



**Universitas Negeri Surabaya  
Vocational Faculty,  
D4 Civil Engineering Study Program**

Document Code

**SEMESTER LEARNING PLAN**

<b>Courses</b>	<b>CODE</b>	<b>Course Family</b>	<b>Credit Weight</b>			<b>SEMESTER</b>	<b>Compilation Date</b>																																																	
PHYSICAL PROPERTIES OF SOIL AND PRACTICAL	2230503017		T=3	P=0	ECTS=4.77	3	July 17, 2024																																																	
<b>AUTHORIZATION</b>	<b>SP Developer</b>		<b>Course Cluster Coordinator</b>			<b>Study Program Coordinator</b>																																																		
	.....		.....			Puguh Novi Prasetyono, S.Pd., M.T.																																																		
<b>Learning model</b>	Project Based Learning																																																							
<b>Program Learning Outcomes (PLO)</b>	PLO study program that is charged to the course																																																							
	Program Objectives (PO)																																																							
	PLO-PO Matrix																																																							
		<table border="1" style="margin: auto;"> <tr><td style="width: 30px; height: 20px;">P.O</td></tr> </table>						P.O																																																
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	<table border="1" style="margin: auto;"> <tr><td colspan="16" style="text-align: center;">PO Matrix at the end of each learning stage (Sub-PO)</td></tr> <tr> <td style="width: 30px; height: 20px;">P.O</td> <td colspan="15" style="text-align: center;">Week</td> </tr> <tr> <td></td> <td style="width: 20px;">1</td> <td style="width: 20px;">2</td> <td style="width: 20px;">3</td> <td style="width: 20px;">4</td> <td style="width: 20px;">5</td> <td style="width: 20px;">6</td> <td style="width: 20px;">7</td> <td style="width: 20px;">8</td> <td style="width: 20px;">9</td> <td style="width: 20px;">10</td> <td style="width: 20px;">11</td> <td style="width: 20px;">12</td> <td style="width: 20px;">13</td> <td style="width: 20px;">14</td> <td style="width: 20px;">15</td> <td style="width: 20px;">16</td> </tr> </table>							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
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P.O	Week																																																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16																																								
<b>Short Course Description</b>	Study of the origin of soil and rocks, rock cycle, soil composition, relationship between soil parameters, soil consistency, soil classification using AASHTO and USCS methods, water flow in soil, flow net, lifting force calculations, safety against heave and the concept of stress effective.																																																							
<b>References</b>	<b>Main :</b>																																																							
	1. Braja M. Das. 2013. Mekanika Tanah Jilid I (Alih Bahasa Noor Endah dan Indrasurya). Jakarta: Erlangga. 2. Braja M. Das. 1998. Advanced Soil Mechanics . Singapore: McGraw-Hill. 3. Joseph E. Bowles. 1996. Sifat-sifat Fisis dan Geoteknis Tanah (Alih Bahasa Johan Kelanaputra H. Jakarta: Erlangga.																																																							
	<b>Supporters:</b>																																																							
<b>Supporting lecturer</b>	Dra. Nur Andajani, M.T. Arik Triarso, S.Pd., M.T.																																																							
<b>Week-</b>	<b>Final abilities of each learning stage (Sub-PO)</b>	<b>Evaluation</b>		<b>Help Learning, Learning methods, Student Assignments, [ Estimated time]</b>		<b>Learning materials [ References ]</b>	<b>Assessment Weight (%)</b>																																																	
		<b>Indicator</b>	<b>Criteria &amp; Form</b>	<b>Offline ( offline )</b>	<b>Online ( online )</b>																																																			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)																																																	

