	SEMESTER LEARNING PLAN DEPARTMENT OF GEOMATICS ENGINEERING FACULTY OF CIVIL, PLANNING, and GEO ENGINEERING			
PROGRAM	**UNDERGRADUATE**			
COURSE NAME	**Environmental Geodesy**		**CODE**	**RM184937**
SEMESTER	**VIII (eight)**		**CREDITS**	**3 (three)**
LECTURERS	**Dr. Ir. Muhammad Taufiq**			

COURSE MATERIALS	1	Earth Curvature and Coordinate System
	2	Gravity
	3	Earth Temporal Variation
	4	Geodynamics , 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
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 understand the concepts of geodesy science and technology.
	2	Able to understand physical events on the surface of the earth.
	3	Able to analyze the geodesy method for observing physical events on the surface of the earth.
ABILITY CATEGORIES	*Cognitive Prosecess*	*Analyse*
	Knowledge Domain	*Procedural*
	Psychomotor	*Conscious control*
	Affective	*Change of attitude*

Class	Lesson learning outcome	Criteria dan Assessment Indicator	Weight	Learning Materials	Learning Experience	Learning Methods	Estimated Time
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

1	Students are able to explain the shape and coordinate system of the earth	Material completeness, depth of explanation, effectiveness of communication, accuracy of attitude	10%	1.ellipsoid 2.geoid 3. 2D and 3D coordinate systems	Lectures; Discussion, Assignment	Teacher-centered learning; Student-centered learning; Problem-based learning	2 x 50'
2	Students are able to explain the Temporal Variations of the Earth	Material completeness, depth of explanation, effectiveness of communication, accuracy of attitude	10%	1. Earth tides 2. Presession and Nutrition	Lectures; Discussion, Assignment	Teacher-centered learning; Student-centered learning; Problem-based learning	2 x 50'
3	Students are able to understand the gravity and anomalies of gravity that occur on the surface of the earth	Material completeness, depth of explanation, effectiveness of communication, accuracy of attitude	10%	1. Global and Local Geoid Models 2. Anomaly in Gravity	Lectures; Discussion, Assignment	Teacher-centered learning; Student-centered learning; Problem-based learning	2 x 50'
4-5	Students are able to understand the concepts of geodynamics and deformation	Material completeness, depth of explanation, effectiveness of communication, accuracy of attitude	10%	1. Geodynamic Concepts 2. Horizontal Deformation 3. Vertical Deformation	Lectures; Discussion, Assignment	Teacher-centered learning; Student-centered learning; Problem-based learning	
6-7	Students are able to understand the activity of tectonic plates and earthquakes	Material completeness, depth of explanation, effectiveness of communication, accuracy of attitude	10%	1. Tectonic plate movement activity 2. Earthquake activity	Lectures; Discussion, Assignment	Teacher-centered learning; Student-centered learning; Problem-based learning	3 x 50'
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9	Students are able to understand the phenomenon of climate change	Material completeness, depth of explanation, effectiveness of communication, accuracy of attitude	10%	1.El Nino 2.La Nina 3. Melting Polar Ice	Lectures; Discussion, Assignment	Teacher-centered learning; Student-centered learning; Problem-based learning	3 x 50'
10	Students are able to understand the occurrence of sea level variations	Material completeness, depth of explanation, effectiveness of communication, accuracy of attitude	10%	1. Sea water variations due to climate change	Lectures; Discussion, Assignment	Teacher-centered learning; Student-centered learning; Problem-based learning	
11-12	Students are able to understand the use of gravity satellites and altimetry satellites	Material completeness, depth of explanation, effectiveness of communication, accuracy of attitude	10%	1. Utilization of satellites for modeling sea level gravity	Lectures; Discussion, Assignment	Teacher-centered learning; Student-centered learning; Problem-based learning	2 x 50'

13	Students are able to understand the use of the GNSS application in Geodesy	Material completeness, depth of explanation, effectiveness of communication, accuracy of attitude	10%	1. the use of GNSS for the determination of the earth's mathematical model, geodynamic monitoring and climate change	Lectures; Discussion, Assignment	Teacher-centered learning; Student-centered learning; Problem-based learning	2 x 50'
14-15	Students are able to understand the use of the Remote Sensing application in Geodesy	Material completeness, depth of explanation, effectiveness of communication, accuracy of attitude	10%	1. Utilization of Remote Sensing technology for monitoring deformation	Lectures; Discussion, Assignment	Teacher-centered learning; Student-centered learning; Problem-based learning	2 x 50'
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