



UNIVERSITAS PENDIDIKAN INDONESIA

SEMESTER LEARNING PLAN (RPS)

COURSE INFORMATION

Course Name	Course Code	Credits	Workload	Course Group	Semester	Prerequisite Course	Date of Issue
REMOTE SENSING FOR LAND USE AND VEGETATION	SA416	2	90	Compulsory Course	6		2025-09-09 11:26:56

Prepared by	Reviewed by	Approved by
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COURSE DESCRIPTION AND LEARNING OUTCOMES

Course Description	Remote Sensing for Vegetation and Land Use is a compulsory course for second-year students of the Geographic Information Science (SaIG) study program. Its scope focuses on remote sensing applied to the study of vegetation and land use, which is extracted from imagery, subsequently analyzed, and applied for various purposes. This course carries two credits, comprising face-to-face sessions, independent laboratory activities, field practicum (ground check), and exposition. The face-to-face sessions cover topics on the fundamental concepts of vegetation and land use, medium- and high-resolution imagery for and vegetation and land use studies, land cover and vegetation and land use, medium- land use classification, and the study of various vegetation and land use index transformations (NDVI, MSARVI, SAVI, NDBI, etc.).		
Program Learning Outcome Assigned in the Course	1	Demonstrating religious and attitudes and behavior, upholding humanistic values, embodying vegetation having patriotism, environmental awareness, and demonstrating responsibility toward work and field of expertise independently.	
	2	Capable of mastering the theoretical concepts pertaining to vegetation and land use concepts.	
	3	Capable of applying logical, critical, systematic, and innovative and thinking in the context of developing or implementing knowledge and technology that and observes and applies humanistic values in accordance with the relevant field of expertise	
	4	Capable of making well-informed decisions in the context of problem-solving within the field of expertise, based on the results of information and data analysis	
	5	Capable of managing learning independently	
	6	Capable of designing, developing, producing, utilizing, utilizing, managing, and evaluating analytical models and and theories of geospatial information based on science and technology.	
Course Learning Outcome (CPMK)	1	Students are able to understand the concepts of vegetation and land through	
	2	Students are able to perform image and	
	3	Students are able to utilize imagery of various resolutions for vegetation and land use through	
	4	Students are able to perform accuracy testing on land cover and land use through	
	5	Students are able to perform vegetation and built-up land index transformation	
Sub-CRITERIA	1	CPMK - 1	Explaining the differences between land cover and land use, and the role of vegetation in ecosystems.
	2	CPMK - 2	Downloading and pre-processing satellite imagery data from various sources.
	3	CPMK - 3	Using medium- and high-resolution imagery for vegetation analysis and land use change concepts.
	4	CPMK - 4	Performing classification accuracy testing using a confusion matrix and field validation data.
	5	CPMK - 5	Calculating and analyzing vegetation indices (NDVI, SAVI) and built-up land indices (NDBI, UI).
Course Materials	1	Definitions of Land, Land Cover, and Land Use	

	2	Definitions and Concepts of Vegetation
	3	Fundamental Concepts of Land Use Use
	4	Remote Sensing Imagery for Land Use and Vegetation Vegetation
	5	Land Cover and Land Use Classification Methods, Part 1
	6	Land Cover and Land Use Classification Methods, Part 2
	7	Land Cover and Land Use Classification Accuracy Use
	8	Midterm Examination (Midterm)
	9	Supervised Classification Analysis Classification
	10	Unsupervised Classification Analysis Classification
	11	Land Cover Classification Accuracy Testing Use
	12	Vegetation Density Analysis Practicum (NDVI)
	13	Vegetation Density Analysis Practicum (SAVI)
	14	Built-up Area Density Analysis Practicum (NDBI)
	15	Urban Index Analysis Practicum (UI)
	16	Final Examination (Final)
Learning outcomes demonstrated at the end of the course *)	Students are able to interpret imagery, analyze vegetation indices, and validate field data for accurate land use mapping.	
Learning Strategy	✓	Case Method
		Team based Project
		Others
Learning Stages	Learning commences with face-to-face lectures to understand the fundamental concepts of vegetation and land use, along with an introduction to various types of imagery for and and high-resolution imagery. Students subsequently study land cover and land use classification techniques through and land use, through software. Subsequently, students analyze vegetation and land use index transformations such as NDVI, MSARVI, SAVI, and NDBI. Field practicum (ground check) is conducted to validate image interpretation results, followed by laboratory activities for further data processing. At the end of the course, students present their analytical results in an exposition session to demonstrate the understanding and skills acquired.	
References	1	Howard, A. (n.d.). Remote Sensing for Forest Resources: Theory and Application.

