	Universitas Negeri Surabaya Faculty of Postgraduate School, Master of Technology and Vocational Education Study Program	Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
Geographic Information System)	8310103036		T=3	P=0	ECTS=6.72	1	July 18, 2024

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
	.....	.....	Dr. Ir. Achmad Imam Agung, M.Pd.

Learning model	**Project Based Learning**
Program Learning Outcomes (PLO)	**PLO study program that is charged to the course**
	Program Objectives (PO)
	PLO-PO Matrix

	P.O

PO Matrix at the end of each learning stage (Sub-PO)

P.O	Week															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Short Course Description	The Basic Geographic Information Systems (GIS-Basic) course discusses the principles of geographic information systems, understanding of data, information and GIS, data sources, data collection systems, spatial, tabular and attribute data input, data base design, spatial data processing and attributes, output format, GIS database preparation, GIS operations and applications (repositioning, digitization, editing, labeling, transformation and digital map layout). Learning is carried out for one semester using a project-based learning approach with demonstration, discussion, practicum and individual and group assignment methods. Assessment is carried out through written, performance and portfolio tests.
References	**Main :**

1. Budiyanto, Eko. 2011. Pengenalan dan Bekerja dengan Arcview. Pustaka Pelajar : Yogjakarta
2. Chris Brunsdon and Lex Comber, 2014, An Introduction to R for Spatial Analysis and Mapping , SAGE Publications Ltd
3. ESRI, 2012, ArcGIS 9.2 Manual , ESRI Publiser, New York
4. John C. Rodgers, et all, 2012, Geospatial Online Instruction Model, Review of International Geographycal Education Online Vol. 2 Nomor 1 Spring 2012
5. Lilywati, H dan Budiman, 2007, Data Spasial, Pilihan Cerdas Bangsa Yang Bijak , PT Sarana Komunikasi Utama, Bogor.
6. National Research Council, 2006, Learning to The Think Spatially: GIS as a Support System in The K-12 Curriculum, The National Academies Press, Washington.
7. Sri Utami, Wiwik dan Ita Mardiani Z, 2012, Petunjuk Praktikum SIG , untuk kalangan sendiri, Tidak Dipublikasikan, Surabaya

Supporters:	
Supporting lecturer	KUSNAN Arie Wardhono, S.T., M.MT., M.T., Ph.D.

Week-	Final abilities of each learning stage (Sub-PO)	Evaluation		Help Learning, Learning methods, Student Assignments, [Estimated time]		Learning materials [References]	Assessment Weight (%)
		Indicator	Criteria & Form	Offline (*offline*)	Online (*online*)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

1	Students are able to analyze GIS as a data base management system (DBMS)	- Explain the taxonomy of information systems as entities in GIS. - Analyzing GIS as a data base management system (DBMS). - Identify the components in a Geographic Information System (GIS)	**Criteria:** 1. Geographic as DBMS. 2. The assessment contained in Assessment Sheet 1 is carried out during the Mid-Semester Examination (UTS). 3. Assessment Sheet 1. Consists of 4 essay questions. 4. Weight of Questions No. 1- 3 = 20 5. Weight of question no. 4 = 40	- Pulpit lecture - Question and answer. - Discussion 3 X 50			0%
2	Students are able to identify data as input in the GIS process	- Identifying attribute data in GIS - Identifying tabular data in GIS - Identifying raster data in GIS - Identifying vector data in GIS	**Criteria:** 1. Input Data. 2. The assessment contained in Assessment Sheet 1 is carried out during the Mid-Semester Examination (UTS). 3. Assessment Sheet 1. Consists of 4 essay questions. 4. Weight of Questions No. 1- 3 = 20 5. Weight of question no. 4 = 40	- Pulpit lecture - Question and answer. - Discussion 3 X 50			0%
3	Students are able to explain subsystems in GIS	- Explain the input sub system in GIS. - Explain the process sub system in GIS - Explain the output sub system in GIS	**Criteria:** 1. The assessment contained in Assessment Sheet 1 is carried out during the Mid-Semester Examination (UTS). 2. Assessment Sheet 1. Consists of 4 essay questions. 3. Weight of Questions No. 1- 3 = 20 4. Weight of question no. 4 = 40	- Pulpit lecture - Demonstration - assignment 3 X 50			0%
4	Students are able to interpret spatial data in GIS.	- Explain the various types of spatial data. - Explain the weaknesses and advantages of various spatial data as GIS input. - Interpreting spatial data in GIS.	**Criteria:** 1. The assessment contained in Assessment Sheet 1 is carried out during the Mid-Semester Examination (UTS). 2. Assessment Sheet 1. Consists of 4 essay questions. 3. Weight of Questions No. 1- 3 = 20 4. Weight of question no. 4 = 40	- Pulpit lecture - Demonstration - Assignment - discussion 3 X 50			0%

