2.2 Final Exam



KEMENTERIAN RISET, TEKNOLOGI DAN PENDIDIKAN TINGGI
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FINAL EXAM SEMESTER 1 ACADEMIC YEAR 2020/2021

COURSE : Earth Physics
STUDY PROGRAM / STUDY GROUP : Physics / 2019E
LECTURER : Prof. Tjipto Prastowo, Ph.D
Mita Anggaryani, Ph.D
DAY AND DATE : Tuesday, 5 January 2021
DURATION / TIME : 100 minutes / 09.00 – 10.40 am
EXAM TASK : Individual Presentation

HINT: Make a video clip on your individual presentation for final exam on Earth Physics Course. You may better do it with use of any relevant source from weekly course notes, Lecture Notes on Earth Physics, and the internet.

NOTES:

1. Send your video clips to tjiptoprastowo@unesa.ac.id or WA: 081231537072
2. Create a short video clip of about 5 minutes long for individual presentation.
3. You may create either separate files of a video clip for each student in the same group or a combined file for a group of students with the same topic of presentation.
4. Focus your presentation on important parts of a theme poster by the group.
5. Evaluation and assessment of your presentation is justified using the following table:

ASSESSMENT OF INDIVIDUAL PRESENTATION

Course : Name of Student :
Course Unit : Study Group :

No	Aspects of Assessment	Scoring Scale			
		1	2	3	4
1	Attitude				
2	Continuity				
3	Content				
4	Time Management				
5	Responsive Talk				
Presentation Grade					

Scoring Scale:

1 = inadequate 3 = good
2 = adequate 4 = very good

Presentation Grade = Total score obtained for each student \times 5

D.3 SAMPLES OF STUDENT PERFORMANCE

D.3.1 Short Article (Assignment 1)

Nama Kelompok :

1. Mohammad Arif R. (19030224022)
2. Ilham Rahmatullah (19030224036)
3. Arifa Insani N. (19030224055)
4. Irin Fagianti R.P. (19030224056)

85

ERUPSI GUNUNG API

Gunung api adalah suatu sistem bentukan alam dari rekahan pada kerak bumi sebagai tempat keluarnya fluida panas (magma) atau lainnya ke permukaan bumi. Gunung api terbentuk akibat adanya pertemuan atau tumbukan dari lempeng **—** lempeng. Bentuk dan bentang alam gunung api terdiri atas : (1) kerucut dibentuk oleh endapan atau lava; (2) bentuk kubah, dibentuk oleh terobosan lava di kawah membentuk seperti kubah; (3) kerucut sinder, dibentuk oleh lapisan material sinder atau skoria; (4) **maar** terbentuk pada lereng gunung api akibat letusan freatomagnetik; (5) plateau dataran tinggi yang terbentuk akibat lemparan lelehan lava.

Secara geologis Indonesia terletak diantara 3 lempeng utama yakni lempeng Australia, lempeng Eurasia, dan lempeng Pasifik. Dari letak geologis tersebut mengakibatkan Indonesia memiliki banyak gunung yang masih aktif. Kondisi ini membuat Indonesia rawan terjadi bencana erupsi gunung api. Erupsi gunung api adalah gerakan keluar fluida panas (magma) dan gas atau material lain dari dalam gunung ke permukaan bumi. Magma dan material lain dari dalam gunung dapat keluar ke permukaan bumi disebabkan adanya dorongan yang kuat dari dalam bumi, dorongan yang kuat ini dapat juga menyebabkan gempa bumi dan ledakan yang keras. Ciri-ciri gunung api akan erupsi dapat diketahui dengan suhu disekitar daerah gunung api meningkat secara drastis, terjadi kekeringan akibat dari aktivitas magma, frekuensi gempa tremor yang tinggi akibat tekanan endogen yang besar mendorong aktivitas magma ke segala arah, binatang gunung bermigrasi karena suhu tinggi dan aktivitas vulkanik di sekitar area gunung berapi, dan terdengar suara gemuruh yang disebabkan oleh aktivitas magma yang hendak keluar melalui kawah.

