SEMESTER LEARNING ACTIVITY PLANS
(SLAP)
SEMESTER EVEN 2022/2023

Mineral Exploration

MFF5936 / 2 Credits

Lecturer Coordinator:

Dr. Eddy Hartantyo, M.Si.

UNIVERSITAS GADJAH MADA
FACULTY OF MATHEMATICS AND NATURAL SCIENCE
2022

Universitas Gadjah Mada
Faculty of Mathematics and Natural Science
Physics Department / Study Program Master Physics
Semester Even 2022/2023

SEMESTER LEARNING ACTIVITY PLANS (SLAP)

Code	Course Name	Credits (credits)	Semester	Status	Prerequisite
MFF5936	*Mineral Exploration*	*2*	*Even*	*Elective*	*None*

Short Description

Mineral Exploration course is Elective course 2 credits (Theory) in the 2022 Curriculum Master Physics Study Program, Faculty of Mathematics and Natural Science UGM.

The syllabus of this course is as follows:
Introduction: Tectonic concepts. Rocks: Igneous, Sedimentary, Metamorphic. Minerals: Formation of mineral, physical properties of minerals. Geophysical survey for minerals: Magnetic, Gravity, Resistivity, Electromagnetic, Polarization Induction, and the problem of integrated geophysical surveys.

The courses are held in class for 14 weeks, each week's session last for 2 x 50 minutes. Four weeks of course period is used for Midterm Exam and Final Exam, each held for two weeks as scheduled.

Student evaluation for course assessments is performed summative and formative. The summative evaluation is implemented as written exams, both Midterm and Final Exam, which take a maximum of 120 minutes. The formative evaluation is implemented as individual assignments for each student in the form of completing an assignment individually. Monitoring is carried out by observing student activities during the course, such as attendance, Q&A and discussion about the material presented, and student performance in completing individual assignments.

Program Learning Outcomes (PLO) Imposed on the Course

PLO 2	Having the professional ability of a scientist.
PLO 3	Mastering further knowledge of classical and modern physics theory, and its relationship with other disciplines, and has mastered an advanced field of physics specialization that allows him to keep up with the latest international research developments.
PLO 4	Mastering various mathematical disciplines related to an advanced field of physics, and able to develop physical models using various mathematical and computational tools with an inter or multidisciplinary approach to solving problems related to an advanced field of physics.
PLO 6	Able to apply knowledge to analyze, synthesize, formulate problems and solve problems comprehensively in one of advanced field of physics, through experimental or theoretical research, then be able to classify and draw conclusions about their findings for the development of science and technology.

Upon completion of this course, students should be able to:

Course Outcomes (CO)	***CO1***	Explain the economic mineralogy of minerals, related to their formation and their discoverability in nature.		
	CO2	Describe the application of geophysical methods to mineral exploration.		
	CO3	Rewrite, analyze, and deliver a mineral exploration case study..		
	CO4			
	CO5			
	CO6			
	CO7			
	CO8			
The Correlation of CO to Learning Materials and Methods, and Time Allocation		**Learning Materials**	**Learning Methods**	**Time Allocation**
	CO1	Basic Mineralogy	Lecture, discussion	2 x 50 minutes
	CO1	Formation of Minerals in Nature.	Lecture, discussion	2 x 50 minutes
	CO1	Mineral Exploration Process 1 and 2.	Lecture, discussion	2 x 50 minutes
	CO2	Mineral Petrophysics 1 and 2	Lecture, discussion	2 x 50 minutes
	CO2	Application of Geophysical Methods in Mineral Exploration.	Lecture, discussion	2 x 50 minutes
	CO2		Lecture, discussion	2 x 50 minutes
	CO2		Lecture, discussion	2 x 50 minutes
	CO3		Lecture, discussion	2 x 50 minutes
	CO3		Lecture, discussion	2 x 50 minutes
	CO3		Lecture, discussion	2 x 50 minutes
	CO4		Lecture, discussion	2 x 50 minutes
	CO4		Lecture, discussion	2 x 50 minutes
	CO4		Lecture, discussion	2 x 50 minutes
	CO4		Lecture, discussion	2 x 50 minutes
	Final Exam/ Project Task Results/ Case Analysis Results			
Learning Methods	Lecture, discussion			
Student Learning Experience	Learn to analyze and review: Basic Mineralogy, Formation of Minerals in Nature., Mineral Exploration Process 1 and 2., Mineral Petrophysics 1 and 2, Application of Geophysical Methods in Mineral Exploration., , , , , , , , , .			
Access to Learning Media/ LMS	Textbooks and display of lecture material			

and Offline and Online Percentage	
Assessment Methods and Synchronization with CO	

Assessment Methods	**Assessment Percentage**	**Criteria/Indicators**	**CO1**	**CO2**	**CO3**	**CO4**
Participatory Activity*						
Project Results/ Case Study Results/ PBL Results*						
Cognitive						
Assignment	30%		7,5%	7,5%	7,5%	7,5%
Quiz						
Midterm Exam	35%		17,5%	17,5%		
Final Exam	35%				17,5%	17,5%

*) can also be obtained from the Midterm or Final Exam as the result of participatory activities or project/ case study results. According to IKU 7, the percentage of project results/ case study/ PBL results is at least 50%.

References	**Main references:** 1. Husein S, 2009, Basic Geological Handout 2010. Faculty of Geological Engineering UGM. 2. Milsom J, 2003, Field Geophysics, 3rd Ed, John Wiley & Sons Ltd, WestSussex PO19 8SQ, England. 3. Telford, W.M., Geldard, L.P., and Sheriff, R.E, 1990, Applied Geophysics. 2nd Ed, Cambridge Univ Press.
Lecturers (*Team Teaching*)	1. Dr. Eddy Hartantyo, M.Si. 2. 3. 4.

Authorization	**Date of Drafting**	**Lecturer Coordinator**	**Head of Curriculum Committee**	**Head of Study Program**
		Dr. Eddy Hartantyo, M.Si.	Dr.Ing. Ari Setiawan	Mirza Satriawan, M.Si., Ph.D