



**Universitas Negeri Surabaya  
Faculty of Engineering  
Civil Engineering Undergraduate 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>																																	
Residential Utilities	2220102157	Study Program Elective Courses	T=2 P=0 ECTS=3.18	5	July 17, 2024																																	
<b>AUTHORIZATION</b>	<b>SP Developer</b>		<b>Course Cluster Coordinator</b>		<b>Study Program Coordinator</b>																																	
	.....		.....		Yogie Risdianto, S.T., M.T.																																	
<b>Learning model</b>	<b>Case Studies</b>																																					
<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: 100px; height: 30px;">P.O</td> </tr> </table>					P.O																															
P.O																																						
<b>Short Course Description</b>	PO Matrix at the end of each learning stage (Sub-PO)																																					
		<table border="1" style="margin: auto;"> <tr> <td rowspan="2" style="width: 50px; height: 30px;">P.O</td> <td colspan="16" style="text-align: center;">Week</td> </tr> <tr> <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>					P.O	Week																1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
P.O	Week																																					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16																						
<b>References</b>	<p><b>Main :</b></p> <ol style="list-style-type: none"> <li>1. Ir. Setyo Soetiadji S. 1996. ANATOMI UTILITAS. Djambatan</li> <li>2. Ir. Jimmy S. Juwana. 2004. Panduan SISTEM BANGUNAN TINGGI untuk Arsitek dan Praktisi Bangunan. Erlangga</li> <li>3. Soufyan M. Noerbambang. 1985. PERANCANGAN DAN PEMELIHARAAN SISTEM PLAMBING. Takeo Morimura</li> </ol> <p><b>Supporters:</b></p>																																					
<b>Supporting lecturer</b>	Ir. Nurhayati Aritonang, M.T. Krisna Dwi Handayani, S.T., M.MT., M.T. Abdiyah Amudi, S.T., 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	Students are able to understand the design of clean water supply systems in residential building construction	Explain the clean water supply system in residential building construction	<b>Criteria:</b> Can design clean water supply systems in residential building construction  <b>Form of Assessment :</b> Participatory Activities	Lectures, discussions and questions and answers 2 X 50		<b>Material:</b> Design of a clean water supply system in residential building construction. <b>Reference:</b> <i>Ir. Jimmy S. Juwana. 2004. HIGH BUILDING SYSTEMS Guide for Architects and Building Practitioners. Erlangga</i>	4%
2	Students are able to understand the design of clean water supply systems in residential building construction	Explain the clean water supply system in residential building construction	<b>Criteria:</b> Can design clean water supply systems in residential building construction  <b>Form of Assessment :</b> Participatory Activities	Lectures, discussions and questions and answers 2 X 50		<b>Material:</b> design of clean water supply systems in residential building construction <b>Reader:</b> <i>Ir. Jimmy S. Juwana. 2004. TALL BUILDING SYSTEMS Guide for Architects and Building Practitioners. Erlangga</i>	3%
3	Students are able to understand the design of clean water supply systems in residential building construction	Explain the clean water supply system in residential building construction	<b>Criteria:</b> Can design clean water supply systems in residential building construction  <b>Form of Assessment :</b> Participatory Activities	Lectures, discussions and questions and answers 2 X 50		<b>Material:</b> design of clean water supply systems in residential building construction <b>Reader:</b> <i>Ir. Jimmy S. Juwana. 2004. TALL BUILDING SYSTEMS Guide for Architects and Building Practitioners. Erlangga</i>	4%
4	Students are able to understand vertical transportation systems in residential building construction	Explain the vertical transportation system in residential building construction	<b>Criteria:</b> Can plan vertical transportation systems in residential building construction  <b>Form of Assessment :</b> Participatory Activities	Lectures, discussions and questions and answers 2 X 50		<b>Material:</b> vertical transportation systems in residential building construction <b>Reference:</b> <i>Ir. Jimmy S. Juwana. 2004. TALL BUILDING SYSTEMS Guide for Architects and Building Practitioners. Erlangga</i>	4%