Mitigasi gunung api adalah usaha yang dilakukan untuk **meminimalisir** dampak bahaya dari bencana letusan gunung api. **Upaya dalam melakukan mitigasi gunung api terbagi dalam 3 fase yakni sebelum, saat, dan sesudah terjadi bencana.** Dalam fase sebelum terjadi bencana gunung api dapat dilakukan dengan menghindarkan penduduk yang berada di sekitar daerah gunung api, oleh karena itu sebelum terjadi bencana perlu dilakukan pemantauan sehingga pergerakan gunung api dapat diketahui. Dalam melakukan pemantauan terdapat beberapa metode yang digunakan, namun di Indonesia lebih banyak menggunakan metode Seismik dalam pemantauan aktivitas gunung api. Hal ini dikarenakan gempa vulkanik yang terjadi saat gunung api melakukan perambatan melalui gelombang seismik. **Sehingga proses pemantauan gunung api lebih mengutamakan instrumen seismik, yaitu seismograf. Instrumen seismograf ini menghasilkan data pemantauan yang lebih akurat, tahan lama, dan relatif mudah digunakan.**

Erupsi gunung api akan menimbulkan dampak positif dan negatif. Dampak positif dari erupsi gunung api yakni abu vulkanik yang dikeluarkan saat erupsi gunung api dapat menyuburkan lahan pertanian di sekitar lereng gunung api. Selain itu bahan material vulkanik yang dikeluarkan dapat digunakan sebagai bahan bangunan seperti pasir dan batu. **Sedangkan** dampak negatif yang ditimbulkan yaitu terjadinya pencemaran udara yang disebabkan gas beracun yang keluar dari rekahan mengandung zat berbahaya seperti CO₂, H₂S, HCl, dan SO₂. Selain itu gulungan awan bercampur gas, pasir, dan batu hasil erupsi dengan suhu 200°C - 700°C dengan kecepatan 70 km/jam.

The following rubric is used for assessing student assignment 1.

No	Aspects of Assessment	Scoring Scale			
		1	2	3	4
1	Formatted text				✓
2	Originality			✓	
3	Writing ideas				✓
4	Sources			✓	
5	Alternative solution			✓	
Presentation Grade		85			

Scoring Scale:

1 = inadequate

2 = adequate

3 = good

4 = very good

Presentation Grade = Total score obtained for each student × 5

D.3.2 Thematic Poster (Assignment 2)

ERUPSI GUNUNG API



Adalah gerakan keluar fluida panas (magma) dan gas atau material lain ke permukaan bumi yang disebabkan adanya dorongan kuat dari dalam bumi sehingga mengakibatkan terjadinya gempa bumi dan ledakan keras

Proses Terjadi



Terjadinya letusan

Keluar awan panas dan hujan abu

Magma mengeras setelah terpapar udara luar

Terjadi dorongan sehingga magma mencapai permukaan lewat rekahan

Ciri - Ciri



KEKERINGAN AKIBAT AKTIVITAS MAGMA



MENINGKATNYA SUHU SECARA DRASTIS



BINATANG BERIMIGRASI

Dampak yang Ditimbulkan



Tanah subur



Material bahan bangunan



Pencemaran Udara



Hujan Abu

Mitigasi Bencana





Pemantauan dengan Metode Seismik

The following rubric is used for assessing student assignment 2.

No	Aspects of Assessment	Scoring Scale			
		1	2	3	4
1	Poster design			✓	
2	Placement of photos or pictures				✓
3	Poster content				✓
4	Relevance				✓
5	Importance			✓	
Presentation Grade		90			

Scoring Scale:

1 = inadequate
2 = adequate

3 = good
4 = very good

Presentation Grade = Total score obtained for each student × 5

D.3.3 Student Work on Mid Exam

Nama : Dwi Maulidia

90

NIM/ Kelas : 19030224037 / FRE 2019

UTS FISIKA BUMI

1. Iklim adalah kondisi cuaca di wilayah tertentu dalam periode yang lama. Sistem iklim di dunia dipengaruhi oleh wilayah ekuator yang terpapar sinar matahari yang lebih kuat dibandingkan dengan wilayah lain. Tidak hanya manusia, atmosfer dan lautan juga berpengaruh dalam pengendalian iklim dunia. Manusia merupakan pengembang dan pengguna teknologi, tanpa disadari teknologi yang sering kali digunakan bisa membuat iklim dunia menjadi lebih panas, salah satu contohnya yaitu emisi gas kendaraan bermotor dengan bahan bakar fosil, CFC yang terkandung dalam kulkas dan AC, aktivitas industri juga menjadi faktor utama dalam pemanasan global, dan lain sebagainya. Gas yang dihasilkan dari aktivitas manusia tersebut dapat meningkatkan konsentrasi CO₂ dan berkurangnya lapisan ozon (O₃) di atmosfer Bumi sehingga akan memicu terjadinya perubahan iklim global. Lautan juga berperan penting dalam perubahan iklim dunia, jika terjadi perubahan iklim dunia akan mempengaruhi kelestarian biota laut, dan juga air laut juga akan semakin asam akibat dari emisi gas buang yang terkandung dalam kendaraan dan industri. Tidak hanya lautan, atmosfer juga berperan dalam perubahan iklim dunia, emisi dari gas buang industri dan kendaraan yang mengandung nitrogen dan sulfur dapat menyebabkan hujan asam. Selain itu gas lainnya yang terbuang juga dapat menyebabkan terjadinya pencemaran udara yang dapat mengganggu kegiatan sehari-hari manusia. Menurut saya yang dapat kita lakukan untuk mengurangi perubahan iklim dunia yaitu dengan cara menjaga lingkungan terhindar dari limbah yang dapat menimbulkan pencemaran, mengurangi atau penggunaan teknologi yang dapat menimbulkan gas berbahaya bagi Bumi secara efektif, melakukan reboisasi untuk meningkatkan kandungan oksigen di Bumi, sebagai penerus bangsa ciptakanlah teknologi yang bermanfaat serta ramah lingkungan.
2. A. Hidrometeorologi adalah bencana kebumihan yang dipengaruhi oleh faktor cuaca seperti banjir, tanah longsor, dan juga badai. Hidrometeorologi dipengaruhi oleh parameter meteorologi seperti curah hujan, kelembaban, temperatur dan angin. Perubahan iklim juga berpengaruh dalam hidrometeorologi. Indonesia sering kali terjadi bencana hidrometeorologi mengingat juga Indonesia memiliki curah hujan yang cukup tinggi. Diperlukan pencegahan atau mitigasi yang harus dilakukan untuk mengurangi resiko dampak dari bencana kebumihan tersebut. Ketika pra bencana, dapat dilakukan dengan menjaga lingkungan agar tetap lestari, pastikan juga saluran air tidak ada yang terhambat, juga ketika ingin membangun rumah pastikan sesuai dengan standar prosedur yang ada. Ketika terjadi bencana, bisa dilakukan dengan mengungsi dan menyelamatkan barang-barang yang sekiranya dapat terselamatkan. Ketika pasca bencana, dapat dilakukan perbaikan dan evaluasi dalam penanganan bencana kebumihan. Tak lupa juga diperlukan edukasi dan sosialisasi akan pentingnya menjaga lingkungan serta pelatihan dasar kebencanaan bagi masyarakat.
B. Menurut saya, kontribusi yang bisa saya lakukan untuk mengatasi masalah tersebut yaitu sebagai mahasiswa tugas kami adalah belajar untuk membentuk masa depan yang lebih baik lagi, dengan meraih ilmu sedalam-dalamnya sehingga dapat memperbaiki kekurangan dari mitigasi bencana kebumihan yang telah ada dimasa yang akan datang, dan juga dimulai dari langkah yang kecil, yaitu kesadaran untuk membuang sampah pada tempatnya dan mau memelihara tumbuh-tumbuhan yang dapat menyerap banyak air. Sehingga ketika hujan turun, maka air hujan yang ada dapat diserap dan disimpan oleh tumbuh-tumbuhan. Tak lupa juga untuk saling mengingatkan satu sama lain akan pentingnya menjaga lingkungan. Karena terjadinya bencana kebumihan sangat dipengaruhi oleh aktivitas manusia.

