	INSTITUT TEKNOLOGI SEPULUH NOPEMBER FACULTY OF CIVIL, PLANNING AND GEO ENGINEERING DEPARTMENT OF GEOMATICS ENGINEERING UNDERGRADUATE STUDY PROGRAM	Document Code

SEMESTER LEARNING PLAN (SLP)						
COURSE NAME		**CODE**	**COURSE GROUP**	**CREDITS (SKS)**		**SEMESTER**	**Date of Preparation**
Geospatial Information Analysis		CM234632	Geospatial	**T=2**	**P=1**	6	-
AUTHORIZATION		**SLP Developer**		**Course Group Coordinator**		**Head of Study Program**
		Dr. Ing. Ir. Teguh Hariyanto, M.Sc.		Prof. Lalu Muhamad Jaelani, S.T., M.Sc., Ph.D.		Putra Maulida, S.T., M.T., Ph.D.

Learning Outcomes (LO)	Expected Learning Outcomes (ELO) that Imposed in the Course	
	ELO-2	Able to study and utilize science and technology in order to apply it to the areas of expertise in Geodesy and Surveying, Hydrography, Photogrammetry, and Remote Sensing, as well as Geospatial and Land Information, and able to make appropriate decisions from the results of their own work or group work in the form of a final project report or other forms of learning activities whose outcomes are equivalent to the final project through logical, critical, systematic and innovative thinking.
	ELO-6	Able to identify, formulate, analyze and solve problems in the fields of Geodesy and Surveying, Hydrography, Photogrammetry and Remote Sensing also Geographic Information Systems and Cadastral.
	ELO-7	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 and Surveying, Hydrography, Photogrammetry and Remote Sensing also Geographic Information Systems and Cadastral.
	Course Learning Outcomes (CLO)	
	CLO-1	Students are able to identify, formulate, and analyze problems in the fields of geodesy, surveying, hydrography, remote sensing, photogrammetry, and cadastral based on theoretical bases and survey methods in geospatial information
	CLO-2	Students are able to compile survey and measurement plans and analyze spatial information generated independently and teamwork

| | CLO-3 | Students are able to compile survey and measurement plans, process spatial data using modern industry-standard software and analyze mapping designs in the fields of geodesy, surveying, hydrography, remote sensing, photogrammetry, and cadastral |
| | CLO-4 | Students are able to conduct comprehensive analysis using geospatial information technology in the fields of geodesy, surveying, hydrography, remote sensing, photogrammetry, geographic information systems, and cadastral |

Matrix ELO-CLO

CLO	ELO-2	ELO-6	ELO-7
CLO-1	V	V	
CLO-2	V		
CLO-3		V	V
CLO-4		V	

Course Description	In this course, students will learn one of the main objectives in science and technology in the field of spatial information. Students will also understand extra-terrestrial data acquisition technology, understand the relationship between spatial data both vector and raster through various spatial analysis models, and apply comprehensive geospatial information analysis to thematic problems related to land use, natural resources, supervision of natural disaster areas, and regional and urban planning
Course Materials	1. Geospatial Information Analysis Concept 2. Spatial Autocorrelation 3. Pattern and Cluster Analysis 4. Proximity Analysis on Vector and Raster Data 5. Geostatistical Models 6. 3D Terrain Analysis 7. Grid-Based Analysis 8. Spatial Regression Model 9. Model Cellular Automata 10. Analysis of geospatial information for land use and natural resource management 11. Geospatial information analysis for monitoring natural disaster areas 12. Geospatial information analysis for geospatial information for urban and regional planning
References	**Main:**

	1. Mitchel, Andy.The Esri Guide to GIS Analysis (three volumes), Esri Press. 1999.
	   • Volume 1: Geographic Patterns and Relationships2005.
	   • Volume 2: Spatial Measurements and Statistics2012.
	   • Volume 3: Modeling Suitability, Movement, and Interaction

2. de Smith, MJ, M.F. Goodchild and PALongley, 2006-2011. Geospatial Analysis: A Comprehensive Guide to Principles, Techniques and Software Tools, 3rdEdition. www.spatialanalysisonline.com.
3. O'Sullivan, D. and D. Unwin. 2003. Geographic Information Analysis. John Wiley & Sons.
4. Fahrmeir, L; Kneib T; Lang, S; Marx, B. 2013. Regression. London: Springer
5. Sherman, M. 2011. Spatial Statistics and Spatio-Temporal Data.USA: John Wiley & Sons
6. Haining, R. 2004. Spatial Data Analysis Theory and Practice. Cambridge: Cambridge University Press

Additional :

1. Mitchell, Andy. The ESRI Guide to GIS Analysis, Volume 2. ESRI Press, 2005. ISBN: 978-1-58948-116-9. www.esri.com.
2. Bivand Roger S., Pebesma, Edzer J., and Gmez-Rubio, Virgilio. 2008. Applied Spatial Data Analysis with R, Springer.