5	Students are able to understand vertical transportation systems in residential building construction	Explain the vertical transportation system in residential building construction	<p><b>Criteria:</b> Can plan vertical transportation systems in residential building construction</p> <p><b>Form of Assessment :</b> Participatory Activities</p>	Lectures, discussions and questions and answers 2 X 50		<p><b>Material:</b> vertical transportation systems in residential building construction</p> <p><b>Reference:</b> <i>Ir. Jimmy S. Juwana. 2004. TALL BUILDING SYSTEMS Guide for Architects and Building Practitioners. Erlangga</i></p>	4%
6	Students are able to understand the design of exhaust and vent systems in residential building construction	Explain exhaust and ventilation systems in residential building construction	<p><b>Criteria:</b> Can design exhaust and ventilation systems in residential building construction</p> <p><b>Form of Assessment :</b> Participatory Activities</p>	Lectures, discussions and questions and answers 2 X 50		<p><b>Material:</b> design of exhaust and ventilation systems in residential building construction.</p> <p><b>Reference:</b> <i>Ir. Setyo Soetiadji S. 1996. ANATOMY OF UTILITY. Bridge</i></p>	4%
7	Students are able to understand the design of exhaust and vent systems in residential building construction	Explain exhaust and ventilation systems in residential building construction	<p><b>Criteria:</b> Can design exhaust and ventilation systems in residential building construction</p> <p><b>Form of Assessment :</b> Participatory Activities</p>	Lectures, discussions and questions and answers 2 X 50		<p><b>Material:</b> design of exhaust and ventilation systems in residential building construction.</p> <p><b>Reference:</b> <i>Ir. Setyo Soetiadji S. 1996. ANATOMY OF UTILITY. Bridge</i></p>	4%
8	Midterm Exam (UTS)		<p><b>Form of Assessment :</b> Participatory Activities, Tests</p>	2 X 50			20%
9	Students understand the concept of clean water and dirty water installations in residential building construction	Understand the concept of clean water and dirty water installations in residential building construction	<p><b>Criteria:</b> Can understand the concept of clean water and dirty water installations in residential building construction</p> <p><b>Form of Assessment :</b> Participatory Activities</p>	Lectures, discussions and questions and answers 2 X 50		<p><b>Material:</b> concept of clean water and dirty water installation in residential building construction</p> <p><b>Library:</b> <i>Ir. Setyo Soetiadji S. 1996. ANATOMY OF UTILITY. Bridge</i></p>	3%
10	Calculating clean water needs using several basic calculations, in Residential Building Construction	Able to calculate clean water needs using several basic calculations, in Residential Building Construction	<p><b>Criteria:</b> Can calculate clean water needs using several basic calculations, in Residential Building Construction</p> <p><b>Form of Assessment :</b> Participatory Activities</p>	Lectures, discussions and questions and answers 2 X 50		<p><b>Material:</b> clean water needs with several basic calculations, in Residential Building Construction</p> <p><b>Library:</b> <i>Ir. Setyo Soetiadji S. 1996. ANATOMY OF UTILITY. Bridge</i></p>	4%

11	Students are able to calculate the volume requirements for septic tanks and dirty water installations in residential building construction	Calculating the volume requirements for septic tanks and dirty water installations in residential building construction	<p><b>Criteria:</b> Can calculate the volume requirements for septic tanks and dirty water installations in residential building construction</p> <p><b>Form of Assessment :</b> Participatory Activities</p>	Lectures, discussions and questions and answers 2 X 50		<p><b>Material:</b> volume requirements for septic tanks and dirty water installations in residential building construction.</p> <p><b>Library:</b> Ir. Setyo Soetiadji S. 1996. ANATOMY OF UTILITY. Bridge</p>	3%
12	Students are able to complete the Clean and Dirty Water Sanitation Task in a 2-story Residential Building	Completing Clean and Dirty Water Sanitation Tasks in 2-story Residential Buildings	<p><b>Criteria:</b> Can complete Clean and Dirty Water Sanitation Tasks in 2-story Residential Buildings</p> <p><b>Form of Assessment :</b> Participatory Activities, Portfolio Assessment</p>	Lectures, discussions and questions and answers 2 X 50		<p><b>Material:</b> Clean and Dirty Water Sanitation in 2-story Residential Buildings</p> <p><b>Reference:</b> Ir. Setyo Soetiadji S. 1996. ANATOMY OF UTILITY. Bridge</p>	4%
13	Students are able to understand electrical installation systems in residential building construction	Calculating Electrical Power Requirements in Residential Buildings	<p><b>Criteria:</b> Can Calculate Electrical Power Requirements in Residential Buildings</p> <p><b>Form of Assessment :</b> Participatory Activities</p>	Lectures, discussions and questions and answers 2 X 50		<p><b>Material:</b> electrical installation systems in residential building construction</p> <p><b>Reference:</b> Ir. Setyo Soetiadji S. 1996. ANATOMY OF UTILITY. Bridge</p>	3%
14	Students understand the planning of Single Line Electrical Diagrams in Residential Buildings	Explain the prevention and control of fire hazards in residential building construction	<p><b>Criteria:</b> Can understand the planning of Single Line Electrical Diagrams for Residential Buildings. Single Line Electrical Diagrams for Residential Buildings</p> <p><b>Form of Assessment :</b> Participatory Activities</p>	Lectures, discussions and questions and answers 2x50		<p><b>Material:</b> planning Single Line Electrical Diagrams in Residential Buildings</p> <p><b>Library:</b> Ir. Setyo Soetiadji S. 1996. ANATOMY OF UTILITY. Bridge</p>	3%
15	Students are able to carry out Electrical Installation Tasks, Single Line Diagrams and PLN Power Subscription Requirements	Carrying out Electrical Installation Tasks, Single Line Diagrams and PLN Power Subscription Requirements	<p><b>Criteria:</b> Can plan the installation of lightning protection in residential building construction</p> <p><b>Form of Assessment :</b> Participatory Activities</p>	Lectures, discussions and questions and answers 2 X 50		<p><b>Material:</b> Electrical Installation, Single Line Diagrams and PLN Power Subscription Requirements</p> <p><b>Library:</b> Ir. Setyo Soetiadji S. 1996. ANATOMY OF UTILITY. Bridge</p>	3%
16	Final Semester Examination (UAS)		<p><b>Form of Assessment :</b> Participatory Activities, Tests</p>	2 X 50			30%

**Evaluation Percentage Recap: Case Study**

No	Evaluation	Percentage
----	------------	------------

1.	Participatory Activities	73%
2.	Portfolio Assessment	2%
3.	Test	25%
		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** 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.