D.3.4 Student Work on Final Exam

In this stage, students were required to create a video clip containing a short talk on the basis of their own thematic poster for Individual Presentation (Assignment 3). The following picture was taken from a clip made by one of the students, explaining about landslides.



The following rubric is used for assessing student assignment 3.

Course : Name of Student :
 Course Unit : Study Group :

No	Aspects of Assessment	Scoring Scale			
		1	2	3	4
1	Attitude				✓
2	Continuity				✓
3	Content				✓
4	Time Management			✓	
5	Responsive Talk			✓	
Presentation Grade		90			

Scoring Scale:

1 = inadequate
 2 = adequate

3 = good
 4 = very good

Presentation Grade = Total score obtained for each student × 5

D.4 VALIDATION TEST

D.4.1 Validation Test of Mid Exam





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VALIDATION FORM FOR MID-SEMESTER EXAM

COURSE	:	Earth Physics
CLO	:	<ol style="list-style-type: none"> 1. Demonstrating independent and honest characters in doing Mid-Exam on Earth Physics. 2. Understanding the roles of Earth as a physical system in human lives. 3. Understanding aspects of interdependence of Earth and mankind. 4. Understanding frequent Earth-related disasters including geological and hydro-meteorological hazards in Indonesia. 5. Applying personal awareness and responsiveness of living environment as well as alertness to possible Earth-related disasters.
Lecturer	:	Tjipto Prastowo, Ph.D
Instruction	:	Choose and tick (✓) the appropriate mark in this column for: 1. Adequate 2. Good 3. Excellent

No	Aspects	Category		
		1	2	3
1	Instruction for solving the problems			✓
2	Suitability of each question with CLO			✓
3	Level balance of easy, medium and difficult questions		✓	
4	Scoring guidelines follow the points of the mark		✓	
5	The duration of completing the questions follows the time available		✓	
6	Allows multiple alternative correct answers	Yes		
7	Each question does not depend on other questions	Yes		
8	The questions are communicative and do not have ambiguity		✓	
9	Tables, pictures, graphics, maps, or the like are presented clearly and legibly (if any)			
Comments/Suggestions: Mid-exam questions are in line with CLO for Earth Physics Course listed.		Surabaya, 29 October 2020 Validator,  Mita Anggaryani, M.Pd NIP 198202022006042002		
Responses from Lecturer:		Surabaya, 30 October 2020 Lecturer,  Tjipto Prastowo, Ph.D NIP 196702031995021001		

D.4.2 Validation Test of Final Exam



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VALIDATION SHEET FOR FINAL EXAM

Name of Course	:	Earth Physics
CLO:	:	Sub-CLO:
<ol style="list-style-type: none"> Demonstrating independent, creative and honest characters in doing student assignments, mid and final exams Understanding the roles of the Earth as a complex physical system in human life. Understanding aspects of interdependence of the Earth and mankind. Understanding frequent Earth-related disasters including geological and hydro-meteorological hazards in Indonesia. Building awareness and responsiveness of the environment as well as alertness towards possible Earth-related disasters. 	:	<ol style="list-style-type: none"> Being able to understand the effects of human activities on the environment. Being able to understand the important roles of lands, seas, atmospheres and biospheres in human life. Being able to understand precursors of and potential threats from volcanic eruption and tsunami hazards. Being able to understand precursors of and potential threats from tectonic earthquake and tsunami hazards. Being able to understand geohazard potential associated with conditions on local, regional and global climates. Being able to create a poster relevant to the environment and/or Earth Physics course materials.
Lecturer	:	Prof. Tjipto Prastowo, Ph.D
Instruction	:	Give (√) on the column selected: 1. Adequate 2. Good 3. Very Good

