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

Geophysics Electronics

Geophysics

MFG-2108/ 2 credits

Mentoring Team:

Geophysical Electronics Assistance

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:**
			.....

SEMESTER LEARNING PROGRAM AND ACTIVITY PLAN (RPKPS)

Course Code	Course Name	Weight (credit)		Semester	Course Status		Prerequisite Courses
MFG-2108	Geophysical Electronics	*T: 2*	*P: -*	*Complete*	*Mandatory*		*MFF-1012*

Course Brief Description	Geophysical Electronics (MFG-2108) is a compulsory subject in the geophysics study program that teaches discrete/digital system analysis and discrete/digital data processing. This course aims to: 1. Students understand the basic components of analog electronics 2. Students are able to design analog electronic circuits 3. Students understand the basic components of digital electronics 4. Students are able to design digital electronic circuits	
Graduate Learning Outcomes (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.
Course Learning Outcomes (CPMK)	**After completing the learning of this course, students are expected to be able to:**	
	CPMK-1	Understand the basic components of analog electronics [CPL-2]
	CPMK-2	Able to design analog electronic circuits [CPL-3]
	CPMK-3	Understand the basic components of digital electronics [CPL-2]
	CPMK-4	Able to design digital electronics circuits [CPL-3]

CPL mapping with CPMK

	CPMK1	CPMK2	CPMK3	CPMK4
CPL-2				
CPL-3				

The Relationship of CPMK with Learning Materials and Forms, as well as Time Allocation		Learning Materials	Forms of Learning	Time Allocation
	CPMK-1	Understanding analog electronics	TCL - SCL mixed	2
	CPMK-2	KVL and KCL series	TCL - SCL mixed	2
	CPMK-2	Thevenin and Norton Rules	TCL - SCL mixed	2
	CPMK-1	Capacitors and Inductors	TCL - SCL mixed	2
	CPMK-1	Diode	TCL - SCL mixed	2
	CPMK-2	Diode Applications	TCL - SCL mixed	2
	CPMK-2	Transistors and their applications	TCL - SCL mixed	2
	UTS/Project Task Results/Case Analysis			

	CPMK-3	Introduction to digital systems and number systems	TCL - SCL mixed	2 Hour
	CPMK-3	Basic and combinational Logic Gates	TCL - SCL mixed	2 Hour
	CPMK-4	Boolean algebra and Programming techniques	TCL - SCL mixed	2 Hour
	CPMK-4	SOP method, POS method and Karnaugh Map	TCL - SCL mixed	2 Hour
	CPMK-4	Combinational circuit : Sum, Subtract, Multiplexer, Encoder, Decoder,7 Segment	TCL - SCL mixed	2 Hours
	CPMK-4	Sequential Logic Circuits: R-S flip-flop, D flip-flop, J-K flip-flop, J-K Master Slave flip-flop, T flip-flop,	TCL - SCL mixed	2 Hours
	CPMK-4	Registers and Counters	TCL - SCL mixed	2
	CPMK-4	State diagram and Synchronous sequential circuit	TCL - SCL mixed	2 Hour
	UAS/ Project Task Results/ Case Analysis			

Learning Methods	Student centered Learning
Student Learning Experience	Class discussion, problem solving, design practice and data processing with computers
Access Learning Media / LMS and Offline &; Online Percentage	CD, paper, pyton, Laptop, Zoom Meeting and Google meet

Assessment Methods and Alignment with CPMK

Assessment Techniques	Assessment	Criteria/ Indicators	CPMK 1	CPMK 2	CPMK 3	CPMK 4	CPMK5	CPMK6
Participatory Activities*)	**10**	**Liveliness**	√					
***Project Results/*Case Study Results/PBL**								
Cognitive								
Assignment	**20**	**Task Grad**			√			
Quiz								
UTS	**35**	**Test score**		√	√			
UAS	**35**	**Test score**				√		
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%.

<table>
<tr><td>Reference List</td><td colspan="5">1. Wang, M., 2010, Understandable Electric Circuits, The Institution of Engineering and Technology, London, United Kingdom
2. Sadiku, M.N.O., and Alexander, C.K., 2013, Fundamentals of Electric Circuits, 5th edition, The McGraw-Hill Companies, Inc.
3. Maini, A.K, 2007, Digital Electronics:Principles, Devices and Applications, John Wiley &; Sons, Ltd.
4. Course modules.</td></tr>
<tr><td>Name of Lecturer (Team Teaching)</td><td colspan="5">Dr. Afif Rahman, MT,. Dr.SUDARMAJI, MSi</td></tr>
<tr><td rowspan="2">Authorization</td><td>Drafting Date</td><td>Course Coordinator</td><td>Coordinator of Expertise (if any)</td><td></td><td>Head of Study Program</td></tr>
<tr><td>August 10 2022</td><td> 
Dr. Afif Rahman, MT.</td><td>Dr. rer.nat. Ade Anggraini, M.T.</td><td></td><td> 
Dr. Sudarmaji, MSi.</td></tr>
</table>