



**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 (SKS)		SEMESTER	Date of Preparation
Environmental Geodesy		CM234960	Geodesy and Geodinamics		T=2	P=1	Elective Course	-
AUTHORIZATION		SLP Developer		Course Group Coordinator			Head of Study Program	
		Putra Maulida, S.T., M.T., Ph.D.		Prof. Dr. Eko Yuli Handoko, S.T., M.T.			Putra Maulida, S.T., M.T., Ph.D.	
Learning Outcomes (LO)	Expected Learning Outcomes (ELO) that Imposed in the Course							
	ELO-6	Able to identify, formulate, analyze and solve problems in the fields of Geodesy and Surveying, Hydrography, Photogrammetry and Remote Sensing, as well as Geospatial and Land Information.						
	ELO-7	Able to perform spatial data acquisition using modern measurement methods, geospatial data processing, using industry standard software, and making standard designs and analyses in the fields of Geodesy and Surveying, Hydrography, Photogrammetry and Remote Sensing, as well as Geospatial and Land Information.						
	ELO-9	Able to plan, perform and evaluate the process of surveying and mapping activities using the latest technology in the fields of geodesy, surveying, hydrographic, remote sensing, photogrammetry, and cadastral.						
	Course Learning Outcomes (CLO)							
	CLO-1	Students are able to explain the concepts of geodetic science and technology						
	CLO-2	Students are able to explain physical phenomena on the earth's surface						
	CLO-3	Students are able to analyze the geodesy method to observe physical events on the earth's surface						
	CLO-4	Students are able to model physical phenomena on the earth's surface						
		Matrix ELO – CLO						
		CPMK	ELO-6	ELO-7	ELO-9			
		CLO-1	V	V				

		CLO-2	V		V		
		CLO-3	V	V	V		
		CLO-4	V	V			
Course Description	This course studies about Earth Shape, Gravity and Temporal Variations that occur. By paying attention to the activities which occur on the surface of the earth such as plate movements, deformation, climate change, sea level variations, etc. These activities can be identified and observed using geodetic methods such as the application of Altimetry satellites, gravity satellites, GNSS satellites and remote sensing satellites.						
Course Materials	1. Earth Curvature and Coordinate System 2. Gravity 3. Earth Temporal Variation Geodynamics 4. Deformation and Plate Tectonic 5. Earthquake 6. Climate Change 7. Sea Levels Variation 8. Gravity and Altimetry Satellite Measurement 9. GNSS Applications 10. Active and Passive Remote Sensing						
References	Main:						
	1. Geodesy 4th. 2012. W.Torge 2. Physical Geodesy. 2005. Hoffmann-Wellenhof and Helmut Moritz 3. Satellite Geodesy. 2003. Gunter Seeber 4. Satellite Radar Interferometry. VBH Ketelaar. Springer 5. Geodynamics. Donald. Lturcotte Gerald Schubert. Cambride						
	Additional :						
	-						
Lecturer	Putra Maulida, S.T., M.T., Ph.D.						
Prerequisite	-						
Class/ Week	Lesson Learning Outcome (Sub-CLO)	Evaluation		Forms of Learning, Learning methods,Student Assignments/Task, [Estimated Time]		Learning Materials [References]	Weight (%)
		Indicators	Criteria and Form	Offline	Online		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

