	Universitas Negeri Surabaya Vocational Faculty, D4 Civil Engineering Study Program	Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
LAND MEASURING SCIENCE & PRACTICUM	2230503048	Compulsory Study Program Subjects	T=2	P=1	ECTS=4.77	1	August 4, 2023

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

Program Objectives (PO)

PO - 1	Students are able to understand the basic concepts of land surveying
PO - 2	master the knowledge of the concepts and practices of land surveying

PLO-PO Matrix

P.O
PO-1
PO-2

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																
PO-2																

Short Course Description	This course contains a study of the basics of land measurement on a flat plane. basic measurements, knowledge of tools, measuring angles, measuring height differences, calculating azimuth. Measurement to determine the height or height difference between two points. This spirit level measurement is very important for obtaining data for mapping, planning and implementation work.

References

Main :

1. : [1]. Muhamadi, M, 1999, DiktatIlmu Ukur Tanah,Teknik Sipil dan Perencanaan, JurusanTeknik Sipil,InstitutTeknologi Sepuluh Nopember Surabaya.[2]. Wongsotjitro, S, 1985.Ilmu Ukur Tanah ,Penerbit Kanisius.[3]. Brinker, Russel C, dan Wolf,Paul R, 1986, Dasar - dasar Pengukuran Tanah (Surveying), PenerbitErlangga.[4].Amir, Z, 1988, Dasar-dasar Pengukuran Terestris DanPemetaan Situasi, Jurusan Teknik Sipil FakultasTeknik, Universitas Andalas.

Supporters:

Supporting lecturer	Satriana Fitri Mustika Sari, S.T., M.T. Heri Suryaman, S.Pd., M.Pd.

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	Able to explain IUT and create maps according to correct standards.	1. Explain the meaning of IUT and map requirements. 2. Explain the various types of maps. 3. Explain the branches of geodesy and land measurement	**Criteria:** Full marks if you can answer everything correctly **Forms of Assessment** : Participatory Activities, Portfolio Assessment, Practical Assessment, Tests	Lecture Question and answer and practice 3 X 50			0%
2	Able to carry out direct and indirect measurements and calculations.	1. Explain the various tools. 2. Explaining Tool Knowledge. 1. Able to use and master the spirit level tool well. 2. Explain the various types of measurement work. 3. Determine the measurement error calculation.	**Criteria:** Full marks are obtained if the types and calculations are explained correctly **Form of Assessment** : Participatory Activities, Practice/Performance	Lectures, and field practice 3 X 50			0%
3	Able to carry out direct and indirect measurements and calculations.	1. Explain the various types of measurement work. 2. Determine the measurement error calculation.	**Criteria:** Full marks are obtained if there is no difference in the high accuracy values **Forms of Assessment** : Participatory Activities, Portfolio Assessment, Practice / Performance	Lectures, questions and answers and practical demonstrations on the 3 X 50 field			0%
4	Able to determine azimuth and point coordinates	1. Determine the azimuth of two fixed points 2. Determine the coordinates of the points	**Criteria:** Full marks are obtained if the azimuth angle image is correct, the azimuth angle value and the point coordinates are correct **Forms of Assessment** : Participatory Activities, Portfolio Assessment, Practical Assessment, Tests	Lectures, discussions and practical exercises in the field. 3 X 50			0%
5	Able to determine azimuth and point coordinates	1. Determine the azimuth of two fixed points 2. Determine the coordinates of the points	**Criteria:** Full marks are obtained if the azimuth angle image is correct, the azimuth angle value and the point coordinates are correct **Form of Assessment** : Participatory Activities, Practice/Performance	Exercises. 3 X 50			0%
6	Able to determine the position of point coordinates using the Cartesian Coordinate System	1. Determine the coordinate position of the point. 2. Calculate and draw the Cartesian Coordinate System.	**Criteria:** Full marks are obtained if the point coordinates and the written layout of the report are correct **Forms of Assessment** : Participatory Activities, Practice/Performance, Tests	lectures and practice in the field 3 X 50			0%
7	Able to know about tools.	1. Explain the various tools. 2. Explaining Tool Knowledge.	**Criteria:** 1. Full marks are obtained if you know and understand the operation of the equipment 2. The completeness of the report is written correctly **Form of Assessment** : Participatory Activities	practice questions 3 X 50			0%

8	UTS	-	**Criteria:** Full marks if you can answer everything correctly **Form of Assessment** : Portfolio Assessment	- 2 X 50			0%
9	Able to determine angles and make maps in the field.	Calculating right angles Explaining right angles in the field Making maps with simple tools.	**Criteria:** Full marks and correct writing and completeness of the report **Forms of Assessment** : Participatory Activities, Practical Assessment, Practical / Performance	Lectures and practical training in the field. 3 X 50			0%
10	Able to determine angles and make maps in the field	Calculating right angles Explaining right angles in the field Making maps with simple tools.	**Criteria:** Full marks and correct writing and completeness of the report **Forms of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment, Practical Assessment, Practical / Performance	Lectures and practical training in the field. 3 X 50			0%
11	Able to determine the accuracy of measurements using a spirit level	Calculating the accuracy of the water level height difference. Explain measurement accuracy and height differences.	**Criteria:** 1.Full marks are obtained if there is no difference in the high accuracy values 2.The completeness of the report is written correctly **Forms of Assessment** : Participatory Activities, Practical Assessment, Practical / Performance	Lectures and practical training in the field. 3 X 50			0%
12	Able to determine longitudinal and profile measurements	Calculate the longitudinal flat edge measurements. Explaining the measurement of a longitudinal flat profile. Calculating the measurement of a profile flat profile	**Criteria:** Full marks if you can answer everything correctly **Forms of Assessment** : Participatory Activities, Practical Assessment, Practical / Performance	Lectures, exercises and practice on the 3 X 50 field			0%
13	Able to determine longitudinal and profile measurements	Calculate the longitudinal flat edge measurements. Explaining the measurement of a longitudinal flat profile. Calculating the measurement of a profile flat profile	**Criteria:** Full marks if you can answer everything correctly **Forms of Assessment** : Participatory Activities, Practical Assessment, Practical / Performance	Lectures, exercises and practice in the field. 3 X 50			0%
14	Able to determine longitudinal and profile measurements	Calculate the longitudinal flat edge measurements. Explaining the measurement of a longitudinal flat edge. Calculating the measurement of a flat profile profile	**Criteria:** Full marks are obtained if the situation mapping image at a certain scale matches the original form **Forms of Assessment** : Participatory Activities, Practical Assessment, Practical / Performance	Lectures, discussions, exercises and practice in the field. 3 X 50			0%

15	Able to create maps correctly according to standards	Calculate distance measurements, height differences and angles. Draw a map	**Criteria:** Full marks if you can answer everything correctly **Forms of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment, Portfolio Assessment, Practical Assessment, Practice / Performance	exercise and practice on the 3 X 50 field			0%
16			**Form of Assessment** : Test	uas			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.