							Document Code

Universitas Negeri Surabaya
Faculty of Social Sciences and Law
Geography Education Undergraduate Study Program

SEMESTER LEARNING PLAN

Courses		CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
BASIC GIS		8720202219	Engineering Geography	**T=2**	**P=0**	**ECTS=3.18**	2	July 17, 2024
AUTHORIZATION		**SP Developer**		**Course Cluster Coordinator**			**Study Program Coordinator**	
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Learning model	**Project Based Learning**

Program Learning Outcomes (PLO)	**PLO study program that is charged to the course**	
	PLO-5	Able to make appropriate decisions to solve educational problems and transformative geography learning by utilizing various learning resources based on science and technology and the arts
	PLO-7	Able to make appropriate decisions to resolve regional problems in a spatial context based on an integrated geographic approach
	Program Objectives (PO)	
	PO - 1	Students understand the basic concepts of geographic information systems (GIS) and master basic digital mapping techniques
	PLO-PO Matrix	

P.O	PLO-5	PLO-7
PO-1		

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
PO-1																

Short Course Description	This Basic Geographic Information System is often also called Basic GIS. This course will lead fellow students to learn together about the basic concepts used in geographic information systems. Apart from that, you will also be invited to practice making digital maps

References	**Main :**

1. Esri. 1996. Introduction to Map Design . Esri Inc New York
2. Fortin, M, J,. Dale, M, . 2005. Spatial Analysis a Guide for Ecologist . Cambridge University Press
3. Fotheringham, S, Rogerson, P,. 2005. Spatial Analysis and GIS . London: Taylor & Francis
4. Lloyd, C, D,. 2011. Local Models For Spatial Analysis, Second Edition . New York: CRC Press, Taylor & Francis Group
5. QGIS Project. 2013. QGIS User Guide . QGIS Project
6. Riester, J,. 2008. Introduction to Topographic Maps . Geospatial Training and Analysis Cooperative
7. Sanders, L,. 2007. Models in Spatial Analysis . London: ISTE Ltd
8. Stillwell, J, Clarke, G,. 2004. Applied GIS and Spatial Analysis . England: John Wiley & Sons
9. Eko Budiyanto. 2016. Sistem Informasi Geografis menggunakan Quantum GIS. Yogyakarta: Penerbit Andi

Supporters:

Supporting lecturer	Dr. Eko Budiyanto, S.Pd., M.Si. Dr. Aida Kurniawati, S.Pd., M.Si. Dr. Lidya Lestari Sitohang, S.Si., M.Sc. Putu Wirabumi, S.Si., M.Sc.

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 master the basic concepts of geographic information systems	1. Understanding GIS 2. GIS components 3. GIS Types and Devices 4. GIS Applications	**Form of Assessment :** Participatory Activities, Portfolio Assessment	- Pulpit lecture - Question and answer. - Discussion 2 X 50			5%

