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

Physical Geophysics

Volcano Seismology

MFG 4633/ 2 credits

Mentoring Team:

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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 4633	*Volcano Seismology*	*T: 2*	*P: -*	*Odd*	*Choice*	*MFG 3111 - Volcano Physics*

Course Brief Description	Volcano Seismology is an advanced course that teaches specifically the relationship of seismology with volcanic activity.	
Graduate Learning Outcomes (CPL) Charged n in MK	***CPL-1***	**Good Attitude:** Graduates are honest, disciplined, curious, critical, confident, independent, emotionally mature, cooperative, and trustworthy. Uphold norms, values, morals, religion, general ethics and professional ethics, and actively play a role in the global movement of sustainable development and behave professionally.
	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.
Course Learning Outcomes (CPMK)	**After completing the learning of this course, students are expected to be able to:**	
	CPMK-1	Students can explain various types of volcanic earthquakes. [CPL-1,CPL-2]
	CPMK-2	Students can use basic concepts of seismology to analyze seismic signals of volcanic activity. [CPL-1, CPL-3]
	CPMK-3	Students can interpret volcanic seismic signals within the framework of monitoring volcanic activity. [CPL-1, CPL-4]
CPL Mapping with CPMK		

	CPMK1	CPMK2	CPMK3
CPL-1	5	5	5
CPL-2	20		

CPL-3		35	
CPL-4			30

CPMK link with Material and Form of Learning, as well as Time Allocation		**Learning Materials**	**Forms of Learning**	**Time Allocation**
	CPMK-1	RPKPS Volcano Seismology, Introduction, Group Division and Material	TCL - SCL mixed	1 Hour
	CPMK-1	Seismicity and base of Volcano Seismology	TCL - SCL mixed	3 Hours
	CPMK-1	The origin of the VolcanoTectonic (VT) earthquake, VT earthquakes on basaltic, andesite, and dasitic volcanoes	TCL - SCL mixed	4 Hours
	CPMK-2	Swarm VT	TCL - SCL mixed	2 Hours
	CPMK-2	VT earthquake source mechanism	TCL - SCL mixed	2 Hours
	CPMK-2	VT earthquake and its role in the process of volcanism	TCL - SCL mixed	2 Hours
	CPMK-2	Seismic signals related to volcanic eruptions	TCL - SCL mixed	2 Hours
	CPMK-2	Volcanic tremor	TCL - SCL mixed	2 Hours
	CPMK-3	Seismic signals by pyroclastic flows, avalanches, and lahars	TCL - SCL mixed	2 Hours
	CPMK-3	LP and VLP earthquakes	TCL - SCL mixed	2 Hours
	CPMK-3	Microearthquake swarms and volcanic eruptions		2 Hours
	CPMK-3	Gel.acoustics and volcanic eruptions	TCL - SCL mixed	2 Hours
	CPMK-3	Volcano monitoring and analysis	TCL - SCL mixed	2 Hours
	UAS/ Project Task Results/ Case Analysis			
Learning Methods	TCL - SCL mixed			

Student Learning Experience	Study the material, present, and answer questions							
Access to Learning Media an/ LMS and Offline &; Online Percentage	Presentation, paper preparation, oral test, written test							
Assessment Methods and Alignment with CPMK	**Assessment Techniques**	**Assessment Percentage**	**Criteria / Indicator**	**CPMK-1**	**CPMK-2**	**CPMK-3**		
	Participatory Activities *)							
	***Project Results*/Hasil Case Study/ PBL Results**[*)]	**50**		**10**	**20**	**20**		
	Cognitive							
	Assignment							
	Quiz	**20**		**5**	**10**	**5**		
	UTS	**15**		**10**	**5**			
	UAS	**15**			**5**	10		
	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	1. Vyacheslay M. Zobin, 2012, Introduction to Volcanic Seismology, 2nd edition, Elsevier B.V ISBN:978-0-444-56375-0 2. Joachim Wassermann, 2002, Manual of Seismological Observatory Practice CHAPTER 13: Volcano Seismology, IASPEI 3. Relevant Journals, Papers, and Research Results							
Name of Lecturer (*Team Teaching*)	Imam Suyanto, Ade Anggraini							
Authorization	**Drafting Date**	**Course Coordinator**		**Coordinator of Expertise (if applicable)**		**Head of Study Program**		

	2020			 Dr. Sudarmaji, MSi