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

Geotechnical Engineering

MFF5913 / 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 Odd 2022/2023

SEMESTER LEARNING ACTIVITY PLANS (SLAP)

Code	Course Name	Credits (credits)	Semester	Status	Prerequisite
MFF5913	*Geotechnical Engineering*	*2*	*Odd*	*Elective*	*None*

Short Description

Geotechnical Engineering 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 to Geotechnical Engineering, grain size analysis, weight-volume relationship, plasticity, soil classification and soil compaction, Study of stress in soil mass, Consolidation and shear strength of soils, Subsurface exploration, and Cases of geotechnical engineering studies (example: slope stability, retaining walls, foundations, and liquefaction).

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 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.

Course Outcomes (CO)

Upon completion of this course, students should be able to:	
CO1	Understanding the physical properties of soil/rock near the surface related to geotechnical matters.
CO2	Understand the application of physics/geophysics in geotechnical analysis.
CO3	Understand the geophysical acquisition, processing and interpretation of landslide geotechnical cases.
CO4	Understand the geophysical acquisition, processing and interpretation of liquefaction geotechnical cases.

	CO5			
	CO6			
	CO7			
	CO8			
The Correlation of CO to Learning Materials and Methods, and Time Allocation		**Learning Materials**	**Learning Methods**	**Time Allocation**
	CO1			2 x 50 minutes
	CO1			2 x 50 minutes
	CO1			2 x 50 minutes
	CO2			2 x 50 minutes
	CO2			2 x 50 minutes
	CO2			2 x 50 minutes
	CO2			2 x 50 minutes
	CO3			2 x 50 minutes
	CO3			2 x 50 minutes
	CO3			2 x 50 minutes
	CO4			2 x 50 minutes
	CO4			2 x 50 minutes
	CO4			2 x 50 minutes
	CO4			2 x 50 minutes
	Final Exam/ Project Task Results/ Case Analysis Results			
Learning Methods				
Student Learning Experience	Learn to analyze and review: , , , , , , , , , , , , , .			
Access to Learning Media/ LMS 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. Das, B.M. and Sivakugan, N., 2016. Introduction to Geotechnical Engineering, 2nd ed., Cengage Learning, Boston. USA. ISBN: 978-1-305-25732-0.
2. Sutharam, T.G., Jakka, R., and Kolathayar, S., 2021. Latest Developments in Geotechnical Earthquake Engineering and Soil Dynamics. Springer Transaction in Civil and Environmental Engineering, Singapore. https://doi.org/10.1007/978-981-16-1468-2.

Lecturers (*Team Teaching*)

1. Dr. Eddy Hartantyo, M.Si.
2.
3.
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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