



UNIVERSITAS PENDIDIKAN INDONESIA

SEMESTER LEARNING PLAN (RPS)

Course Identity

Course Name	Course Code	Credits	Workload	Course Group	Semester	Prerequisite	Published
Terrestrial Mapping	SA404	3	135	Compulsory	3	Land Surveying, Mathematics	-

Prepared by Lecturer	Reviewed by QA Team	Approved by Head of Programme
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Course Description and Graduate Learning Outcomes (CPL)

Course Description	This course is for Geographic Information Science (GIS) students and examines the application of survey and mapping, the application of horizontal and vertical positioning, and methods of measuring horizontal and vertical control frameworks and situational detail. The course comprises both theoretical and practical components.
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Graduate Learning Outcomes (CPL) Assigned to the Course	
P1	To master the theoretical concepts of resource survey and mapping (natural, social, and cultural) and to have skills in applying various methods of resource survey and mapping (natural, social, and cultural).
KU1	To be able to complete wide-scope tasks and analyse data using various appropriate methods, whether conventional or non-conventional.
KU3	To be able to solve work problems with characteristics and contexts appropriate to the applied field of expertise, based on logical,

	innovative thinking, and bearing responsibility for the results independently.
KU5	To be able to collaborate, communicate, and innovate in professional activities.
KK2	To be able to conduct surveys in the field of resources (natural, social, and cultural) in a given area.
KK3	To be able to process survey data in the field of resources (natural, social, and cultural) and present them in the form of maps.
KK6	To be able to report the results of surveys, mapping, and geographic information in the field of resources (natural, social, and cultural).

Course Learning Outcomes (CPMK)		
1	Students are able to understand the relationship between terrestrial mapping material and land surveying.	
2	Students are able to understand the measurement of the control framework.	
3	Students are able to understand and apply the concept of the horizontal control framework.	
4	Students are able to understand and apply the concept of the vertical control framework.	
5	Students are able to understand the concept of contour generation, longitudinal profiles, and cross-sections.	
6	Students are able to understand the concept and application of detailed object mapping.	
7	Students are able to complete a final group project.	

Sub-Course Learning Outcomes		
1	CPMK-1: Students are able to understand the relationship between terrestrial mapping and land surveying.	
2	CPMK-2: Students are able to understand the concept of the mapping control framework.	

3	CPMK-2: Students are able to understand and apply the concept of control framework measurement in map production.
4	CPMK-3: Students are able to understand the concept and apply horizontal control framework mapping using various methods.
5	CPMK-2: Students are able to understand the calculation of control framework coordinate values and their application in the survey and mapping process.
6	CPMK-4: Students are able to understand and apply the concept of vertical control framework mapping using various methods.
7	CPMK-5: Students are able to understand and produce contours, longitudinal profiles, and cross-sections.
8	CPMK-6: Students are able to understand the concept and application of detailed object mapping.
9	CPMK-7: Students are able to complete the final project in accordance with the requirements from the planning stage through to the presentation and reporting of the final project results.

Course Material		
1	Mapping Control Framework	
2	Horizontal Control Framework	
3	Vertical Control Framework	
4	Contour generation in mapping	
5	Objects and situational detail mapping	
6	Methods of situational detail mapping	
7	Field Practice	
8	Group Final Project	

Learning Outcomes at End of Course	Final Project at the End of the Course
Learning Strategy	Case Method; Team-based Project

Learning Steps	Learning is conducted both synchronously and asynchronously, using face-to-face methods, lectures, tutorials, case method, and team-based project.
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References		
1	Hartono, S. (2018). Pengukuran tanah dan pemetaan terestris. Jakarta: Penerbit Mitra.	
2	Suharyanto, B. (2019). Dasar-dasar ilmu ukur tanah dan pemetaan. Yogyakarta: Penerbit Andi.	
3	Nugroho, A. (2020). Teknik pemetaan terestris dan aplikasi GPS. Bandung: Penerbit Salemba.	
4	Santosa, D. (2022). Pemetaan terestris: Prinsip dan aplikasi. Surabaya: Penerbit Bumi Aksara.	
5	Sugito, N.T., et al. (2021). Survey Terestris. Bandung: UPI Press.	

