

**SEMESTER LEARNING ACTIVITY PLANS  
(SLAP)  
SEMESTER ODD 2022/2023**



Physics Undergraduate Study Program

Physics Department

Introduction to Geophysics

MFG 1101/ 2 Credits

Lecturer Coordinator:

**UNIVERSITAS GADJAH MADA  
FACULTY OF MATHEMATICS AND NATURAL SCIENCE  
2022**



## Universitas Gadjah Mada

Faculty of Mathematics and Natural Science  
 Physics Department / Physics Undergraduate Study Program  
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Document Number :

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### SEMESTER LEARNING ACTIVITY PLANS (SLAP)

Code	Course Name	Credits (Credits)		Semester	Status	Prerequisite
<i>MFG 1101</i>	<i>Introduction to Geophysics</i>	<i>T: 2</i>	<i>P: ...</i>	<i>ODD</i>	<i>Elective</i>	<i>None</i>
<b>Short Description</b>	<p>This course is a compulsory first year course for geophysics study program students. This course is intended to provide an overview of geophysics as a science and the uses of geophysics in everyday life. By recognizing the field of science as early as possible, it is hoped that students can be more motivated in attending lectures in the following semesters.</p> <p>This course aims to:</p> <ul style="list-style-type: none"> <li>Introducing new students, for what and how geophysics is. In addition, to motivate and strengthen their determination to enter higher education in geophysics, and to introduce them to general topics of Earth physics.</li> <li>Students who have taken this course in earnest are expected to have the enthusiasm, determination, insight and adequate first-hand knowledge to attend basic scientific courses and basic geophysical skills courses in the following semester.</li> </ul>					
<b>Program Learning Outcomes (PLO) Imposed on the Course</b>	<i>PLO 2</i>	<b>Knowledge.</b> Able to explain theoretical concepts and principles of classical and modern physics and able to apply basic concepts of physics and related mathematical methods in finding solutions to physical problems.				
	<i>PLO 3</i>	<b>General Skills.</b> Able to communicate the results of problem studies and physical behavior both in writing and verbally, as well as being able to lead and collaborate at various levels of roles in a team.				
<b>Course Outcomes (CO)</b>	<b>After completing this course, students are expected to be able to:</b>					
	<i>CO1</i>	Students can explain the position of the earth in the context of the universe to the internal structure of the earth and the contribution of geophysics in understanding the position and structure				
	<i>CO2</i>	Students can explain the role of geophysics in natural resource exploration				
<b>The Correlation of CO to Learning Materials and Methods, and Time Allocation</b>	<b>Learning Materials</b>		<b>Learning Methods</b>		<b>Time Allocation</b>	
	<i>CO 1</i>	1. RPKPS 2. Geophysical science and its role in general	TCL-SCL mixed		<i>2X50 minutes</i>	
	<i>CO 2</i>	Earth and Solar System. The shape, size and composition of the Earth. Earth's revolution and rotation. Parts of the Earth: exosphere, atmosphere, hydrosphere, lithosphere, upper mantle or asthenosphere, lower mantle, outer core and inner core.	TCL-SCL mixed		<i>4X50 minutes</i>	

	<i>CO 2</i>	<i>Earth's gravitational field: pendulum and gravitometer, geoid, isostasy and tides.</i>		TCL-SCL mixed					<i>4X50 minutes</i>	
	<i>CO 2</i>	Seismology: seismographs and seismometers, the mechanism of earthquake occurrence (focal mechanism) and its propagation, the internal structure of the Earth, micro-earthquakes, tsunamis.		TCL-SCL mixed					<i>4X50 minutes</i>	
<b>Midterm exam/Project Task Results/Case Analysis Results</b>										
	<i>CO 2</i>	Geomagnetism and rock magnetism: compass and magnetometer, main and external fields, daily variations and westward drift, rock magnetization, palaeomagnetism and ocean floor spreading.		TCL-SCL mixed					<i>6X50 minutes</i>	
	<i>CO 2</i>	Georadioactivity: absolute dating (absolute dating), the age of the Earth.		TCL-SCL mixed					<i>4X50 minutes</i>	
	<i>CO 2</i>	Earth's internal heat: temperature, temperature gradient and surface heat flux, variations in temperature with depth.		TCL-SCL mixed					<i>4X50 minutes</i>	
<b>Final exams/ Project Task Results/Case Analysis Results</b>										
<b>Learning Methods</b>	TCL - SCL mixed									
<b>Student Learning Experience</b>	Listening to the lecturer's explanation and discussion									
<b>Access to Learning Media/ LMS and Offline and Online Percentage</b>	Text, presentation, image, web									
<b>Assessment Methods and Synchronization with CO</b>	<b>Assessment Methods</b>	<b>Assessment Percentage</b>	<b>Criteria/ Indicators</b>	<b>CO1</b>	<b>CO2</b>					
	<b>Participatory Activity*</b>									
	<b>Project Results/ Case Study Results/ PBL Results*</b>									
	<b>Cognitive</b>									
	<b>Assignment Quiz</b>	<b>15</b>			√	√				

	<b>Midterm Exam</b>	<b>45</b>		√	√				
	<b>Final Exam</b>	<b>40</b>		√	√				
	<b>Total</b>	<b>100</b>							
	*) can also be obtained from the Midterm or Final Exam as the result of participatory activities or project/ case study results. According to IKU 7, the percentage of project results/ case study/ PBL results is at least 50%.								
<b>References</b>	<b>Main References;</b> Field Geophysics, Malcolm 2012								
<b>Lecturers (Team Teaching)</b>	<ol style="list-style-type: none"> <li>1. Dr. Eddy Hartantyo, M.Si.,</li> <li>2. Dr. wahyudi, MS.</li> </ol>								
<b>Authorization</b>	<b>Date of Drafting</b>	<b>Lecturer Coordinator</b>	<b>Head of Curriculum Committee</b>	<b>Head of Study Program</b>					
	2022			<i>Dr. Eng. Ahmad Kusumaatmaja, S.Si., M.Sc.</i>					