



**Universitas Negeri Surabaya
Faculty of Engineering,
Building Engineering Education Undergraduate Study Program**

Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date																																																																																																					
Plumbing Skills Practice	8320502184	Compulsory Study Program Subjects	T=2	P=0	ECTS=3.18	5	July 17, 2024																																																																																																					
AUTHORIZATION	SP Developer		Course Cluster Coordinator			Study Program Coordinator																																																																																																						
	Drs. Djoni Irianto, M.T.				Dr. Gde Agus Yudha Prawira Adistana, S.T., M.T.																																																																																																						
Learning model	Case Studies																																																																																																											
Program Learning Outcomes (PLO)	PLO study program which is charged to the course																																																																																																											
	Program Objectives (PO)																																																																																																											
	PO - 1	Have social sensitivity and high concern for society.																																																																																																										
	PO - 2	Have good ethical morals and personality in completing mapping measurement tasks.																																																																																																										
	PO - 3	Able to develop oneself and think logically and SMARTly in solving problems from the tasks given																																																																																																										
	PO - 4	Able to be responsible for interpreting the final results of the measurement map.																																																																																																										
	PLO-PO Matrix																																																																																																											
		<table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>P.O</td></tr> <tr><td>PO-1</td></tr> <tr><td>PO-2</td></tr> <tr><td>PO-3</td></tr> <tr><td>PO-4</td></tr> </table>	P.O	PO-1	PO-2	PO-3	PO-4																																																																																																					
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PO Matrix at the end of each learning stage (Sub-PO)																																																																																																												
	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th rowspan="2">P.O</th> <th colspan="16">Week</th> </tr> <tr> <th>1</th><th>2</th><th>3</th><th>4</th><th>5</th><th>6</th><th>7</th><th>8</th><th>9</th><th>10</th><th>11</th><th>12</th><th>13</th><th>14</th><th>15</th><th>16</th> </tr> </thead> <tbody> <tr><td>PO-1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>PO-2</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>PO-3</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>PO-4</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </tbody> </table>	P.O	Week																1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	PO-1																	PO-2																	PO-3																	PO-4																						
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Short Course Description	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. Measurement using a total station for measurement of situations, details, open and closed polygons, etc																																																																																																											
References	Main :																																																																																																											
	<ol style="list-style-type: none"> 1. : [1]. Muhamadi, M, 1999, DiktatIlmu Ukur Tanah,Teknik Sipil dan Perencanaan, JurusanTeknik Sipil,InstitutTeknologi Sepuluh Nopember Surabaya. 2. [2]. Wongsotjitra, S, 1985.IlmU Ukur Tanah ,Penerbit Kanisius. 3. [3]. Brinker, Russel C, dan Wolf,Paul R, 1986, Dasar - dasar Pengukuran Tanah (Surveying), PenerbitErlangga. 4. [4].Amir, Z, 1988, Dasar-dasar Pengukuran Terestris DanPemetaan Situasi, Jurusan Teknik Sipil FakultasTeknik, Universitas Andalas. 																																																																																																											
	Supporters:																																																																																																											
Supporting lecturer	Drs. Djoni Irianto, M.T.																																																																																																											

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.	1.1. Explain the meaning of IUT and map requirements. 2.2. Explain the various types of maps. 3.3. Explain the branches of geodesy and land measurement	Criteria: Full marks if you can answer everything correctly Form of Assessment : Participatory Activities	Lecture Question and answer and practice 4 X 50	Lecture Question and answer and practice 4 X 50	Material: IUT and making maps according to standardization. Library: : [1]. Muhamadi, M, 1999, Diktat on Land Surveying, Civil Engineering and Planning, Civil Engineering Department, Sepuluh Nopember Institute of Technology, Surabaya.	0%
2	Able to carry out direct and indirect measurements and calculations.	1.1. Explain the various types of measurement work. 2.2. Determine the measurement error calculation.	Criteria: Full marks are obtained if the types and calculations are explained correctly Form of Assessment : Participatory Activities, Tests	Question and answer discussion lectures and practical demonstrations in the 4 X 50 field	Question and answer discussion lectures and practical demonstrations in the 4 X 50 field	Material: Various kinds of measurement work. References: Material: Various kinds of measurement work. References: : [1]. Muhamadi, M, 1999, Diktat on Land Surveying, Civil Engineering and Planning, Civil Engineering Department, Sepuluh Nopember Institute of Technology, Surabaya.	0%
3	Able to carry out direct and indirect measurements and calculations.	1.1. Explain the various types of measurement work. 2.2. Determine the measurement error calculation.	Criteria: Full marks are obtained if the types and calculations are explained correctly Form of Assessment : Participatory Activities	Question and answer discussion lectures and practical demonstrations in the 4 X 50 field	Question and answer discussion lectures and practical demonstrations in the 4 X 50 field	Material: Various kinds of measurement work. References: [2]. Wongsotjitra, S, 1985. Land Surveying, Kanisius Publishers.	0%
4	Able to determine azimuth and point coordinates	1.1. Determine the azimuth of two fixed points 2.2. Determine the coordinates of the point	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, Tests	Practice questions 4 X 50	Practice questions 4 X 50	Material: Azimuth and point coordinates Reference: [2]. Wongsotjitra, S, 1985. Land Surveying Science, Kanisius Publishers.	10%
5	Able to determine azimuth and point coordinates	1.1. Determine the azimuth of two fixed points 2.2. Determine the coordinates of the point	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, Tests	Exercises. 4 X 50	Exercises. 4 X 50	Material: Azimuth of two fixed points References: [3]. Brinker, Russel C, and Wolf, Paul R, 1986, Basics of Land Measurement (Surveying), Erlangga Publishers.	0%

