

**PROGRAM PLAN AND SEMESTER LEARNING  
ACTIVITIES  
(RPKPS)  
2021/2022 SCHOOL YEAR**



Geophysics

Physics

Introduction to Geophysics

MFG 1101 / 2 CREDITS

Teaching Team:

Dr. Eddy Hartantyo, M.Si et al

**GADJAH MADA UNIVERSITY  
FACULTY OF MIPA  
2021**



## Gadjah Mada University

Faculty of Mathematics and Natural Sciences  
Department of Physics / Undergraduate Geophysics  
Study Program 2021/2022 Academic Year

**Document Code:**


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### SEMESTER LEARNING PROGRAM AND ACTIVITY PLAN (RPKPS)

Course Code	Course Name	Weight (credits)		Semester	Course Status	Prerequisite Course									
<i>MFF 1101</i>	<i>Introduction to Geophysics</i>	<i>T: 2</i>	<i>P: -</i>	<i>odd</i>	<i>Required</i>	-									
<b>Brief Course Description</b>	<p>This course is a compulsory first-year course for students of geophysics study program. This course is intended to provide an overview of geophysics as a science and the use of geophysics in everyday life. By recognizing the field of science as early as possible, students are expected to be more motivated in attending lectures in the following semesters.</p> <p>This course aims to:</p> <ul style="list-style-type: none"> <li>- To introduce new students, in outline and at a glance, to the what, what for and how of geophysics. It is also to motivate and strengthen their determination to enter geophysical higher education, and familiarize them with general topics of Earth physics.</li> <li>- Students who have taken this course seriously are expected to have the enthusiasm, determination, insight and adequate first provision to follow the basic scientific courses and basic geophysical expertise courses in the following semester.</li> </ul>														
<b>Graduate Learning Outcomes (SLOs) Charged to the MK</b>	<b>CPL1</b>	<b>Good Attitude:</b> Graduates are honest, disciplined, curious, critical, confident, independent, emotionally mature, cooperative, and trustworthy. Uphold the norms, values, morals, religion, general ethics and professional ethics, and actively play a role in the global sustainable development movement and behave professionally													
	<b>CPL2</b>	<b>Knowledge Aspect.</b> Able to explain the theoretical concepts and principles of classical and modern physics, and able to apply them basic concepts of physics and related mathematical methods in finding solutions to physical problems.													
<b>Course Learning Outcomes (CPMK)</b>	<b>After completing this course, students are expected to be able to:</b>														
	<b>CPMK1</b>	Students are able to 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 this position and structure [SLO-1, SLO-2].													
	<b>CPMK2</b>	Students are able to explain the role of geophysics in natural resources exploration [CPL-1, CPL-2]													
<b>Mapping SLO with CPMK</b>	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>CPMK1</th> <th>CPMK2</th> </tr> </thead> <tbody> <tr> <td>CPL-1</td> <td>10</td> <td>10</td> </tr> <tr> <td>CPL-2</td> <td>40</td> <td></td> </tr> </tbody> </table>							CPMK1	CPMK2	CPL-1	10	10	CPL-2	40	
	CPMK1	CPMK2													
CPL-1	10	10													
CPL-2	40														
<b>Linkage of CPMK with Learning Materials and Forms,</b>	<b>Learning Materials</b>			<b>Form of Learning</b>		<b>Time Allocation</b>									
	<b>CPMK1</b>	1. RPKPS		TCL - SCL mixed		2 Hours									

<b>and Time Allocation</b>		2. Geophysical science and its role in general			
	<i>CPMK1</i>	Earth and Solar System. 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	2 Hours	
	<i>CPMK1</i>	Earth's gravitational field: pendulum and gravitometer, geoid, isostasy and tides.	TCL - SCL mixed	2 Hours	
	<i>CPMK1</i>	Seismology: seismographs and seismometers, earthquake focal mechanism and propagation, internal structure of the Earth, earthquakes micro, tsunami.	TCL - SCL mixed	2 Hours	
	<i>CPMK1</i>	Geomagnetism and rock magnetism: compasses and magnetometers, main and outer fields, diurnal variations and westward drift, rock magnetization, palaeomagnetism and ocean floor expansion.	TCL - SCL mixed	2 Hours	
	<i>CPMK1</i>	Georadioactivity: dating absolute dating, the age of the Earth.	TCL - SCL mixed	2 Hours	
	<i>CPMK1</i>	Earth's internal heat: temperature, temperature gradient and surface heat flux, temperature variation with depth.	TCL - SCL mixed	2 Hours	
	<b>UTS / Project Assignment Results / Case Analysis Results</b>				
	<i>CPMK2</i>	Geophysical Methods Exploration.	TCL - SCL mixed	4 Hours	
	<i>CPMK2</i>	Geothermal exploration and groundwater.	TCL - SCL mixed	4 Hours	

	<b>CPMK2</b>	Petroleum and gas exploration.	TCL - SCL mixed	2 Hours	
	<b>CPMK2</b>	Exploration of ore bodies and minerals.	TCL - SCL mixed	2 Hours	
	<b>CPMK2</b>	Environmental Geophysics: Earth's potential as a storehouse of grace and disaster.	TCL - SCL mixed	2 Hours	
<b>UAS / Project Assignment Results / Case Analysis Results</b>					
<b>Learning Methods</b>	TCL - SCL mixed				
<b>Student Learning Experience</b>	Listening to lecturer's explanation and discussion				
<b>Learning Media Access / LMS and Offline &amp; Online Percentage</b>	Text, presentation, images, web				
<b>Assessment Method and Alignment with CPMK</b>	<b>Engineerin g Assessment</b>	<b>Percentage Assessment</b>	<b>Criteria. Indicator</b>	<b>CPMK 1</b>	<b>CPMK 2</b>
	<b>Participatory Activities<sup>*)</sup></b>				
	<b>Project <i>Result</i> / Case Study Result / PBL Result<sup>*)</sup></b>				
	<b>Cognitive</b>				
	<b>Tasks</b>	<b>20</b>		<b>10</b>	<b>10</b>
	<b>Quiz</b>	<b>-</b>			
	<b>UTS</b>	<b>40</b>		<b>40</b>	
	<b>UAS</b>	<b>40</b>			<b>40</b>
	<b>Total</b>	<b>100</b>			
	*) can also be obtained from UTS or UAS which are the results of participatory activities or project/case <i>study</i> results. In accordance with KPI 7, the <b>total percentage</b> of participatory activities and the results of projects / case studies / PBL results is at least 50%.				

<b>Reference List</b>	<p>1. Field Geophysics, Malcolm 2012</p> <p>2. Fundamentals of Geophysics, Author: William Lowrie; Andreas Fichtner, Cambridge University Press, 3rd<sup>rd</sup> edition, 2020</p>			
<b>Name of Lecturer (Team Teaching)</b>	Dr. Eddy Hartantyo, M.Si., Dr. Wahyudi, MS, Drs. Imam Suyanto, M.Si, Dr.rer.nat. Ade Anggraini, S.Si, MT			
<b>Authorization</b>	<b>Date of Preparation</b>	<b>Course Coordinator</b>	<b>Area of Expertise Coordinator (if any)</b>	<b>Head of Study Program</b>
	September 2022	<i>(Signature) Dr. Mitrayana</i>		 Dr. Sudarmaji, MSi.