No	Aspects	Category		
		1	2	3
1	Instruction for solving the problems			✓
2	Suitability of each question with CLO			✓
3	Level balance of easy, medium and difficult questions		✓	
4	Scoring guidelines follow the points of the mark			✓
5	The duration of completing the questions follows the time available		✓	
6	Allows multiple alternative correct answers			
7	Each question does not depend on other questions			
8	The questions are communicative and do not have ambiguity			✓
9	Tables, pictures, graphics, maps, or the like are presented clearly and legibly (if any)			✓
Comments/Suggestions: Individual presentation are recorded as clips for alternative Final Exam on Earth Physics Course. This is agreement between lecturer and students,				





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ID 9108850021

<p>which is in line with Semester Lesson Plan (SLP) on Earth Physics.</p>	<p>Surabaya, 7 January 2021 Validator,  Mita Anggaryani, Ph.D NIP 198202022006042002</p>
<p>Response from Lecturer:</p>	<p>Surabaya, 6 January 2021 Lecturer,  Prof. Tjipto Prastowo, Ph.D NIP 196702031995021001</p>

D.5 CLASS ACADEMIC ACHIEVEMENT

7/18/2021

Cetak DPNA ..



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Jl. Lidah Wetan, Surabaya - 60213
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Faksimile : +6231-99424932
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Daftar Nilai Periode 2020/2021 Gasal

Mata Kuliah : Fisika Bumi
Kelas : 2019E
Prodi : S1 Fisika

Dosen : Prof. Tjipto Prastowo, Ph.D.
Mita Anggaryani, M.Pd., Ph.D.

No.	N I M	Nama Mahasiswa	Partisipasi	Tugas	UTS	UAS	NA	NH	Kehadiran
1.	19030224022	MOHAMMAD ARIF RAHMATULLOH	90.00	87.50	80.00	85.00	85.8	A	100 %
2.	19030224023	BUDIMAN ZEBUA	90.00	87.50	90.00	90.00	89.3	A	100 %
3.	19030224024	DALILAH SALSABILA ESTU	90.00	87.50	85.00	90.00	88.3	A	100 %
4.	19030224026	JHULINDA NIZAR WATI	90.00	87.50	75.00	85.00	84.8	A-	100 %
5.	19030224027	NOVIAN AKBAR PRATAMA	90.00	87.50	70.00	80.00	82.3	A-	100 %
6.	19030224028	STEVEN DAFA ARNANDO	90.00	87.50	70.00	85.00	83.8	A-	100 %
7.	19030224029	CORNELIA FEBRIANI	90.00	87.50	80.00	80.00	84.3	A-	100 %
8.	19030224030	FRISELLYA DIRGANTARI	90.00	87.50	90.00	85.00	87.8	A	100 %
9.	19030224031	MUHAMMAD FIKRI ZULFY FARDHANY	90.00	87.50	75.00	80.00	83.3	A-	100 %
10.	19030224034	ZUHA IKHLASHUL AMIEN	90.00	87.50	80.00	80.00	84.3	A-	100 %
11.	19030224035	SEFRINA PUTRI TRISNANTI	90.00	87.50	85.00	90.00	88.3	A	100 %
12.	19030224036	ILHAM RAHMATULLAH	90.00	87.50	75.00	80.00	83.3	A-	100 %
13.	19030224037	DWI MAULIDIA	90.00	87.50	90.00	85.00	87.8	A	100 %
14.	19030224038	PRAMESTI REGITA ARIYANTI	90.00	87.50	75.00	90.00	86.3	A	100 %
15.	19030224040	MUHAMMAD NAUFAL ABIYU	90.00	87.50	75.00	0.00	59.3	C	100 %
16.	19030224053	ADINDA NUR NATASYA	90.00	87.50	80.00	80.00	84.3	A-	100 %
17.	19030224054	NABILA ARIS MUHAMMAD	90.00	87.50	90.00	85.00	87.8	A	100 %
18.	19030224055	ARIFA INSANI NAVALIA	90.00	87.50	90.00	80.00	86.3	A	100 %
19.	19030224056	IRIN FAGIANTI RIAS PRATIWI	90.00	87.50	85.00	80.00	85.3	A	100 %
20.	19030224057	FINANDA RAHMANITA	90.00	87.50	90.00	85.00	87.8	A	100 %
21.	19030224058	BIM MAULANA RUSDI	90.00	87.50	75.00	80.00	83.3	A-	100 %
22.	19030224059	NOVTANTIAN ERLINDA PUTRI RAMADHANI	90.00	87.50	85.00	90.00	88.3	A	100 %
23.	19030224060	KHANSA ZANADIA ULFA	90.00	87.50	75.00	80.00	83.3	A-	100 %
24.	19030224062	DHENATRA RIFQY PRASETYO	90.00	87.50	85.00	85.00	86.8	A	100 %
25.	19030224063	RYAN YUSRIZAL	90.00	87.50	70.00	85.00	83.8	A-	100 %