6	Able to determine the position of point coordinates using the Cartesian Coordinate System	1.1. Determine the coordinate position of the point. 2.2. Calculate and draw the Cartesian Coordinate System.	Criteria: Full marks are obtained if the coordinates of the point and the written layout of the complete report are correct Form of Assessment : Participatory Activities, Tests	Exercises. 4 X 50	Exercises. 4 X 50	Material: Calculating and drawing the Cartesian Coordinate System. References: [3]. Brinker, Russel C, and Wolf, Paul R, 1986, <i>Basics of Land Measurement (Surveying)</i> , Erlangga Publishers.	0%
7	Able to know about tools.	1.1. Explain the various tools. 2.2. 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	Field practical discussion lecture 4 X 50	Field practical discussion lecture 4 X 50	Material: Knowledge of various IUT measurement tools. References: [4]. Amir, Z, 1988, <i>Basics of Terrestrial Measurements and Situation Mapping</i> , Department of Civil Engineering, Faculty of Engineering, Andalas University.	0%
8	UTS	meeting materials 1-7	Criteria: Full marks if you can answer everything correctly Form of Assessment : Participatory Activities, Tests	UTS 2 X 50	UTS UTS	Material: UTS Library: : [1]. Muhamadi, M, 1999, <i>Diktat on Land Surveying, Civil Engineering and Planning, Civil Engineering Department, Sepuluh Nopember Institute of Technology, Surabaya.</i>	30%
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 of the complete report Forms of Assessment : Participatory Activities, Portfolio Assessment, Practical Assessment	Lectures, discussions, practical exercises in the field. 4 X 50	Lectures, discussions, practical exercises in the field. 4 X 50	Material: Right angles and making maps in the field. References: [2]. Wongsotjitra, S, 1985. <i>Land Surveying Science</i> , Kanisius Publishers.	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 of the complete report Forms of Assessment : Participatory Activities, Portfolio Assessment, Practical Assessment, Practical / Performance	Lectures, discussions, practical exercises in the field. 4 X 50	Lectures, discussions, practical exercises in the field. 4 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.	<p>Criteria:</p> <ol style="list-style-type: none"> 1.Full marks are obtained if there is no difference in the high accuracy values 2.The completeness of the report is written correctly <p>Forms of Assessment : Participatory Activities, Practical Assessment, Practical / Performance</p>	Lectures and practical training in the field. 4 X 50	Lectures and practical training in the field. 4 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	<p>Criteria:</p> <p>Full marks if you can answer everything correctly</p> <p>Forms of Assessment : Participatory Activities, Portfolio Assessment, Practical Assessment, Practical / Performance</p>	Lectures, discussions, exercises and practice in the 4 X 50 field	Lectures, discussions, exercises and practice in the 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	<p>Criteria:</p> <p>Full marks if you can answer everything correctly</p> <p>Forms of Assessment : Participatory Activities, Portfolio Assessment, Practical Assessment, Practical / Performance</p>	Lectures, discussions, exercises and practice in the field. 4 X 50			20%
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	<p>Criteria:</p> <p>Full marks are obtained if the situation mapping image at a certain scale matches the original form</p> <p>Forms of Assessment : Portfolio Assessment, Practical Assessment, Practical / Performance</p>	Lectures, discussions, exercises and practice in the field. 4 X 50			0%
15	Able to apply closed polygon measurements	Calculate distance measurements, height differences and angles. Draw a map	<p>Criteria:</p> <p>Full marks if you can answer everything correctly</p> <p>Forms of Assessment : Portfolio Assessment, Practical Assessment, Practical / Performance</p>	exercise and practice on the 4 X 50 field			0%
16	UAS		<p>Forms of Assessment : Portfolio Assessment, Practical Assessment, Practical / Performance</p>	UAS 2 x 50	UAS 2 x 50		40%

Evaluation Percentage Recap: Case Study

No	Evaluation	Percentage
1.	Participatory Activities	25%
2.	Portfolio Assessment	18.33%
3.	Practical Assessment	18.33%
4.	Practice / Performance	18.33%
5.	Test	20%
		99.99%

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.