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

Geophysics

Geographic Information Systems Practicum

MFG 4632/ 1 credits

Mentoring Team:

Dr. rer. Nat. Herlan Darmawan, M.Sc
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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
MFG4631	*Geographic Information System*	*T: 2 P: 1*	*Odd*	*Choice*	

Course Brief Description	In this course will understand and practice vector data digitization, 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-1***	**Attitude** **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	**General Skills** **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	**Special skills** **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-5	**Advanced Specific Skills** **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	Students are able to understand the tools and methods of geospatial data analysis
	CPMK-2	Students are able to visualize subsurface data from geophysical data into informative spatial information (maps)

CPL mapping with CPMK

	CPMK1	CPMK2		
CPL-1	✓	✓		
CPL-3	✓	✓		
CPL-4	✓	✓		
CPL-5	✓	✓		
	✓	✓		

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

	Learning Materials	Forms of Learning	Time Allocation
CPMK 1	Map Digitization	Material exposure + SCL + Discussion	2 Hours
CPMK 1	Finding the Area of Earthquake Hazard to a Specific Lithology	Material exposure + SCL + Discussion	2 Hours
CPMK 2	Data Interpolation Techniques	Material exposure + SCL + Discussion	2 Hours
CPMK 1	Hillshade, Slope Aspect	Material exposure + SCL + Discussion	2 Hours
CPMK 1	Topographic Changes	Material exposure + SCL + Discussion	2 Hours
UTS/Project Task Results/Case Analysis Results			
CPMK 1	Hydrological Analysis	Material exposure + SCL + Discussion	2 Hours
CPMK 1	Volumetric calculation of material deposits and losses	Material exposure +SCL+PBL+ Discussion	2 Hours
CPMK 2	*Rapid flood mapping*	Material exposure +SCL+PBL+ Discussion	2 Hours
CPMK 1	*Supervised image classification*	Material exposure + SCL + Discussion	2 Hours
CPMK 1 and 2	Response test	Material exposure + SCL + 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**			
	Participatory Activities*)							
	***Project Results*/Case Study Results/PBL Results*)**	**80%**	**Practicum Report**	✓	✓			
	Cognitive							
	Practicum Report	**80%**						
	Quiz							
	Respons e Exam	**20%**						
	Total	**100**						
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				