5	Students are able to reposition and digitize digital maps	- Repositioning maps/aerial photos/satellite imagery - Digitizing line type features (roads, contours, rivers, administration)	**Criteria:** 1. Assessment sheet 2 is used to assess students' mastery in using Arcview/ArcGIS software, students' skills in applying software to reposition, digitize, edit, label, transform and layout digital maps. 2. Assessment sheet 2 is used to observe students' responsibilities in carrying out/completing each task given and observing students' resilience in GIS practicum. 3. The assessment in Assessment Sheet 2 is carried out during lectures in the GIS course.	- Demonstration - Performance - 9 X 50 Assignment			0%
6	Students are able to reposition and digitize digital maps	- Repositioning maps/aerial photos/satellite imagery - Digitizing line type features (roads, contours, rivers, administration)	**Criteria:** 1. Assessment sheet 2 is used to assess students' mastery in using Arcview/ArcGIS software, students' skills in applying software to reposition, digitize, edit, label, transform and layout digital maps. 2. Assessment sheet 2 is used to observe students' responsibilities in carrying out/completing each task given and observing students' resilience in GIS practicum. 3. The assessment in Assessment Sheet 2 is carried out during lectures in the GIS course.	- Demonstration - Performance - 9 X 50 Assignment			0%

7	Students are able to reposition and digitize digital maps	- Repositioning maps/aerial photos/satellite imagery - Digitizing line type features (roads, contours, rivers, administration)	**Criteria:** 1. Assessment sheet 2 is used to assess students' mastery in using Arcview/ArcGIS software, students' skills in applying software to reposition, digitize, edit, label, transform and layout digital maps. 2. Assessment sheet 2 is used to observe students' responsibilities in carrying out/completing each task given and observing students' resilience in GIS practicum. 3. The assessment in Assessment Sheet 2 is carried out during lectures in the GIS course.	- Demonstration - Performance - 9 X 50 Assignment			0%
8	Create digital maps		**Criteria:** participation, performance, product	Demonstrations, assignments, practice 3 X 50			0%
9	Students are able to digitize digital maps.	- Digitizing feature type polygons. (land use) - Digitizing feature type points	**Criteria:** 1. Assessment sheet 2 is used to assess students' mastery in using Arcview/ArcGIS software, students' skills in applying software to reposition, digitize, edit, label, transform and layout digital maps. 2. Assessment sheet 2 is used to observe students' responsibilities in carrying out/completing each task given and observing students' resilience in GIS practicum. 3. The assessment in Assessment Sheet 2 is carried out during lectures in the GIS course.	- Demonstration - Performance 6 X 50			0%

10	Students are able to digitize digital maps.	- Digitizing feature type polygons. (land use) - Digitizing feature type points	**Criteria:** 1. Assessment sheet 2 is used to assess students' mastery in using Arcview/ArcGIS software, students' skills in applying software to reposition, digitize, edit, label, transform and layout digital maps. 2. Assessment sheet 2 is used to observe students' responsibilities in carrying out/completing each task given and observing students' resilience in GIS practicum. 3. The assessment in Assessment Sheet 2 is carried out during lectures in the GIS course.	- Demonstration - Performance 6 X 50			0%
11	Students are able to edit the digitization results in the GIS stage	- Editing the line type feature - Editing the polygon feature type	**Criteria:** 1. Assessment sheet 2 is used to assess students' mastery in using Arcview/ArcGIS software, students' skills in applying software to reposition, digitize, edit, label, transform and layout digital maps. 2. Assessment sheet 2 is used to observe students' responsibilities in carrying out/completing each task given and observing students' resilience in GIS practicum. 3. The assessment in Assessment Sheet 2 is carried out during lectures in the GIS course.	- Demonstration - Performance 6 X 50			0%

