

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



Geophysics Basic

Geology

MFG 1104/ 2 credits

Mentoring Team:

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PhD Dr. Eng. Agung Setianto,

**GADJAH MADA UNIVERSITY  
FACULTY OF MATHEMATICS  
AND NATURAL SCIENCES  
2021**



**Gadjah Mada University**  
 Faculty of Mathematics and Natural Sciences  
 Department of Physics / S1 Geophysics Study  
 Program Academic Year 2021/2022

**Document Code:**


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

Course Code	Course Name	Weight (credit)		Semester	Course Status	Prerequisite Courses
MFG 1104	<i>Basic Geolo</i>	<i>T: 2</i>	<i>P: 1</i>	<i>Complete</i>	<i>Mandatory</i>	-
<b>Course Brief Description</b>	Basic Geology introduces the basics of Geology to new students (first-year lectures) regarding the definition of geology, scientific coverage, the relationship of geology in the context of earth science in general; also presented material forming the Earth in the form of minerals and rocks, as well as geological processes involved in the rock cycle such as magmatism, volcanism, weathering, erosion, sedimentation, and metamorphism; how rocks deform and within geologic time frames, as well as how surface geological processes shape the evolving landscape on Earth; and how all of Earth's constituent materials and processes involved can be understood in the formation of natural resources and potential natural disasters.					
<b>Graduate Learning Outcomes (CPL) Charged to MK</b>	<b>CPL-1</b>	<b>Good Attitude:</b> Students are expected to be able to develop a strong <i>curiosity</i> as a provision in the ability to learn independently, be able to think critically in filtering data and interpretation, and be confident and able to work together in conveying opinions and ideas in cases raised in learning.				
	<b>CPL-2</b>	<b>Mastery of general knowledge:</b> Students are expected to be able to understand the application of basic science (mathematics, physics, chemistry and biology) in studying the process of formation of the Earth's constituent materials (minerals and rocks), rock deformation, geological time scales, geological processes that work in and on the surface of the Earth.				
	<b>CPL-3</b>	<b>Operational and comprehensive skills :</b> Students are expected to be able to apply simple practical geological science in the design of natural resource exploration and efforts to mitigate potential natural disasters.				
<b>Course Learning Outcomes (CPMK)</b>	<b>After completing the learning of this course, students are expected to be able to:</b>					
	<b>CPMK-1</b>	Students are expected to be able to apply basic science understanding (mathematics, physics, chemistry and biology) in studying the constituent materials of the Earth (minerals and rocks) and processes involved in the rock cycle (plate tectonics and exogenous processes) [CPL1, CPL2, CPL3]				
	<b>CPMK-2</b>	Students are expected to be able to apply basic science understanding (mathematics, physics, chemistry and biology) in studying rock deformation and geological time scales ( <i>deep-time</i> ). [CPL1, CPL2]				
	<b>CPMK-3</b>	Students are expected to be able to understand the concept of natural resource exploration and the concept of natural disaster mitigation				

		Able to propose simple designs in exploration and mitigation. [CPL3]																		
<b>CPL mapping with CPMK</b>	<table border="1"> <thead> <tr> <th></th> <th>CPMK1</th> <th>CPMK2</th> <th>CPMK3</th> </tr> </thead> <tbody> <tr> <td>CPL-1</td> <td>V</td> <td>V</td> <td></td> </tr> <tr> <td>CPL-2</td> <td>V</td> <td>V</td> <td></td> </tr> <tr> <td>CPL-3</td> <td>V</td> <td></td> <td>V</td> </tr> </tbody> </table>					CPMK1	CPMK2	CPMK3	CPL-1	V	V		CPL-2	V	V		CPL-3	V		V
		CPMK1	CPMK2	CPMK3																
	CPL-1	V	V																	
	CPL-2	V	V																	
CPL-3	V		V																	
<b>CPMK link with Material and Form of Learning, as well as Time Allocation</b>		<b>Learning Materials</b>	<b>Forms of Learning</b>	<b>Time Allocation</b>																
	<i>CPMK1</i>	Introduction	TCL - SCL mixed	2 Hours																
	<i>CPMK1</i>	Mineral	TCL - SCL mixed	2 Hours																
	<i>CPMK1</i>	Magmatism, Volcanism, and the Formation of Igneous Rocks	TCL - SCL mixed	2 Hours																
	<i>CPMK1</i>	Weathering, Erosion, Sedimentation, and Sedimentary Rock	TCL - SCL mixed	2 Hours																
	<i>CPMK1</i>	Metamorphism and the Formation of Malihan Rocks	TCL - SCL mixed	2 Hours																
	<i>CPMK2</i>	Rock Deformation and Geological Structure	TCL - SCL mixed	2 Hours																
	<i>CPMK2</i>	Geochronology and Geologic Time Scale	TCL - SCL mixed	2 Hours																
	<b>UTS/ Project Task Results/ Case Analysis</b>																			
	<i>CPMK2</i>	Earth's Interior	TCL - SCL mixed	2 Hours																
	<i>CPMK2</i>	Plate Tectonics	TCL - SCL mixed	2 Hours																
	<i>CPMK3</i>	Mass Movement	TCL - SCL mixed	2 Hours																
	<i>CPMK3</i>	Hydrological Cycle and Fluvial Process	TCL - SCL mixed	2 Hours																
	<i>CPMK3</i>	Hydrogeology and Groundwater Exploitation	TCL - SCL mixed	2 Hours																
	<i>CPMK3</i>	Coastal Geology and Climate Change	TCL - SCL mixed	2 Hours																
	<i>CPMK3</i>	Geological Resources Exploration and Geological Hazard Mitigation	TCL - SCL mixed	2 Hours																
	<b>UAS/ Project Task Results/ Case Analysis</b>																			
<b>Learning Methods</b>	TCL - SCL mixed																			
<b>Student Learning Experience</b>	Listen to lecturers' explanations, questions and answers, quizzes, rubrics, and discuss related cases that are <i>up-to-date</i>																			

