



**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
Geographic Information Systems		CM234422	Geoinformatics	T=2	P=1	4	-
AUTHORIZATION		RPS Developer		Course Group Coordinator		Head of Study Program	
		Nurwatik, S.T., 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-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 explain the concepts and definitions of Geographic Information Systems					
	CLO-2	Students are able to identify Geographic Information System data in spatial data processing					
	CLO-3	Students are able to compile a spatial database in GIS format					
	CLO-4	Students are able to represent spatial data in GIS format					
		Matrix ELO – CLO					
		CLO	ELO-6	ELO-7			
		CLO-1	V	V			
		CLO-2	V	V			
		CLO-3	V	V			
		CLO-4	V	V			

<b>Course Description</b>		In this course, students will learn one of the main objectives in geographic information systems, namely the use of computer-based systems to manage geographic data. The theoretical basis of geographic information systems, components, data formats and methods of spatial data processing will be provided so that students will have knowledge about how to compile, process, analyze, and interpret spatial data in geographic information systems. To understand and gain experience in the preparation of spatial data, students will be given the task of compiling simple spatial data which is compiled as attribute data in spatial data. The process of converting spatial data used in geographic information systems will also be given in this course.					
<b>Course Materials</b>		<ol style="list-style-type: none"> <li>1. GIS Definition, GIS Components</li> <li>2. Data format, Spatial referencing</li> <li>3. Data conversion, Data structure, spatial and non-spatial analysis</li> <li>4. Spatial database, Attribute database in GIS format</li> <li>5. Thematic geographic information systems</li> </ol>					
<b>References</b>		<b>Main:</b> <ol style="list-style-type: none"> <li>1. Burrough P.A, Principle of GIS for Land Resources Assessment, Oxford, 1998</li> <li>2. Christopher Jones, GIS and Computer Cartography, Longman England, 1999</li> <li>3. Green D. and T. Bossomaier, Online GIS and spatial metadata. Taylor &amp; Francis, 2002</li> <li>4. Aronoff S., Geographic information systems: a management perspective. WDL Publications, 1989.</li> <li>5. Teguh Hariyanto, Pendahuluan SIG, bahan ajar SIG, ITS Surabaya, 2009</li> </ol> <b>Additional:</b> <ol style="list-style-type: none"> <li>1. Kang-Tsung Chang, Introduction to Geographic Information Systems, Fourth Edition. Singapore. Mc Graw Hill. 2008</li> </ol>					
<b>Lecturer</b>		<ol style="list-style-type: none"> <li>1. Dr-Ing. Ir. Teguh Hariyanto, MSc</li> <li>2. Agung Budi Cahyono, S.T., MSc, DEA</li> <li>3. Nurwatik, S.T., M.Sc</li> <li>4. Cherie Bhekti Pribadi S.T., M.T.</li> </ol>					
<b>Prerequisite</b>		<ol style="list-style-type: none"> <li>1. Database System</li> <li>2. Cartography</li> </ol>					
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	Able to explain the concept and definition of Geographic Information Systems, spatial	Accuracy explains the definition and	1. Completeness of the material	1. Lecture [1 x 50'] 2. Discussion [1 x 50']		Silabus, Tatib, Concept and definition of GIS	10

	data storage systems in GIS format, GIS data components	understanding of Geographic Information Systems, spatial data storage systems in GIS format, GIS data components	2. Depth of explanation and effectiveness of communication	3. Responses, Tasks and Results Presentation [1 x 50']			
<b>2 - 3</b>	Able to explain spatial data storage systems and data components in Geographic Information Systems	Accuracy describes spatial data storage systems of data components in Geographic Information Systems	1. Completeness of the material 2. Depth of explanation and effectiveness of communication	1. Lecture [2 x 50'] 2. Discussion [2 x 50'] 3. Responses, Tasks and Results Presentation [2 x 50']		1. Global GIS Application, GIS Component 2. Sources and Spatial Data Storage Systems	10
<b>4 - 5</b>	Able to explain data formats, data sources and data quality in the Geographic Information System	Accurately describe the data format, data source along with data quality in Geographic Information Systems	1. Completeness of the material 2. Depth of explanation and effectiveness of communication	1. Lecture [2 x 50'] 2. Discussion [2 x 50'] 3. Responses, Tasks and Results Presentation [2 x 50']		1. Format and quality GIS Data 2. Quality and Error source of GIS Data	10
<b>6 - 7</b>	Able to explain data integration related to reference adjustments used in Geographic Information Systems	Accuracy describes the integration of data related to the suitability of the reference used in Geographic	1. Completeness of the material 2. Depth of explanation and effectiveness of communication	1. Lecture [2 x 50'] 2. Discussion [2 x 50'] 3. Responses, Tasks and Results Presentation [2 x 50']		1. Georeference system of GIS data 2. Types and using of GIS data	10

		Information Systems					
<b>8</b>	<b>Midterm Evaluation / Midterm Exam</b>						<b>40</b>
<b>9 - 10</b>	Able to explain the differences between each data in the format of a Geographic Information System	1. Precision describes the method of satellite orbit 2. The influence of satellite orbits in data acquisition	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, Paper assignment [2 x 50']		1. UTS results discussion and assessment system 2. Format differences between each data in GIS	10
<b>11 - 12</b>	Able to explain the understanding of the data digitization process and data conversion process	Accuracy describes an understanding of the data conversion 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. Responses, Tasks and Results Presentation [2 x 50']		1. Data digitization process 2. Data conversion, data conversion method, data conversion process	15
<b>13</b>	Able to explain the understanding of the conversion method used	Accuracy describes an understanding of the data conversion method used	1. Completeness of the material 2. Depth of explanation and effectiveness of communication	1. Lecture [1 x 50'] 2. Discussion [1 x 50'] 3. Quiz [1 x 50']		Data conversion method and data conversion process	10
<b>14</b>	Able to explain spatial data topology processes, data structures and attribute databases in Geographic Information Systems	Accuracy in explaining and making various possible errors in making formations Data topology, data structure as well as	1. Completeness of the material 2. Depth of explanation and effectiveness of communication	1. Lecture [1 x 50'] 2. Discussion [1 x 50'] 3. Quiz [1 x 50']		Process topology, data structure and attribute database	10

		attribute database					
15	Able to carry out basic spatial data analysis processes	Accuracy in carrying out spatial data analysis processes spatial in Geographic Information Systems	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, Paper assignment [1 x 50']		Process topology for sample spatial data and data attribute design in GIS	15
16	Final Semester Evaluation / Final Semester Examination						100