Lecturer	1. Prof. Dr. Ir. Bangun Muljo Sukojo, DEA, DESS 2. Husnul Hidayat, S.T., M.T. 3. Nurwatik, S.T., M.Sc 4. Cherie Bhekti Pribadi, S.T., M.T. 5. Hepi Hapsari Handayani, S.T., M.Sc, Ph.D.
Prerequisite	1. Digital Cartography 2. Remote Sensing 3. Digital Photogrammetry 4. Geographic Information Systems

Class/ Week	**Lesson Learning Outcome (Sub-CLO)**	**Valuation**		**Learning Forms, Learning Methods, Student Assignments /Task, [Estimated Time]**		**Learning Materials [References]**	**Weight (%)**
		Indicators	**Criteria**	**Offline**	**Online**		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Students know and are able to explain the definition of Geospatial Information Analysis		1. Completeness of the material 2. Depth of explanation and effectiveness of communication	1. Lecture [1 x 50'] 2. Discussion [1 x 50'] 3. Response [1 x 50']		Definition of Geospatial Information Analysis	5
2	Students know and are able to explain the definition of Spatial Analysis		1. Completeness of the material 2. Depth of explanation and	1. Lecture [1 x 50'] 2. Discussion [1 x 50'] 3. Response [1 x 50']		Definition of Spatial Analysis	10

Week	Learning Outcome		Assessment Criteria	Learning Method		Material	Weight
						effectiveness of communication	
3 – 4	Students know and are able to explain the use of Spatial Analysis		1. Completeness of the material 2. Depth of explanation and effectiveness of communication	1. Lecture [2 x 50'] 2. Discussion [2 x 50'] 3. Response [2 x 50']		Use of Spatial Analysis	10
5	Students know and are able to explain about DEM, DSM, DTM		1. Completeness of the material 2. Depth of explanation and effectiveness of communication	1. Lecture [1 x 50'] 2. Discussion [1 x 50'] 3. Response [1 x 50']		DEM, DSM, DTM	10
6 – 7	Students know and are able to explain applications in the spatial analysis process		1. Completeness of the material 2. Depth of explanation and effectiveness of communication	1. Lecture [2 x 50'] 2. Discussion [2 x 50'] 3. Response [2 x 50']		Application in the process of spatial analysis	15
8	**Midterm Evaluation / Midterm Exam**						**50**
9	Students know and are able to explain the Definition of Spatial Interpolation		1. Completeness of the material 2. Depth of explanation and effectiveness of communication	1. Lecture [1 x 50'] 2. Discussion [1 x 50'] 3. Response [1 x 50']		Definition of Spatial Interpolation	10
10 – 11	Students know and are able to explain the Spatial Interpolation Method		1. Completeness of the material 2. Depth of explanation and effectiveness of communication	1. Lecture [2 x 50'] 2. Discussion [2 x 50'] 3. Response [2 x 50']		Spatial Interpolation Method	10

12	Students know and are able to explain Geostatistical Analysis		1. Completeness of the material 2. Depth of explanation and effectiveness of communication	1. Lecture [1 x 50'] 2. Discussion [1 x 50'] 3. Response [1 x 50']		Geostatistical Analysis	10
13	Students know and are able to explain Regression Analysis		1. Completeness of the material 2. Depth of explanation and effectiveness of communication	1. Lecture [1 x 50'] 2. Discussion [1 x 50'] 3. Response [1 x 50']		Regression Analysis	10
14 – 15	Students know and are able to explain Weighting Regression Analysis		1. Completeness of the material 2. Depth of explanation and effectiveness of communication	1. Lecture [2 x 50'] 2. Discussion [2 x 50'] 3. Response [2 x 50']		Weighting Regression Analysis	10
16	**Final Semester Evaluation / Final Semester Examination**						**100**