



**INSTITUT TEKNOLOGI SEPULUH NOPEMBER
FACULTY OF CIVIL, PLANNING AND GEO ENGINEERING
DEPARTMENT OF GEOMATICS ENGINEERING
UNDERGRADUATE PROGRAM**

**Document
Code**

SEMESTER LEARNING PLAN (SLP)

COURSE NAME		CODE	COURSE GROUP	CREDITS		SEMESTER	Compilation Date
Earth Science		CM234102	Geodesy and Geodynamics	T=2	P=1	2	-
AUTHORIZATION		SLP DEVELOPER	COURSE GROUP COORDINATOR			HEAD OF UNDERGRADUATE PROGRAM	
		Putra Maulida, S.T., M.T., Ph.D.					
Learning Outcome (LO)	Expected Learning Outcomes (ELO) that Imposed in the Course						
	ELO-4	Able to apply mathematics, science, and engineering in the fields of geodesy, surveying, hydrography, remote sensing, photogrammetry, geographic information systems, and cadastral to gain a thorough. understanding of the principles of engineering.					
	Course Learning Outcomes (CLO)						
	CLO-1	Able to understand basic general concepts of earth science: atmosphere, hydrosphere, lithosphere, and biosphere					
	CLO-2	Understand the physical processes due to earth phenomena					
	CLO-3	Have knowledge of social and physical geography					
	CLO-4	Have knowledge about environmental natural resources and disaster					

		Matrix ELO – CLO	
		CLO	ELO-4
		CLO-1	V
		CLO-2	V
		CLO-3	V
		CLO-4	V
Course Description	In this course students learn about general concepts: basic concepts of Earth Sciences: atmosphere, hydrosphere, lithosphere and biosphere, basic concepts: Geodesy and Geomatics Engineering, Geophysical and Meteorological Engineering, Geological and Mineralogical Engineering, Petroleum and Mining Engineering. And Social and Physical Geography Techniques and basic concepts of Geodesy: reference ellipsoids, geometric ellipsoids, coordinate systems, Geodetic problem solving, coordinate transformation.		
Course Materials	1. Basic concepts of Earth Sciences: atmosphere, hydrosphere, lithosphere and biosphere, 2. Basic concepts: Geodesy and Geomatics Engineering, Geophysical and Meteorological Engineering, Geological and Mineralogical Engineering, Petroleum and Mining Engineering. 3. Basic concepts of Geodesy: reference ellipsoids, geometric ellipsoids, coordinate systems, problem solving Geodesy, coordinate transformation. 4. Basic concepts of Social and Physical Geography. 5. Natural resource, environmental and disaster problems.		
References	Main References :		
	1. Bomford. Geodesy. 1975. Oxford University Press. 2. Richardus, Adler. Map Projections for Geodetic, Cartographers, Geographers. 1972. NHPC. Amsterdam.		
	Additional References :		
	1. Kervyn, M. Kervyn, F. Goossens, R. Rowland, S. K. and Ernst. G. G. J. 2007. Mapping volcanic terrain using high-resolution and 3D satellite remote sensing. Geological Society, London, Special Publications 283: 5-30 2. Lagios, E. Vassilopoulou, S. Sakkas, V. Dietrich, V. Damiata, B.N. Ganas, A. 2007. Testing satellite and ground thermal imaging of low-temperature fumarolic fields: The dormant Nisyros Volcano (Greece). < http://www.remsenslab.geol.uoa.gr > . dikunjungi pada tanggal 21 Maret 2012, jam 13.30. 3. Turcotte, Donald, Schubert, Gerald. Geodynamics, 2001, Cambridge University Press		
Lecturer	Akbar Kurniawan, ST, MT Putra Maulida, ST, MT, Ph.D		

		Husnul Hidayat, ST, MT					
Prerequisite		No Prerequisite					
Class/ Week	Lesson Learning Outcome (Sub-CLO)	Evaluation		Forms of Learning, Learning methods, Student Assignments/Task, [Estimated time]		Learning Materials [References]	Weight (%)
		Indicator	Criteria	Offline	Online		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Able to explain the basic concepts of Earth Sciences: atmosphere, hydrosphere, lithosphere and biosphere,		Material completeness, depth of explanation, effectiveness of communication, accuracy of attitude	Lecturer, Teacher-centered learning [1 x 45']		Explain the basic concepts of Earth Sciences	5
				Lecturer, Teacher-centered learning [1 x 45']		Explain the concept of atmosphere, hydrosphere	
				Lecturer, Teacher-centered learning [1 x 45']		Explain the concepts of lithosphere and biosphere,	
2	Able to explain basic concepts: Geodesy and Geomatics Engineering.		Material completeness, depth of explanation, effectiveness of communication, accuracy of attitude	Lecturer, Teacher-centered learning [1 x 45']		Explain the Concept of Geodesy Engineering	5
				Lecturer, Teacher-centered learning [1 x 45']		Explain about Geomatics Engineering	
				Lecturer, Teacher-centered learning [1 x 45']		Geomatics Engineering	