12	Students are able to edit the digitization results in the GIS stage	- Editing the line type feature - Editing the polygon feature type	**Criteria:** 1. Assessment sheet 2 is used to assess students' mastery in using Arcview/ArcGIS software, students' skills in applying software to reposition, digitize, edit, label, transform and layout digital maps. 2. Assessment sheet 2 is used to observe students' responsibilities in carrying out/completing each task given and observing students' resilience in GIS practicum. 3. The assessment in Assessment Sheet 2 is carried out during lectures in the GIS course.	- Demonstration - Performance 6 X 50			0%
13							0%
14	Students are able to transform labeling results in the SIG stage. Students are able to create map layouts digitally	Changing/transforming a digital map from geographic coordinates to UTM coordinates - Determining the map scale (numbers, graphics) - Designing a map legend - Laying out the map according to cartographic principles	**Criteria:** 1. Assessment sheet 2 is used to assess students' mastery in using Arcview/ArcGIS software, students' skills in applying software to reposition, digitize, edit, label, transform and layout digital maps. 2. Assessment sheet 2 is used to observe students' responsibilities in carrying out/completing each task given and observing students' resilience in GIS practicum. 3. The assessment in Assessment Sheet 2 is carried out during lectures in the GIS course.	- Demonstration - Performance - presentation 6 X 50			0%

15	Students are able to transform labeling results in the SIG stage. Students are able to create map layouts digitally	Changing/transforming a digital map from geographic coordinates to UTM coordinates - Determining the map scale (numbers, graphics) - Designing a map legend - Laying out the map according to cartographic principles	**Criteria:** 1. Assessment sheet 2 is used to assess students' mastery in using Arcview/ArcGIS software, students' skills in applying software to reposition, digitize, edit, label, transform and layout digital maps. 2. Assessment sheet 2 is used to observe students' responsibilities in carrying out/completing each task given and observing students' resilience in GIS practicum. 3. The assessment in Assessment Sheet 2 is carried out during lectures in the GIS course.	- Demonstration - Performance - presentation 3 X 50			0%
16							0%

Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
		0%

Notes

1. **Learning Outcomes of Study Program Graduates (PLO - Study Program)** are the abilities possessed by each Study Program graduate which are the internalization of attitudes, mastery of knowledge and skills according to the level of their study program obtained through the learning process.
2. **The PLO imposed on courses** are several learning outcomes of study program graduates (CPL-Study Program) which are used for the formation/development of a course consisting of aspects of attitude, general skills, special skills and knowledge.
3. **Program Objectives (PO)** are abilities that are specifically described from the PLO assigned to a course, and are specific to the study material or learning materials for that course.
4. **Subject Sub-PO (Sub-PO)** is a capability that is specifically described from the PO that can be measured or observed and is the final ability that is planned at each learning stage, and is specific to the learning material of the course.
5. **Indicators for assessing** ability in the process and student learning outcomes are specific and measurable statements that identify the ability or performance of student learning outcomes accompanied by evidence.
6. **Assessment Criteria** are benchmarks used as a measure or measure of learning achievement in assessments based on predetermined indicators. Assessment criteria are guidelines for assessors so that assessments are consistent and unbiased. Criteria can be quantitative or qualitative.
7. **Forms of assessment:** test and non-test.
8. **Forms of learning:** Lecture, Response, Tutorial, Seminar or equivalent, Practicum, Studio Practice, Workshop Practice, Field Practice, Research, Community Service and/or other equivalent forms of learning.
9. **Learning Methods:** Small Group Discussion, Role-Play & Simulation, Discovery Learning, Self-Directed Learning, Cooperative Learning, Collaborative Learning, Contextual Learning, Project Based Learning, and other equivalent methods.
10. **Learning materials** are details or descriptions of study materials which can be presented in the form of several main points and sub-topics.
11. **The assessment weight** is the percentage of assessment of each sub-PO achievement whose size is proportional to the level of difficulty of achieving that sub-PO, and the total is 100%.
12. TM=Face to face, PT=Structured assignments, BM=Independent study.