D.6 ASSESSMENT OF PLO-CLO AND CLASS PERFORMANCE

ASSESSMENT OF PROGRAM LEARNING OUTCOMES (PLO)

COURSE : Earth Physics
CREDIT : 3
STUDY PROGRAM : Undergraduate Programme of Physics
PERIOD : 2020/2021 (Odd Semester)
CLASS : 2019E
PARTICIPANTS : 25

PROGRAM LEARNING OUTCOMES:

PLO 1. Able to demonstrate knowledge of Classical Physics and Modern Physics.

PLO 6. Able to improve their knowledge and be able to continue their study in a higher education.

PLO 7. Able to communicate their ideas and/or research results in academic writing and speaking effectively.

PLO 10. Able to demonstrate good scientist's manners, critical thinking and innovation skills in research and professional fields; and willing to do lifelong learning.

COURSE LEARNING OUTCOMES:

1. Demonstrating independent, creative and honest characters in doing student assignments, mid and final exams.
2. Understanding the roles of Earth as a physical system in human lives
3. Understanding aspects of interdependence of Earth and mankind.
4. Understanding frequent Earth-related disasters including geological and hydro-meteorological hazards in Indonesia.
5. Applying personal awareness and responsiveness of living environment as well as alertness to possible Earth-related disasters.

CLO-PLO CORRELATION:

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11
CLO1	✓	0	0	0	0	✓	✓	0	0	✓	0
CLO2	✓	0	0	0	0	✓	✓	0	0	✓	0
CLO3	✓	0	0	0	0	✓	✓	0	0	✓	0
CLO4	✓	0	0	0	0	✓	✓	0	0	✓	0
CLO5	✓	0	0	0	0	✓	✓	0	0	✓	0

ASSESSMENT PLAN:

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11
CLO1	Participation, Assignment, Mid Test	0	0	0	0	Participation, Assignment, Mid Test	Participation, Assignment, Mid Test	0	0	Participation, Assignment, Mid Test	0
CLO2	Participation, Assignment, Mid Test	0	0	0	0	Participation, Assignment, Mid Test	Participation, Assignment, Mid Test	0	0	Participation, Assignment, Mid Test	0
CLO3	Participation, Assignment, Mid Test	0	0	0	0	Participation, Assignment, Mid Test	Participation, Assignment, Mid Test	0	0	Participation, Assignment, Mid Test	0
CLO4	Participation, Assignment, Final Exam	0	0	0	0	Participation, Assignment, Final Exam	Participation, Assignment, Final Exam	0	0	Participation, Assignment, Final Exam	0
CLO5	Participation, Assignment	0	0	0	0	Participation, Assignment	Participation, Assignment	0	0	Participation, Assignment	0

STUDENTS' PERFORMANCE:

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11
Excellent	93%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	93%	93%	#DIV/0!	#DIV/0!	93%	#DIV/0!
Good	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0%	0%	#DIV/0!	#DIV/0!	0%	#DIV/0!
Satisfy	7%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	7%	7%	#DIV/0!	#DIV/0!	7%	#DIV/0!
Fail	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0%	0%	#DIV/0!	#DIV/0!	0%	#DIV/0!

GRAPHICAL CLASS OR STUDENTS PERFORMANCE