No	Learning Outcome	Study Material	Assessment	Learning Method		Material/References	Weight
2	Students are able to understand the concept of digital base maps	1. Understanding analog and digital maps 2. Vector data concept 3. Characteristics of point, line and polygon type vector data	**Form of Assessment** : Participatory Activities, Portfolio Assessment	- Pulpit lecture - Question and answer. - Discussion 2 X 50			5%
3	Students understand the concept of map projection	1. Datum concept 2. Types of projection systems 3. Geographic Projection System 4. UTM Projection System 5. Projection system conversion	**Form of Assessment** : Participatory Activities	- Pulpit lecture - Demonstration - 2 X 50 assignment		**Material:** Introduction to data input processes and processes in GIS. **Library:** *Stillwell, J, Clarke, G,. 2004. Applied GIS and Spatial Analysis. England: John Wiley & Sons*	5%
4	Students understand the concept of ground control points	1. Definition of tie point 2. Mapping tie point function 3. Method for determining mapping tie points 4. Perform tie point calibration techniques	**Form of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment	- Pulpit lectures - Demonstrations - Assignments - 8 X 50 discussions		**Material:** Characteristics of spatial data in GIS **References:** *Stillwell, J, Clarke, G,. 2004. Applied GIS and Spatial Analysis. England: John Wiley & Sons*	5%
5	Students are able to operate GIS software	1. Acquisition of opensource software for learning (QGIS) 2. GIS software installation 3. Creating vector data in GIS software 4. Examples of digitizing points, lines and polygons	**Criteria:** participation, performance, product **Form of Assessment** : Assessment of Project Results / Product Assessment, Practices / Performance	- Demonstration - Performance - Assignment 8 X 50			5%
6	Students are able to install field tie points (GCP)	1. Georeferencer in GIS software 2. Base map preparation 3. Installation of Geographic tie points 4. Installation of UTM tie points	**Form of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment	Demonstration, performance, assignment 8 X 50			5%
7	Students master digital map digitization techniques	1. Digitizing point objects 2. Digitizing line objects 3. Digitizing polygon objects	**Form of Assessment** : Project Results Assessment / Product Assessment, Portfolio Assessment	Demonstration, performance, assignment 8 X 50		**Material:** Characteristics of topographic data **Reference:** *Riester, J,. 2008. Introduction to Topographic Maps. Geospatial Training and Analysis Cooperative*	5%
8	Midterm exam	Master the creation of digital maps	**Criteria:** Assessment of student knowledge in understanding GIS concepts **Form of Assessment** : Test	expository 2 X 50		**Material:** Meeting material 1 - 7 **References:**	0%
9	Students master vector data editing techniques	1. Vector selection and removal 2. Slide vector of points and lines 3. Displaying, adding, and editing vector nodes 4. Split and merge polygon features 5. Polygon vector editing 6. Vector conversion (Point to Line, Line to Polygon, Polygon to Line) 7. Vector simplification 8. Vertex extraction, centroid extraction	**Form of Assessment** : Project Results Assessment / Product Assessment	Demonstration, Performance 3 X 50			5%

No	Ability	Materials/Content	Form of Assessment	Method		Material/References	Weight
10	Students are able to process vector attribute data	1. Data attribute table 2. Add/remove data attribute fields 3. Input attribute data 4. Select/Search/Delete vector data	**Form of Assessment** : Project Results Assessment / Product Assessment	Demonstration, performance 2 X 50			5%
11	Students master Plotting techniques	1. Creating CSV XYZ data from the field 2. Generating point maps 3. Generating plotting data shapefiles 4. Group survey mapping practice	**Form of Assessment** : Project Results Assessment / Product Assessment	DEMONSTRATION, PERFORMANCE OF WORK 2 X 50		**Material:** Introduction to spatial data for ecological studies **References:** *Fortin, M, J,. Dale, M, . 2005. Spatial Analysis a Guide for Ecologist. Cambridge University Press* **Material:** Introduction to Library Editing techniques **:** *Eko Budiyanto. 2016. Geographic Information System using Quantum GIS. Yogyakarta: Andi Publishers*	5%
12	Students master interpolation concepts and techniques	1. Interpolation concept 2. IDW and Spline Interpolation 3. Point data interpolation process 4. Practice mapping contours of field measurement data	**Form of Assessment** : Project Results Assessment / Product Assessment	Demonstration, Performance 2 X 50		**Material:** Introduction to labeling techniques **Reader:** *Eko Budiyanto. 2016. Geographic Information System using Quantum GIS. Yogyakarta: Andi Publishers*	10%
13	Students master map layout techniques	1. Positioning (Portrait / Landscape) 2. Basic map framing, title, scale and map legend 3. Inset map framing 4. Geographic / UTM coordinate grid 5. Labeling manufacturer's name and logo	**Form of Assessment** : Project Results Assessment / Product Assessment	Demonstration, Performance 2 X 50		**Material:** Introduction to coordinate transformation techniques **Reader:** *Eko Budiyanto. 2016. Geographic Information System using Quantum GIS. Yogyakarta: Andi Publishers*	10%
14	Students are able to produce/reproduce Administrative Maps	Making an administrative map of the student's home area	**Form of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment	- Demonstration - Performance - presentation 2 X 50			15%
15	Students are able to produce thematic maps	Making thematic maps	**Form of Assessment** : Project Results Assessment / Product Assessment	- Demonstration - Performance - Presentation 2 X 50			15%
16	UAS meeting materials 9 - 15	Students are able to complete all projects given as UAS	**Form of Assessment** : Practice/Performance, Test			**Material:** Material 9-15 **Library:**	0%

Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
1.	Participatory Activities	22.5%
2.	Project Results Assessment / Product Assessment	67.5%
3.	Portfolio Assessment	7.5%
4.	Practice / Performance	2.5%
		100%

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** abilities in the process and student learning outcomes are specific and measurable statements that identify the abilities 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.