1	Able to explain the definition and concept of Coordinate System	Accuracy in explaining the definition and concept of Coordinate System	1. Completeness of the material 2. Depth of explanation and effectiveness of communication	1. Lecture [1 x 45'] 2. Discussion [1 x 45'] 3. Response [1 x 45']		Definition and concept of Coordinate System	5
2	Able to explain the concept of Earth Curvature	Accuracy in explaining the concept of Earth Curvature	1. Completeness of the material 2. Depth of explanation and effectiveness of communication	1. Lecture [1 x 45'] 2. Discussion [1 x 45'] 3. Task [1 x 45']		Concept of Earth Curvature and its relation to mathematical of earth	5
3	Able to explain the concept of gravity	Accuracy in explaining the concept of gravity	1. Completeness of the material 2. Depth of explanation and effectiveness of communication	1. Lecture [2 x 45'] 2. Discussion [1 x 45']		The concept of gravity and the parameters that influence it	5
4	Able to explain the earth's spatial and temporal variation	Accuracy in explaining the earth's spatial and temporal variation	1. Completeness of the material 2. Depth of explanation and effectiveness of communication	1. Lecture [1 x 45'] 2. Discussion, Task [1 x 45'] 3. Response/Exercise [1 x 45']		Earth's spatial and temporal variation	5
5	Able to explain the Dynamics of earth	Accuracy in explaining the Dynamics of earth	1. Completeness of the material 2. Depth of explanation and effectiveness of communication	1. Lecture [1 x 45'] 2. Discussion [1 x 45'] 3. Response [1 x 45']		Dynamics of earth	10
6	Able to explain the Deformation and Plate Tectonic	Accuracy in explaining the Deformation	1. Completeness of the material	1. Lecture [1 x 45'] 2. Discussion [1 x 45'] 3. Response [1 x 45']		Deformation and Plate Tectonic	10

		and Plate Tectonic	2. Depth of explanation and effectiveness of communication				
7	Able to explain climate Change	Accuracy in explaining climate Change	1. Completeness of the material 2. Depth of explanation and effectiveness of communication	1. Lecture [1 x 45'] 2. Discussion [1 x 45'] 3. Task [1 x 45']		Climate Change	10
8	Midterm Evaluation / Midterm Exam						50
9	Able to explain the Sea Levels Variation	Accuracy in explaining the Sea Levels Variation	1. Completeness of the material 2. Depth of explanation and effectiveness of communication	1. Lecture [1 x 45'] 2. Discussion [1 x 45'] 3. Response [1 x 45']		Sea Levels Variation and parameters that affect it	5
10	Able to explain the Satellite geodesy observation	Accuracy in explaining the Satellite geodesy observation	1. Completeness of the material 2. Depth of explanation and effectiveness of communication	1. Lecture [1 x 45'] 2. Discussion [1 x 45'] 3. Response [1 x 45']		Review of Satellite geodesy observation	5
11	Able to explain the Gravity observation	Accuracy in explaining the Gravity observation	1. Completeness of the material 2. Depth of explanation and effectiveness of communication	1. Lecture [1 x 45'] 2. Discussion [1 x 45'] 3. Task [1 x 45']		Gravity observation	5
12	Able to explain the Altimetry Satellite Measurement	Accuracy in explaining the Altimetry	1. Completeness of the material 2. Depth of explanation and	1. Lecture [1 x 45'] 2. Discussion [1 x 45'] 3. Task [1 x 45']		Altimetry Satellite Measurement	5

		Satellite Measurement	effectiveness of communication				
13	Able to explain the GNSS Applications for environmental Geodesy	Accuracy in explaining the GNSS Applications for environmental Geodesy	1. Completeness of the material 2. Depth of explanation and effectiveness of communication	1. Lecture [1 x 45'] 2. Discussion [1 x 45'] 3. Task [1 x 45']		GNSS Applications for environmental Geodesy	10
14	Able to explain the Application of direct and indirect signal of GNSS	Accuracy in explaining the Application of direct and indirect signal of GNSS	1. Completeness of the material 2. Depth of explanation and effectiveness of communication	1. Lecture [1 x 45'] 2. Discussion [1 x 45'] 3. Task [1 x 45']		Application of direct and indirect signal of GNSS	10
15	Able to explain the Active and Passive Remote Sensing for environmental geodesy	Accuracy in explaining the Active and Passive Remote Sensing for environmental geodesy	1. Completeness of the material 2. Depth of explanation and effectiveness of communication	1. Lecture [1 x 45'] 2. Discussion [1 x 45'] 3. Task [1 x 45']		Active and Passive Remote Sensing for environmental geodesy	10
16	Final Semester Evaluation / Final Semester Examination						100