



SEMESTER LEARNING PLAN
DEPARTMENT OF GEOMATICS ENGINEERING
FACULTY OF CIVIL, PLANNING, and GEO ENGINEERING

PROGRAM	UNDERGRADUATE						
COURSE NAME	Geodynamics and Deformation				CODE	RM184936	
SEMESTER	Elective Course				CREDITS	3 (three)	
LECTURERS	Ira Mutiara Anjasmara [coord]						
	Eko Yuli Handoko, Putra Maulida						
COURSE MATERIALS	1	Introduction to Geodynamics and Deformation					
	2	Earth's structures: layers of the Earth, Earth's core, Earth's characteristics					
	3	Plate Tectonics: plate tectonics theories, continental drift, and geological studies					
	4	Geodynamics phenomena: volcano, earthquake, fault activities, landslide, land subsidence					
	5	Methods of geodynamics survey: geodynamics studies using SLR, VLBI, GNSS, and InSAR					
	6	Geodynamics studies: global and regional crustal deformation					
	7	Deformation studies: geodetic aspects in deformation study, deformation analysis methods, deformation surveys, deformation survey networks, case studies					
	8	Disaster mitigation					
EXPECTED LEARNING OUTCOMES THAT IMPOSED IN THE COURSE	C	Able to identify, formulate, analyze and solve problems in the fields of geodesy, surveying, hydrographic, remote sensing, photogrammetry, and cadastral.					
	D	Able to perform spatial data acquisition using modern measurement methods, geospatial data processing, using industry standard software, and making standard designs and analyzes in the fields of geodesy, surveying, hydrography, remote sensing, photogrammetry, and cadastral.					
	E	Able to apply information & communication technology and the latest technological developments in the fields of geodesy, surveying, hydrographic, remote sensing, photogrammetry, geographic information systems, and cadastral.					
	F	Able to compile scientific reports and provide solutions based on leadership, creativity and communication skills as well as being responsible for the work done.					
COURSE LEARNING OUTCOMES	1	Able to explain the Earth's geodynamic phenomena related to the structure of the Earth and plate tectonic theory					
	2	Able to identify various types of the Earth's geodynamic phenomena					
	3	Able to identify geodetic technology that can be used to carry out geodynamic observations of the Earth					
	4	Able to perform observations and analyze the Earth's geodynamics using geodetic methods					
	5	Able to explain the geodetic aspects in deformation studies					
	6	Able to perform studies and analysis of deformation using geodetic observation data					
	7	Able to use the results of geodynamic and deformation analysis for disaster mitigation					
ABILITY CATEGORIES	<i>Cognitive Prosecess</i>			<i>Analyse</i>			
	<i>Knowledge Domain</i>			<i>Procedural</i>			
	<i>Psychomotor</i>			<i>Conscious control</i>			
	<i>Affective</i>			<i>Change of attitude</i>			

Class #	Lesson learning outcome	Competencies	Weight	Learning Materials	Learning Experience	Learning Methods	Estimated Time
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Able to explain the purpose	Completeness of materials, the depth	5	Geodesy and Geodynamics	Lecturer	Teacher-centered	1 x 50'

	of geodynamic and deformation studies in the context of Geodesy	of explanations, correctness of the answers, communication effectiveness, proper attitude		Introduction to Geodynamics and Deformation studies	Discussion Independent study	Student-centered learning Problem-based learning	1 x 50' 1 x 50'
2 - 3	Able to explain the structure of the Earth and the concept of plate tectonics and their relation to the current shape of the Earth's surface	Completeness of materials, the depth of explanations, correctness of the answers, communication effectiveness, proper attitude	5	Earth's structure Plate Tectonic Theory Plate Tectonic movement Geodynamics phenomena due to plate tectonic movement	Lecturer Discussion Assignment 1	Teacher-centered Student-centered learning Problem-based learning	2 x 50' 2 x 50' 2 x 50'
4 - 6	Able to explain and identify geodynamic and deformation phenomena	Completeness of materials, the depth of explanations, correctness of the answers, communication effectiveness, proper attitude	20	Volcanology Earthquake and seismicity Crustal deformation Surface deformation (landslide, land subsidence, uplift)	Lecturer Discussion Assignment 2	Teacher-centered Student-centered learning Problem-based learning	3 x 50' 3 x 50' 3 x 50'
7 - 8	Able to explain and identify geodetic methods that can be used in geodynamic and deformation monitoring	Completeness of materials, the depth of explanations, correctness of the answers, communication effectiveness, proper attitude	10	Geodetic method for geodynamics and deformation monitoring - VLBI - LLR and SLR - GNSS - InSAR - Gravity satellites	Lecturer Discussion Assignment 3	Teacher-centered Student-centered learning Problem-based learning	2 x 50' 2 x 50' 2 x 50'
9	Able to convey the results of simple research in the form of report / papers and present them			Assessment	Oral presentation	Assessment	2 x 50'
10 - 11	Able to apply geodetic methods (GNSS and InSAR) in geodynamic monitoring and studies	Completeness of materials, the depth of explanations, correctness of the answers, communication effectiveness, proper attitude	20	Application geodetic methods for geodynamics studies - Crustal deformation - Volcano - Earthquake and seismicity	Lecturer Discussion Practice Assignment 4	Teacher-centered learning Student-centered learning Problem-based learning	2 x 50' 2 x 50' 2 x 50'
12 - 13	Able to explain the concept of deformation studies and perform deformation monitoring using geodetic techniques	Completeness of materials, the depth of explanations, correctness of the answers, communication effectiveness, proper attitude	20	Deformation study - Geodetic aspect in deformation study - Deformation analysis - Deformation monitoring network - Deformation survei	Lecturer Discussion Practice	Teacher-centered Student-centered learning Problem-based learning	2 x 50' 2 x 50' 2 x 50'
14 - 15	Able to apply geodetic methods (GNSS and InSAR) in deformation monitoring and studies	Completeness of materials, the depth of explanations, correctness of the answers, communication effectiveness, proper attitude	20	Application geodetic methods for deformation - surface deformation - land subsidence - fault activities	Lecturer Discussion Practice Assignment 5	Teacher-centered learning Student-centered learning Problem-based learning	2 x 50' 2 x 50' 2 x 50'

16	Able to convey the results of simple research in the form of report / papers and present them		Assessment	Oral presentation	Assessment	2 x 50'
JUMLAH		100				