				Discussion, Student-centered learning [1 x 45']		Examples of actual case studies	
3	Able to explain basic concepts: Geodesy and Geomatics Engineering.		Material completeness, depth of explanation, effectiveness of communication, accuracy of attitude	Lecturer, Teacher-centered learning [1 x 45']		Explain the basic concepts of Social Geography Engineering	10
				Lecturer, Teacher-centered learning [1 x 45']		Explain the basic concepts of Social Geography	
				Lecturer, Teacher-centered learning [1 x 45']		Able to explain the basic concepts of the relationship of Social and Physical Geography Techniques	
				Lecturer, Teacher-centered learning [1 x 45']		Explain problems in the field of Geography	
				Exercise and assignment, Student-centered learning [1 x 45']			
4-5	Able to explain the basic concepts of Social Geography Engineering		Material completeness, depth of explanation, effectiveness of communication, accuracy of attitude	Lecturer, Teacher-centered learning [2 x 45']		Explain the basic concepts of Social Geography Engineering	10
				Lecturer, Teacher-centered learning [2 x 45']		Explain the application of Social Geography Techniques	

				Lecturer, Problem-based learning [2 x 45']		Explain problems in the field of social geography	
				Exercise and assignment, Student-centered learning [1 x 45']			
6	Able to explain the basic concepts of the basic concepts of Physical Geography Engineering		Material completeness, depth of explanation, effectiveness of communication, accuracy of attitude	Lecturer, Teacher-centered learning [1 x 45']		Explain the basic concepts of Physical Geography Engineering	10
				Lecturer, Teacher-centered learning [1 x 45']		Explain the application of Physical Geography Techniques	
				Lecturer, Teacher-centered learning [1 x 45']		Explain problems in the field of Physical Geography	
				Assignment, Student-centered learning [1 x 45']			
7	Able to explain the definition of the basic concept of Geodesy: reference ellipsoide		Material completeness, depth of explanation, effectiveness of communication, accuracy of attitude	Lecturer, Teacher-centered learning [1 x 45']		Explain the basic concepts of Geodesy	10
				Lecturer, Teacher-centered learning [1 x 45']		Explain the basic concepts of Geodesy: Ellipsoida	
				Lecturer, Teacher-centered learning [1 x 45']		Explain the basic concepts of Geodesy: Ellipsoida References	

				Project assignment, Student-centered learning []		Explain the basic concepts of Earth Sciences	
8	Midterm Evaluation / Midterm Exam						50
9-10	Able to explain the understanding of the basic concept of Geodesy: geometric ellipsoids		Material completeness, depth of explanation, effectiveness of communication, accuracy of attitude	Lecturer, Teacher- centered learning [2 x 45']		Explain the basic concepts of Geodesy: Geometric	15
				Lecturer, Teacher- centered learning [2 x 45']		Explains the basic concepts of Geodesy: geometric ellipsoids	
				Discussion, Problem- based learning [2 x 45']		Explain the basic concepts of Geodesy: Ellipsoid Geometry References	
				Assignment, Student- centered learning [2 x 45']			
11	Able to explain the understanding of the basic concepts of Geodesy: coordinate system		Material completeness, depth of explanation, effectiveness of communication, accuracy of attitude	Lecturer, Teacher- centered learning [2 x 45']		Explain the basic concepts of Geodesy: General Coordinate System	10
				Lecturer, Teacher- centered learning [2 x 45']		Explain the basic concepts of Geodesy: Specific Coordinate Systems	
				Discussion, Problem- based learning [2 x 60']		Explain the basic concepts of Geodesy: the Coordinate Reference System	

				Assignment , Student-centered learning []			
12-13	Able to explain the understanding of the basic concepts of Geodesy: Geodetic problem solving, coordinate transformation.		Material completeness, depth of explanation, effectiveness of communication, accuracy of attitude	Lecturer , Teacher-centered learning [1 x 45']		Explain the basic concept of Geodesy: the solution to the problem of Geodetic	15
				Discussion, Student-centered learning [1 x 45']		Geodetic problem solving, coordinate transformation.	
				Assignment , Problem-based learning [1 x 60']		Explain the basic concepts of Geodesy: the Coordinate Reference System	
14	Able to explain the understanding of natural resource problems, the environment		Material completeness, depth of explanation, effectiveness of communication, accuracy of attitude	Lecturer , Teacher-centered learning [1 x 45']		Able to explain the understanding of natural resource problems	5
				Lecturer , Teacher-centered learning [1 x 45']		Able to explain the understanding of environmental problems	
				Discussion , Student-centered learning [1 x 45']		Explain and study problems	
				Assignment , Student-centered learning [1 x 45']			

15	Able to explain the understanding of natural resource problems, natural disasters		Material completeness, depth of explanation, effectiveness of communication, accuracy of attitude	Lecturer , Teacher-centered learning [1 x 45']		Able to explain the understanding of natural resource problems	5
				Lecturer , Teacher-centered learning [1 x 45']		Able to explain the understanding of the problem of disaster	
				Latihan, Student-centered learning [1 x 45']		Explain and study problems	
				Tugas, Student-centered learning [1 x 45']			
16	Final Semester Evaluation / Final Semester Examination						100