	SEMESTER LEARNING PLAN **DEPARTMENT OF GEOMATICS ENGINEERING** **FACULTY OF CIVIL, PLANNING, and GEO ENGINEERING**		
PROGRAM	**UNDERGRADUATE**		
COURSE NAME	**Basic Terrestrial Mapping**	**CODE**	**RM184203**
SEMESTER	**II (two)**	**CREDITS**	**3 (three)**
LECTURERS	**Yuwono [coord]**		
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COURSE MATERIALS	1	Basic understanding of mapping
	2	Unit system
	3	definition of scale
	4	Definition of distance
	5	Horizontal angle, vertical angle
	6	Coordinate system
	7	Measuring equipment
	8	Positioning method
	9	Horizontal and vertical reference frame
	10	Area calculation
EXPECTED LEARNING OUTCOMES THAT IMPOSED IN THE COURSE	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
	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.
	G	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.
	H	Able to work in inter-disciplinary and inter-cultural teams so they can compete at national and international levels.
COURSE LEARNING OUTCOMES	1	Able to use survey equipment.
	2	Being able to do the measurements of the horizontal reference frame and being able to calculate and draw field measurements results..
	3	Able to do measurements of a vertical reference frame and be able to do calculations and depiction of measurement results in the field.
	4	Able to take levelling measurements and able to calculate the results of measurements in the field.
	5	Able to understand area calculation method.

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	Able to explain the concept of terrestrial mapping by	Material completeness, depth of explanation, effectiveness of	5%	Syllabus Explanation	Lectures	Teacher-centered learning	1 x 50'

	using a simple tool that is a compass, meter (roll meter), and prism, as well as the ethics of the mapping profession	communication, accuracy of attitude		Lecture regulation	Discussion	Student-centered	1 x 50'
				Introduction to terrestrial mapping	Exercise	Problem-based learning	1 x 50'
				Simple measuring tool	Assignment		
2	Able to explain unit systems, especially those related to units of length, area, volume, and angle	Material completeness, depth of explanation, effectiveness of communication, accuracy of attitude	10%	Unit of length, area, and volume	Lectures	Teacher-centered learning	1 x 50'
				Angular units: grade, radians, and degrees	Discussion	Student-centered learning	1 x 50'
				Angular Conversion	Exercise	Problem-based learning	1 x 50'
				Another unit commonly used	Assignment		
3 -4	Able to explain the meaning of distance, horizontal and vertical angles, and height differences in relation to terrestrial mapping.	Material completeness, depth of explanation, effectiveness of communication, accuracy of attitude	10%	The distance between two points on a flat plane	Lectures	Teacher-centered learning	2 x 50'
				Horizontal direction and horizontal angle	Discussion	Student-centered learning	2 x 50'
				Vertical angles,slope angles, and zenith angles	Exercise	Problem-based learning	2 x 50'
				Difference in height between two points and point height	Assignment		
5 - 6	Able to explain the functions of goneometry (sine, cosine, tangent) and positioning with coordinates on a flat plane.	Material completeness, depth of explanation, effectiveness of communication, accuracy of attitude	10%	Understanding SINUS, COSINUS, and TANGEN in a flat triangle	Lectures	Teacher-centered learning	2 x 50'
				Definition of Arcus sine, cosine arcus, and tangent arcus	Discussion	Student-centered learning	2 x 50'
				Coordinate system on a plane: Cartesian	Exercise	Problem-based learning	2 x 50'
				Quadrant definition	**Assignment 1**		
7	Able to explain the procedure for determining horizontal position (binding) in the field along with its calculations.	Material completeness, depth of explanation, effectiveness of communication, accuracy of attitude	10%	Coordinate counts (X, Y)	Lectures	Teacher-centered learning	1 x 50'
				Coordinate count elements	Discussion	Student-centered learning	1 x 50'
				Binding of the Front	Exercise	Problem-based learning	1 x 50'
					Assignment		
8				Mid semester evaluation			
9 - 10 - 11	Able to explain the procedure for determining the horizontal position (polygon) in the field along with its calculations	Material completeness, depth of explanation, effectiveness of communication, accuracy of attitude	25%	Polygon Measurement	Lectures	Teacher-centered learning	3 x 50'
				Polygon Geometry	Discussion	Student-centered learning	3 x 50'
				Calculation requirements on Polygons	Exercise	Problem-based learning	3 x 50'
				Errors that occur in Polygons	Assignment		
				Correction to polygons			

				Position Count (X, Y) by Polygon			
12 - 13 - 14	Able to explain the procedure for determining the vertical position (waterpass) in the field along with its calculations	Material completeness, depth of explanation, effectiveness of communication, accuracy of attitude	25%	Waterpass Measurement	Lectures	Teacher-centered learning	3 x 50'
				High and high difference counts	Discussion	Student-centered learning	3 x 50'
				Counting requirements on the Waterpass	Exercise	Problem-based learning	3 x 50'
				Errors that occur at Waterpass			
				Correction of the waterpass			
				elevation and elevation difference counts			
15	Able to explain the procedure for determining terrain profile / field situation and their calculations	Material completeness, depth of explanation, effectiveness of communication, accuracy of attitude	5%	Long section profile	Lectures	Teacher-centered learning	1 x 50'
				Cross section profile	Discussion	Student-centered learning	1 x 50'
				References used	Exercise		1 x 50'
					Exercise	Problem-based learning	1 x 50'
				Profile calculation and depiction	**Assignment-2**		
16				Final semester evaluation			
			100%				