2	Kucler, A. (n.d.). Vegetation Mapping.
3	Bukhart, H. E. (n.d.). Forest Measurement.
4	Biotrop. (1984). Remote Sensing for Vegetation Resources.
5	Faculty of Forestry. (n.d.). Forestry Compendium (500 pp).
6	Simon, H. (n.d.). Teak Forest. Jakarta: Gramedia.
7	Wing, M. G. (2004). GIS Applications for Forestry and Natural Resources. CRC Press.
8	Swain, P. H., & Hoffer, R. M. (n.d.). Remote Sensing: The Quantitative Approach (Ch. 5: Biological Consideration of Spectral Properties, pp. 221-241).
9	Vink, A. P. A. (1983). Landscape Ecology and Land Use. Longman.
10	Van Gils, H. A. M. J., de Vries, J. J., & van Oort, P. A. J. (1990). Monitoring and Modelling of Vegetation Dynamics. Pudoc.
11	Jensen, J. R. (2000). Remote Sensing of the Environment: An Earth Resource Perspective. Upper Saddle River, NJ: Prentice Hall.
12	Lillesand, T. M., Kiefer, R. W., & Chipman, J. W. (2004). Remote Sensing and Image Interpretation (5th ed.). Hoboken, NJ: John Wiley & Sons.
13	Danoedoro, P. (2012). Introduction to Digital Remote Sensing. Yogyakarta: Andi.

LEARNING PLAN

Week -	Sub-CRITERIA	Learning Indicator	Course Material	Assessment		Learning Method		Duration (hours)	Reference	Access Time
				Assessment Methode (test/non-test)	Assessment Weighting (%)	Synchronous	Asynchronous			
1	Explaining the differences between techniques through and land use, and the role of vegetation in ecosystems.	Students are able to understand the definitions of land, Land Cover Use and land use	Definitions of Land, Use and Land Use	Participatory	5	Face-to-face	Searching for sources relevant to the course	2 x 50	1	04-02-2025 08:00
2	Explaining the differences between techniques through and land use, and the role of vegetation in ecosystems.	Students are able to understand the definitions and fundamental concepts of vegetation	Definitions and Concepts Vegetation	Participatory	5	Face-to-face	Searching for sources relevant to the course	2 x 50	2	11-02-2025 08:00
3	Explaining the differences between techniques through and land use, and the role of vegetation in ecosystems.	Students are able to understand the fundamental concepts of land use, land use and land cover classification	Fundamental Concepts of Land Use Classification Land Use Use	Participatory	5	Face-to-face	Searching for sources relevant to the course	2 x 50	3	18-02-2025 08:00
4	Using medium- and high-resolution imagery for models vegetation and land use change detection.	Students are able to utilize medium-resolution remote sensing imagery for land use classification vegetation and land use classification	Remote Sensing Imagery and land use studies, Land Use and Vegetation Classification	Participatory	5	Face-to-face	Searching for sources relevant to the course	2 x 50	4	25-02-2025 08:00
5	Using medium- and high-resolution imagery for models vegetation and land use change detection.	Students are able to utilize remote sensing imagery to identify land cover and and land use through	Land Cover and Land Use Classification Use Methods, Part 1	Participatory	5	Face-to-face	Searching for sources relevant to the course	2 x 50	5	04-03-2025 08:00

Week -	Sub-CRITERIA	Learning Indicator	Course Material	Assessment		Learning Method		Duration (hours)	Reference	Access Time
				Assessment Method (test/non-test)	Assessment Weighting (%)	Synchronous	Asynchronous			
6	Using medium- and high-resolution imagery for models vegetation and land use change detection.	Students are able to utilize remote sensing imagery to identify land cover and land use through	Land Cover and Land Use Classification Use Methods, Part 2	Participatory	5	Face-to-face	Searching for sources relevant to the course	2 x 50	13	11-03-2025 08:00
7	Performing classification accuracy testing using a confusion matrix and field validation data.	Students are able to understand classification accuracy testing for Land Cover land cover and land use	Land Cover and Land Use Classification Accuracy Testing	Participatory	5	Face-to-face	Searching for sources relevant to the course	2 x 50	13	18-03-2025 08:00
8	Midterm Examination				15					24-03-2025 08:00
9	Downloading and pre-processing satellite imagery data from various sources.	Students are able to conduct the land cover and land use classification Land Cover land cover and land use	Practicum: Analysis — Supervised Classification	Participatory	5	Face-to-face	Practicum:	2 x 50	10	08-04-2025 10:20
10	Downloading and pre-processing satellite imagery data from various sources.	Students are able to conduct the land cover and land use classification Land Cover land cover and land use	Practicum: Analysis — Unsupervised Classification	Participatory	5	Face-to-face	Practicum:	2 x 50	12	15-04-2025 08:00
11	Performing classification accuracy testing using a confusion matrix and field validation data.	Students are able to perform classification accuracy testing for Land Cover land cover and land use	Land Cover Classification Accuracy Testing Practicum Use	Participatory	5	Face-to-face	Practicum:	2 x 50	12	22-04-2025 08:00

