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

Geophysics of

Rock Physics

MFG 4603/ 2 credits

Mentoring Team:

Sismanto

UNIVERSITAS GADJAH MADA 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:** .....

SEMESTER LEARNING PROGRAM AND ACTIVITY PLAN (RPKPS)

Course Code	Course Name	Weight (credit)		Semester	Course Status	Prerequisite Courses
MFG 4603	*Rock Physics*	*T : 2*	*P: -*	*Odd*	*Choice*	MFF-1012

Course Brief Description	The rock physics course studies the behavior of rocks to various physical influences, starting from an introduction to the Process of Rock Occurrence and Petrophysical Parameters of Rocks. Then proceed to study the physical properties of rocks, such as Magnetic Properties of Rocks, Rock Radioactivity, Rock Elasticity, Wave Propagation in Rocks, Elasticity Modeling Theory, Seismic Wave Attenuation, Thermal Properties of Rocks, Electrical Properties of Rocks, and Some relationships between physical properties of rocks. The learning method to be delivered is student-based learning, lectures, discussions and student presentations on assignments given by lecturers. After attending the Rock Physics lecture, students are expected to be able to explain concepts and solve basic or simple problems of rock physics systems in an integrated and comprehensive manner.	
Learning Outcomes n Graduates (CPL) Charged to MK	***CPL-2***	**Mastery of general knowledge:** Graduates are able to apply basic science (mathematics, physics, chemistry, biology, geology), and geophysics in general and their relationship with other sciences such as geology, geodesy, geochemistry, geography, computing and information technology.
	CPL-3	**Operational and comprehensive skills**: Graduates are able to apply all geophysical methods (seismic, gravitational, magnetic, electrical, electromagnetic, and thermic methods) for energy exploration (e.g. oil and gas, coal, geothermal), mining materials (eg: iron, copper, gold, silver, tin) as well as groundwater and disaster mitigation.
	CPL-4	**Application and analysis skills**: Graduates are able to carry out and manage a geophysical survey which includes scientific steps in the acquisition, processing and interpretation of data for the exploration of natural resources both for energy (e.g. oil and gas, coal, for energy exploration (e.g. oil and gas, coal, geothermal), mining materials (eg: iron, copper, gold, silver, tin) as well as groundwater and disaster mitigation.

	CPL-6	**Managerial skills and self-development**: Graduates are able to update their competencies, namely by life-long learning in line with the latest geophysical conditions to compete nationally and internationally by upholding UGM values (Pancasila: Divinity, Humanity, Unity, Peoplehood, Justice, and Science: universality, objectivity, freedom, respect for reality and truth).
Learning Outcomes n Courses (CPMK)	**After completing the learning of this course, students are expected to be able to:**	
	CPMK-1	Identify problems or problems of Rock Physics in civil engineering, geology, mining, petroleum and other earth sciences). [CPL2; CPL3]
	CPMK-2	Measure, plot and analyze, and physically interpret relationships between parameters. [CPL4]
	CPMK-3	Analyze and solve simple Rock Physics problems. [CPL3; CPL4]
	CPMK-4	Discuss and communicate results to other related science groups (such as civil engineering, geology, mining, petroleum and other earth sciences). [CPL6]

CPL mapping with CPMK

	CPMK-1	CPMK-2	CPMK-3	CPMK-4
CPL-2				
CPL-3				
CPL-4				
CPL-6				

CPM K link with Learning Material and Form n, as well as Time Allocation

	Learning Materials	Forms of Learning	Time Allocation
CPMK1	Introduction	TCL - SCL mixed	2 Hours
CPMK1	The process of occurrence of	TCL - SCL mixed	2 Hours
CPMK1	Parameters	TCL - SCL mixed	2 Hours

		Petrophysical Rocks		
	CPMK2	Magnetic Properties of Rocks	TCL - SCL mixed	2 Hours
	CPMK2	Rock Radioactivity	TCL - SCL mixed	2 Hours
	CPMK2	Rock elasticity	TCL - SCL mixed	2 Hours
	CPMK2	Wave Propagation in Rocks	TCL - SCL mixed	2 Hours
UTS/Project Task Results/Case Analysis Results				
	CPMK3	Elasticity modeling theory I and II	TCL - SCL mixed	2 Hours
	CPMK3	Seismic wave attenuation	TCL - SCL mixed	2 Hours
	CPMK3	Properties of thermal properties of rocks	TCL - SCL mixed	2 Hours
	CPMK3	Properties of electrical properties of rocks I and II	TCL - SCL mixed	2 Hours
	CPMK3	Some relationships between physical properties of rocks	TCL - SCL mixed	2 Hours
	CPMK4	Student Assignment Presentation I	SCL mixed	2 Hours
	CPMK4	Student Assignment Presentation II	SCL mixed	2 Hours
UAS/ Project Task Results/ Case Analysis Results				

Learning Methods	TCL - SCL mixed, discussions, assignments and lectures
Student Learning Experience	Listening / listening to lecturers' explanations, discussions and presentations
Access Learning Media/ LMS and Offline &; Online	Reference book, Internet-technology, Classroom, Whiteboard, LCD, Powerpoint

Assessment Methods and Alignment with CPMK	**Assessment Techniques**	**Assessment Percentage**	**Criteria/ Indicators**	**CPMK 1**	**CPMK2**	**CPMK3**	**CPMK4**
	Participatory Activities*)	**10**	**Attend and present**				√
	***Project Results/*H Results Case Study/ PBL Results*)**						
	Cognitive						
	Assignment	**10**	**Paper/file**	√			√
	Quiz	**-**					
	UTS	**40**	**Value**		√		
	UAS	**40**	**Value**			√	
	Total	**100**					
	*) can also be obtained from UTS or UAS which is the result of participatory activities or *project* / case study results. In accordance with IKU 7, **the percentage of** participatory activities and project results/case studies/PBL results is at least 50%.						
Reference List	Schon, J.H., 1998, Physical Properties of Rocks, Pergamon Press. Various sources on the Internet and engineering journals related to rock physics.						
Name of Lecturer (*Team Teaching*)	Sismanto						
Authorization	**Drafting Date**	**Course Coordinator**		**Coordinator of Expertise (if any)**			**Head of Study Program**
	2020	*(Signature)*					 Dr.. Sudarmaji,MSi