Semester Learning Plan

Week	Sub-CPMK	Achievement Indicators	Course Material	Assessment	Weight (%)	Learning Method
1	Students are able to understand the relationship between terrestrial mapping and land surveying.	Students are able to understand the relationship between terrestrial mapping and land surveying.	Mapping Control Framework	Participatory	5	Face-to-face lecture
2	Students are able to understand the concept of the mapping control framework.	Students are able to understand the concept of the mapping control framework.	Mapping Control Framework	Participatory	5	Face-to-face lecture
3	Students are able to understand and apply the concept of control framework measurement in map production.	Students are able to apply the concept of control framework measurement in map production.	Mapping Control Framework	Short answer	5	Face-to-face lecture; Individual assignment

4	Students are able to understand the concept and apply horizontal control framework mapping using various methods.	Students are able to understand the concept and apply horizontal control framework mapping using various methods.	Horizontal Control Framework	Essay	5	Face-to-face lecture; Individual and group assignment
5	Students are able to understand and produce contours, longitudinal profiles, and cross-sections.	Students are able to understand contour production in mapping.	Contour generation in mapping	Essay	5	Face-to-face lecture
6	Students are able to understand the concept and application of detailed object mapping.	Students are able to understand the concept and application of detailed object mapping.	Objects and situational detail mapping	Essay	5	Face-to-face lecture
7	Students are able to understand the concept and application of detailed object mapping.	Students are able to understand the concept and application of detailed object mapping.	Methods of situational detail mapping	Essay	5	Face-to-face lecture
8	Students are able to understand the concept and application of detailed object mapping.	Students are able to understand the application of detailed object mapping.	Field Practice	Essay	5	Face-to-face lecture
9	Students are able to complete the final project.	Students are able to complete the final project.	Group Final Project	Portfolio	5	Face-to-face lecture; Group assignment
10	Students are able to complete the final project	Students are able to complete the final project	Group Final Project	Essay	5	Face-to-face lecture

	in accordance with the requirements.	in accordance with the requirements.				
11	Students are able to complete the final project in accordance with the requirements.	Students are able to complete the final project in accordance with the requirements.	Group Final Project	Performance	5	Face-to-face lecture; Group assignment
12	Students are able to complete the final project in accordance with the requirements.	Students are able to complete the final project in accordance with the requirements.	Group Final Project	Performance	5	Face-to-face lecture; Group assignment
13	Students are able to complete the final project in accordance with the requirements.	Students are able to complete the final project in accordance with the requirements.	Group Final Project	Performance	5	Face-to-face lecture; Group assignment
14	Students are able to complete the final project in accordance with the requirements.	Students are able to complete the final project in accordance with the requirements.	Group Final Project	Performance	5	Face-to-face lecture; Group assignment
15	Students are able to understand the relationship between terrestrial mapping and land surveying.	Students are able to complete the final project in accordance with the requirements.	Group Final Project	Performance	5	Face-to-face lecture; Group assignment
16	Students are able to complete the final project from the planning stage through to presentation and reporting.	Students are able to complete the final project in accordance with the requirements.	Group Final Project	Portfolio	25	Face-to-face lecture

Student Study Time (Workload)

Activity	Synchronous	Asynchronous	Student Preparation	Total
Lectures/Tutorials	$12 \times 60 \text{ min} = 720 \text{ min}$	–	–	720 min (12.0 hrs)
Project-based Learning	$6 \times 60 \text{ min} = 360 \text{ min}$	$16 \times 60 \text{ min} = 960 \text{ min}$	–	1,320 min (22.0 hrs)
Discussion (Case-based Learning)	$6 \times 60 \text{ min} = 360 \text{ min}$	$6 \times 60 \text{ min} = 360 \text{ min}$	$6 \times 60 \text{ min} = 360 \text{ min}$	1,080 min (18.0 hrs)
Total Learning				3,120 min (52.0 hrs)
Participation During Learning	$12 \times 60 \text{ min} = 720 \text{ min}$	–	–	720 min (12.0 hrs)
Project Work	$7 \times 60 \text{ min} = 420 \text{ min}$	$14 \times 60 \text{ min} = 840 \text{ min}$	$14 \times 60 \text{ min} = 840 \text{ min}$	2,100 min (35.0 hrs)
Assignments	$6 \times 60 \text{ min} = 360 \text{ min}$	$10 \times 60 \text{ min} = 600 \text{ min}$	$8 \times 60 \text{ min} = 480 \text{ min}$	1,440 min (24.0 hrs)
Quizzes	$4 \times 60 \text{ min} = 240 \text{ min}$	–	$2 \times 60 \text{ min} = 120 \text{ min}$	360 min (6.0 hrs)
Formative				120 min (2.0 hrs)
Summative				240 min (4.0 hrs)
Total Workload				8,100 min (135 hrs)
Ideal Hours				135 hrs
Credits (SKS)				3
Compliance with Credit Hours				Compliant