12	Explaining the differences between techniques through and land use, and the role of vegetation in ecosystems.	Students are able to perform image transformation using the NDVI algorithm for vegetation analysis	Definitions of Land, Use and Land Use	Multiple Choice	5	Face-to-face	Practicum:	2 x 50	11	25-04-2025 08:00
Week -	Sub-CRITERIA	Learning Indicator	Course Material	Assessment		Learning Method		Duration (hours)	Reference	Access Time
				Assessment Method (test/non-test)	Assessment Weighting (%)	Synchronous	Asynchronous			
13	Calculating and analyzing vegetation indices (NDVI, SAVI) and built-up land indices (NDBI, UI).	Students are able to perform image transformation using the SAVI algorithm for vegetation analysis	Density Analysis Practicum (Vegetation) (SAVI)	Participatory	5	Face-to-face	Practicum:	2 x 50	10	01-05-2025 08:00
14	Calculating and analyzing vegetation indices (NDVI, SAVI) and built-up land indices (NDBI, UI).	Students are able to perform image transformation using the NDBI algorithm for built-up land transformation	Density Analysis Practicum (Built-up Area) (NDBI)	Participatory	5	Face-to-face	Practicum:	2 x 50	13	06-05-2025 08:00
15	Calculating and analyzing vegetation indices (NDVI, SAVI) and built-up land indices (NDBI, UI).	Students are able to perform image transformation using the UI algorithm for built-up land analysis	Practicum: Analisis Urban Index Analisis Practicum (UI)	Participatory	5	Face-to-face	Practicum:	2 x 50	13	13-05-2025 08:00
16	Final Examination				15					20-05-2025 08:00

STUDENT LEARNING TIME (WORKLOAD)

	ACTIVITIES	SYNCHRONOUS (Face-to-Face / Virtual Meeting)	ASYNCHRONOUS (Structured / Independent)	STUDENT LEARNING PREPARATION	TOTAL STUDENT LEARNING AND INSTRUCTION TIME
LEARNING	Lectures/Responses/Tutorials	14 x 90 minutes = 1260 minutes	-x-	-x-	1260 menit (21.0 hours)
	Project-based learning	-x-	8 x 90 menit = 720 minutes	8 x 30 menit = 240 minutes	960 menit (16.0 hours)
	Discussion (case-based learning)	8 x 60 menit = 480 minutes	-x-	8 x 30 menit = 240 minutes	720 menit (12.0 hours)
	TOTAL				2940 menit (49.0 hours)
ASSESSMENT	Continuous Assessment				
	Participation During Learning	16 x 60 menit = 960 minutes	-x-	-x-	960 menit (16.0 hours)
	Project Completion	-x-	8 x 90 menit = 720 minutes	-x-	720 menit (12.0 hours)
	Assignments	-x-	8 x 60 menit = 480 minutes	-x-	480 menit (8.0 hours)
	Quizzes	4 x 30 menit = 120 minutes	-x-	-x-	120 menit (2.0 hours)
	Formative				90 menit (1.5 hours)
	Summative				90 menit (1.5 hours)
	TOTAL				2460 menit (41.0 hours)
TOTAL WORKLOAD					5400 Menit (90 Jam)
TOTAL IDEAL HOURS					90 Hours
CREDITS					2
CONFORMITY WITH THE NUMBER OF CREDITS					APPROPRIATE

CPMK ASSESSMENT CRITERIA

CPMK Assessment Criteria Data Not Yet Available

COLLABORATIVE ASSIGNMENT DESIGN

Collaborative Assignment Details Not Yet Available