<b>Access Learning Media / LMS and Offline &amp; Online Percentage</b>	PPT slides, reference books, and videos						
<b>Assessment Methods and Alignment with CPMK</b>	<b>Assessment Techniques</b>	<b>Assessment Percentage</b>	<b>Criteria/ Indikator</b>	<b>CPMK-1</b>	<b>CPMK-2</b>	<b>CPMK-3</b>	
	<b>Participatory Activities<sup>*)</sup></b>	80%	Able to play b and discus i	Application of basic mathematics and science in the rock cycle	Application of mathematics and basic science in rock	Understanding the concepts of resource exploration and disaster mitigation	
	<b>Project Results/Case Study Results/PBL Results<sup>*)</sup></b>	20%	Able to convey opinions	Sequences bowen reactions, mineral resistance, and metamorphic facies	Identify fault types, tectonic plate types, and geologic time scale sequences	Describe the availability of natural resources and the concept of energy distribution in disaster mitigation	
	<b>Cognitive</b>						
	<b>Assignment</b>	10		V	V	V	
	<b>Quiz</b>	10		V	V	V	
	<b>UTS</b>	40		V	V		
	<b>UAS</b>	40			V	V	
	<b>Total</b>	100					
<sup>*)</sup> can also be obtained from UTS or UAS which is the result of participatory activities or <i>project</i> / case study results. In accordance with IKU 7, <b>the percentage of participatory activities and project results/case studies/PBL results is at least 50%.</b>							
<b>Reference List</b>	<ol style="list-style-type: none"> <li>1. Borrero, F., F.S. Hess, J. Hsu, G. Kunze, S.A. Leslie, S. Letro, M. Manga, L. Sharp, T. Snow, and D. Zike (2013) Earth Science: Geology, the Environment and the Universe, McGraw-Hill Education, 1029 p.</li> <li>2. Carlson, D.H., C.C. Plummer, L. Hammersley (2010) Physical Geology Earth Revealed, 9th ed., McGraw-Hill, 645 p.</li> <li>3. Monroe, J.S., R. Wicander, R. Hazlett (2007) Physical Geology Exploring the Earth, 6th ed., Thomson Brooks Cole, 690 p.</li> <li>4. Murck, B.W., and B.J. Skinner (2011) Visualizing Geology, 3rd ed., John Wiley, 558 pp.</li> <li>5. Plummer, C.C., D.H. Carlson, and L. Hammersley (2016) Physical Geology, 15th ed., 595 p.</li> <li>6. Smith, G., and A. Pun (2013) How Does Earth Work Physical Geology and the Process of Science, 2nd ed., Pearson, 640 p.</li> <li>7. Tarbuck, E.J., F.K. Lutgens, and D.G. Tasa (2016) Earth An Introduction to Physical Geology, 12th ed., Pearson, 788 p.</li> </ol>						
<b>Name of Lecturer</b>	Salahuddin Husein, ST, MSc, PhD Dr. Eng. Agung Setianto, ST, Msi						

<b>(Team Teaching)</b>				
<b>Authorization</b>	<b>Drafting Date</b>	<b>Course Coordinator</b>	<b>Coordinator of Expertise (if applicable)</b>	<b>Head of Study Program</b>
	<i>September 3 2022</i>	Salahuddin Hussein		 Dr. Sudarmaji, MSi