CPMK Assessment Criteria

No.	CPMK	Taxonomy	Weight	Achievement Criteria
1	Students are able to understand the relationship between terrestrial mapping material and land surveying.	0	10	90% of all students obtain a score of at least 80 (on a scale of 100)
2	Students are able to understand the measurement of the control framework.	0	10	85% of all students obtain a score of at

				least 80 (on a scale of 100)
3	Students are able to understand and apply the concept of the horizontal control framework.	0	5	80% of all students obtain a score of at least 80 (on a scale of 100)
4	Students are able to understand and apply the concept of the vertical control framework.	0	0	80% of all students obtain a score of at least 80 (on a scale of 100)
5	Students are able to understand the concept of contour generation, longitudinal profiles, and cross-sections.	0	5	80% of all students obtain a score of at least 80 (on a scale of 100)
6	Students are able to understand the concept and application of detailed object mapping.	0	15	80% of all students obtain a score of at least 80 (on a scale of 100)
7	Students are able to complete a final group project.	0	55	70% of all students obtain a score of at least 75 (on a scale of 100)

Collaborative Assignment Design

Assignment Title	Production of a Situational Detail Map
Learning Method	Team-based Project
Assessment Weight	60
Sub-CPMK	Students are able to complete the final project in accordance with the requirements from the planning stage through to the presentation and reporting of the final project results.

Steps for Completing the Assignment

The production of a situational detail map at a scale of 1:1,000 requires systematic steps. The following are general steps that may be followed:

1. Preparation of Equipment and Materials: Measuring instruments (such as a total station, GPS, or distance meter). A base map or location sketch. Millimetre paper or mapping software (e.g., AutoCAD). Drawing instruments (pencils, rulers, etc.).
2. Site Survey: Conduct a field survey to collect data. Determine control points to serve as references. Record the coordinates and elevation of key points (buildings, roads, trees, etc.).

3. Data Processing: Enter the data obtained from the survey into the mapping system (manual or digital). Produce a rough sketch of the location based on the collected data.
4. Map Production: Draw the map based on the data that have been collected. Use the 1:1,000 scale to depict all elements proportionally. Mark important elements such as buildings, roads, and natural features.
5. Addition of Symbols and Labels: Use consistent symbols to represent various elements (e.g., buildings, roads, trees). Add labels to provide explanations of features present on the map.
6. Verification and Validation: Review the completed map to ensure accuracy. Compare it with the original data that were collected.
7. Map Finalisation: Produce the final version of the map, taking into account aesthetic and informational clarity aspects. Prepare a document explaining the scale, legend, and data sources.

Outputs Produced	1. Control Point Map; 2. Situational Detail Map; 3. Contour Map; 4. Report; 5. Seminar/Presentation results.
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Assessment Criteria and Weights

1. Data Accuracy (30%): Level of measurement precision; consistency between field data and the map.
2. Detail and Clarity (25%): Level of detail presented (key elements such as buildings, roads, vegetation); clarity of symbols and labels used.
3. Aesthetics (15%): Visual design of the map (use of colour, layout); readability and visual appeal.
4. Compliance with Standards (15%): Adherence to prevailing mapping standards; conformity of the map format with its intended use.
5. Use of Symbols and Legend (10%): Consistency in the use of symbols; clarity and completeness of the legend.
6. Data Processing (5%): Data processing method used; accuracy in data representation.

Implementation Schedule		
Activity	Implementation Time	
Production of Situational Detail Map	$10 \times 7 = 70$ days	