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

Geophysics

Geographic Information System

MFG 4631/ 2 credits

Mentoring Team:

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UNIVERSITAS GADJAH MADA FACULTY OF MATHEMATICS AND NATURAL SCIENCES
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SEMESTER LEARNING PROGRAM AND ACTIVITY PLAN (RPKPS)					

Course Code	Course Name	Weight (credit)	Semester	Course Status	Prerequisite Courses
MFG4631	Geographic Information System	T: 2	P:1 Odd	Choice	

Course Brief Description	In this course will learn introduction to Geographic Information Systems, geospatial data types, Map Projection Systems, vector Data Analysis, topographic data and interpolation techniques, terrain data analysis (*Digital Elevation Model*), spatial data density analysis (density *map*), hydrological analysis, and *supervised image classification* for rapid *mapping*.

Graduate Learning Outcomes (CPL) Charged to MK	CPL-2	**Mastery of 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 are able to understand the basic theory and application of GIS technology in everyday life.
	CPMK-2	Students are able to understand geospatial data types
	CPMK-3	Students are able to understand the tools and methods of geospatial data analysis
	CPMK-4	Students are able to visualize subsurface data from geophysical data into informative spatial information (maps)

CPL mapping with CPMK

	CPMK1	CPMK2	CPMK3	CPMK4
CPL-2	✓	✓		
CPL-3	✓	✓	✓	
CPL-4				✓

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

	Learning Materials	Forms of Learning	Time Allocation
CPMK 1	Introduction to Geographic Information Systems	Presentation	2 Hours
CPMK 2	Spatial data types	Presentation	2 Hours
CPMK 1	Map Projection System	Presentation	2 Hours
CPMK 3	Vector Data Analysis	Presentation	2 Hours

CPMK 3	GIS analysis for structural (fault) data	Presentation	2 Hours
CPMK 3	Density map	Presentation	2 Hours
CPMK 3	Topographic data and interpolation techniques	Presentation	2 Hours

UTS/Project Task Results/Case Analysis Results

CPMK 3	Terrain analysis	Presentation	2 Hours
CPMK 3	Hydrological analysis	Presentation	2 Hours
CPMK 4	Integration of geophysical data and GIS 1	SCL+PBL+ Discussion	2 Hours
CPMK 4	Integration of geophysical data and GIS 2	SCL+PBL+ Discussion	2 Hours
CPMK 4	Integration of geophysical data and GIS 3	SCL+PBL+ Discussion	2 Hours
CPMK 4	Integration of geophysical data and GIS 4	SCL+PBL+ Discussion	2 Hours

UAS/ Project Task Results/ Case Analysis

Learning Methods	In this course, there are 4 learning methods, namely presentations from lecturers, Student Based Learning, Problem Based Learning, and discussions
Student Learning Experience	Students actively discuss, listen and understand lecture materials given by lecturers, looking for literacy when student based and problem based learning.
Access Learning Media / LMS and Offline &; Online Percentage	100% offline

Assessment Methods and Alignment with CPMK	Assessment Techniques	Assessment Percentage	Criteria/ Indicators	CPMK-1	CPMK- 2	CPMK-3	CPMK -4	
	Participatory Activities[*)]							
	***Project Results/*Case Study Results/PBL Results**[*)]	30%	**Contribute to presentations**			✓	✓	
	Cognitive							
	Assignment	30%				10%	20%	
	Quiz							
	UTS	30%		5%	10%	20%		
	UAS	40%		5%		15%	20%	
	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. Kenneth J. Gregory & Andrew S. Goudie, 2011, The SAGE Handbook of Geomorphology, SAGE Publications LtD, DOI: https://dx.doi.org/10.4135/9781446201053
	2. J. Ronald Eastman, Michelce Fulk, James Toledano, 1993, The GIS Handbook, Clark University.
	3. ESRI, 2021, The ArcGIS Book, website: The ArcGIS Book	The ArcGIS Book.

| Name of Lecturer (*Team Teaching*) | 1. Dr. rer. Nat. Herlan Darmawan, M.Sc |
| | 2. Dr. rer. Nat. Mochamad Nukman, M.Sc |

Authorization	Drafting Date	Course Coordinator	Coordinator of Expertise (if any)	Head of Study Program
	August 25 2020			Dr.. Sudarmaji,MSi