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

Geophysics

Geophysical Analysis Method

MFG-2106/ 3 credits

Mentoring Team:

Geophysical Analysis Method

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-2106	*Geophysical Analysis Methods*	*T: 3*	*P: -*	*Odd*	*Mandatory*	*MFF-1405, MFF-1401, MMM-1102, MFF-1021*

Course Brief Description	Geophysical Analysis Method (MFG-2106) 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 meaning of analog and discrete signals and systems 2. Students understand and apply the theory and application of signals and continuous/analog systems 3. Students understand and apply the theory and application of signals and discrete/digital systems	
Graduate Learning Outcomes (CPL) Charged to 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-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-5	**Synthesis and Evaluation Skills** : Graduates are able to interpret geophysical data in the form of solving advanced and reverse problems (inverse problems) in an integrated manner that have ambiguous characters, carry out interpretation by making models and / or solving simple forward and reverse problems and are skilled in the use of computers both for the purposes of solving geophysical problems and for communication and internet access
Course Learning Outcomes (CPMK)	**After completing the learning of this course, students are expected to be able to:**	
	CPMK-1	Cultivate a good and professional attitude [CPL-1]
	CPMK-2	Students understand and apply the theory and application of signals and continuous/analog systems [CPL-3, CPL-5]
	CPMK-3	Students understand and apply the theory and application of discrete/digital signals and systems [CPL-3, CPL-5]

CPL mapping with CPMK

	CPMK1	CPMK2	CPMK3
CPL-1	√		
CPL-3			√
CPL-5		√	√

The Relationship of CPMK with Learning Materials and Forms, as well as Time Allocation

	Learning Materials	Forms of Learning	Time Allocation
CPMK-2	analog and discrete signals and systems	TCL - SCL mixed	3 Hours
CPMK-2	Models of analog physical systems and their completion	TCL - SCL mixed	6 hours
CPMK-2	Laplace transform for analog system analysis	TCL - SCL mixed	6 Hours
CPMK-2	Continuous Fourier transform and its applications	TCL - SCL mixed	6 Hours
UTS/Project Task Results/Case Analysis			
CPMK-3	Discrete physical system models and their solutions	TCL - SCL mixed	6 Hours
CPMK-3	Z transform for ditigal system analysis	TCL - SCL mixed	6 Hours
CPMK-3	Discrete Fourier transform and its application	TCL - SCL mixed	3 Hours
CPMK-3	Design and apply discrete filters	TCL - SCL mixed	6 Hours
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 Percentage	Criteria/ Indicators	CPMK 1	CPMK 2	CPMK 3	CPMK 4	CPMK5
Participatory Activities*)	**10**	**Liveliness**	√				
***Project Results/*Case Study Results/PBL Results*)**							
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%.							
Reference List	1. Michael D. Adams, 2013, Continuous-Time Signals and Systems, University of Victoria, Canada 2. Luis F. Chaparro, 2011, Signals and Systems Using MATLAB, Elsevier, 3. Ingle, V.K. and Proakis, 2012, J.G., Digital Signal Processing using Matlab, Cengage Learning 4. John G. Proakis and Dimitris G. Manolakis, 2007, Digital Signal Processing: Principles, Algorithms, and Applications, 4th Edition. Prentice Hall. 6. Frank Scherbaum, 1998, of Pole and Zero, Kluwer academic Press,							
Name of Lecturer (*Team Teaching*)	SUDARMAJI, Dr. Wahyudi, M.S.							
Authorization	**Drafting Date**	**Course Coordinator**		**Coordinator of Expertise (if any)**			**Head of Study Program**	
	August 10 2022	 Dr. Sudarmaji, MSi.		Dr. rer.nat. Ade Anggraini, M.T.			 Dr. Sudarmaji, MSi.	