1	able to understand the land	Explain the meaning of soil, the origin of soil, types of soil, soil particles and the behavior of clay minerals	<b>Criteria:</b> Full marks are obtained if you do all the questions correctly and the completeness of the report is correct	Lectures, discussions and questions and answers 3 X 50			0%
2	able to understand the land	Explain the meaning of soil, the origin of soil, types of soil, soil particles and the behavior of clay minerals	<b>Criteria:</b> Full marks are obtained if you do all the questions correctly and the completeness of the report is correct	Lectures, discussions and questions and answers 3 X 50			0%
3	able to understand soil composition, analyze soil parameters, the relationship between soil parameters and relative soil density	Determine volumetric gravimetric soil parameters from theoretical and empirical data	<b>Criteria:</b> Full marks are obtained if you do all the questions correctly and the completeness of the report is correct	Lectures, discussions, questions and answers, practical demonstrations 3 X 50			0%
4	able to understand soil composition, analyze soil parameters, the relationship between soil parameters and relative soil density	Determine volumetric gravimetric soil parameters from theoretical and empirical data	<b>Criteria:</b> Full marks are obtained if you do all the questions correctly and the completeness of the report is correct	Lectures, discussions, questions and answers, practical demonstrations 3 X 50			0%
5	able to understand soil composition, analyze soil parameters, the relationship between soil parameters and relative soil density	Determine volumetric gravimetric soil parameters from theoretical and empirical data	<b>Criteria:</b> Full marks are obtained if you do all the questions correctly and the completeness of the report is correct	Lectures, discussions, questions and answers, practical demonstrations 3 X 50			0%
6	able to analyze soil consistency	Determine the liquid limit, plastic limit, plastic index and shrinkage limit values from theoretical and empirical data	<b>Criteria:</b> Full marks are obtained if you do all the questions correctly and the completeness of the report is correct	Lectures, discussions, questions and answers, practical demonstrations 3 X 50			0%
7	able to analyze soil consistency	Determine the liquid limit, plastic limit, plastic index and shrinkage limit values from theoretical and empirical data	<b>Criteria:</b> Full marks are obtained if you do all the questions correctly and the completeness of the report is correct	Lectures, discussions, questions and answers, practical demonstrations 3 X 50			0%
8	UTS	UTS	<b>Criteria:</b> Full marks are obtained if you do all the questions correctly and the completeness of the report is correct	2 X 50			0%

9	able to classify soil	Able to create grain size distribution curves, able to classify USCS and AASHTO soil systems from theoretical and empirical data	<b>Criteria:</b> Full marks are obtained if you do all the questions correctly and the completeness of the report is correct	Lectures, discussions, questions and answers, practical demonstrations 3 X 50			0%
10	able to classify soil	Able to create grain size distribution curves, able to classify USCS and AASHTO soil systems from theoretical and empirical data	<b>Criteria:</b> Full marks are obtained if you do all the questions correctly and the completeness of the report is correct	Lectures, discussions, questions and answers, practical demonstrations 3 X 50			0%
11	able to classify soil	Able to create grain size distribution curves, able to classify USCS and AASHTO soil systems from theoretical and empirical data	<b>Criteria:</b> Full marks are obtained if you do all the questions correctly and the completeness of the report is correct	Lectures, discussions, questions and answers, practical demonstrations 3 X 50			0%
12	Able to analyze water seepage in the ground	Determine water volume, elevation head, pressure head, total head. Determine the seepage coefficient from practical data	<b>Criteria:</b> Full marks are obtained if you do all the questions correctly and the completeness of the report is correct	Lectures, discussions, questions and answers, practical demonstrations 3 X 50			0%
13	Able to analyze water seepage in the ground	Determine water volume, elevation head, pressure head, total head. Determine the seepage coefficient from practical data	<b>Criteria:</b> Full marks are obtained if you do all the questions correctly and the completeness of the report is correct	Lectures, discussions, questions and answers, practical demonstrations 3 X 50			0%
14	Able to analyze the lifting force under the dam and effective stress	Determine the lifting force under the dam, total stress, water, effective and exit gradients and safety against heave	<b>Criteria:</b> Full marks are obtained if you do all the questions correctly and the completeness of the report is correct	Lectures, discussions, questions and answers, practical demonstrations 3 X 50			0%

15	Able to analyze the lifting force under the dam and effective stress	Determine the lifting force under the dam, total stress, water, effective and exit gradients and safety against heave	<b>Criteria:</b> Full marks are obtained if you do all the questions correctly and the completeness of the report is correct	Lectures, discussions, questions and answers, practical demonstrations 3 X 50			0%
16							0%

**Evaluation Percentage Recap: Project Based Learning**

No	Evaluation	Percentage
		0%

**Notes**

- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- Forms of assessment:** test and non-test.
- 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.
- 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.
- Learning materials** are details or descriptions of study materials which can be presented in the form of several main points and sub-topics.
- 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%.
- TM=Face to face, PT=Structured assignments, BM=Independent study.