



**Universitas Negeri Surabaya**  
**Faculty of Engineering,**  
**Electrical 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>																																																
Electricity System with Distributed Generation	2020102189		T=2 P=0 ECTS=3.18	7	July 18, 2024																																																
<b>AUTHORIZATION</b>	<b>SP Developer</b>		<b>Course Cluster Coordinator</b>		<b>Study Program Coordinator</b>																																																
	.....		.....		Dr. Lusia Rakhmawati, S.T., 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;">P.O</td><td colspan="15"></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 rowspan="2" style="width: 30px;">P.O</td> <td colspan="15" 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>					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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<b>Short Course Description</b>	This course examines the introduction to electric power distribution systems, voltage systems, primary distribution, secondary distribution, distribution system elements, distribution safety, distribution transformers, network construction, direct current distribution analysis, alternating current analysis, distribution system applications, and systems. SCADA																																																				
<b>References</b>	<b>Main :</b>																																																				
	1. Gonen, Turan. 1986. Electric power distribution system Engineering. McGrawHill Book Company. 2. Uppal S.L. 1980. Electric Power. New Delhi Khana: Publisher 3. Anthony, Pensini J. 1986. Electrical Distribution Engineering. Singapore: McGraw-Hill Book Co.																																																				
	<b>Supporters:</b>																																																				
<b>Supporting lecturer</b>	Dr. Ir. Achmad Imam Agung, M.Pd. Widi Aribowo, S.T., M.T. Aditya Chandra Hermawan, S.ST., 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 basics of distribution systems	<p>1.Explain the basics of the electric power distribution system</p> <p>2.Explains the primary distribution configuration, distribution substation and loading</p>	<p><b>Criteria:</b></p> <p>1.The assessment criteria are carried out by looking at aspects:</p> <p>2.Participation: carried out by observing student activities (weight 2) UTS: carried out by assessment during the middle of the semester (weight 2) UAS: carried out every semester to measure all indicators (weight 3) Assignments: carried out on each indicator (weight 3) Value Student End:</p> <p>3.Participation Score (2) x Assignment Score (3) x UTS Score (2) x UAS Score (3) divided by 10.</p>	Presentation, discussion and practice 2 X 50			0%
2	Able to understand the basics of construction types and line impedance of distribution systems	<p>1.Explain construction types and line impedance in electric power distribution systems</p> <p>2.Explain the secondary relationship of electric power distribution</p>	<p><b>Criteria:</b></p> <p>1.The assessment criteria are carried out by looking at aspects:</p> <p>2.Participation: carried out by observing student activities (weight 2) UTS: carried out by assessment during the middle of the semester (weight 2) UAS: carried out every semester to measure all indicators (weight 3) Assignments: carried out on each indicator (weight 3) Value Student End:</p> <p>3.Participation Score (2) x Assignment Score (3) x UTS Score (2) x UAS Score (3) divided by 10.</p>	Presentation, discussion and practice 2 X 50			0%

3	Able to understand the basics of underground electrical power distribution systems	<p>1.Explain the basics of underground distribution of electric power systems</p> <p>2.Explains installation, primary distribution configuration, cable testing</p>	<p><b>Criteria:</b></p> <p>1.The assessment criteria are carried out by looking at aspects:</p> <p>2.Participation: carried out by observing student activities (weight 2) UTS: carried out by assessment during the middle of the semester (weight 2) UAS: carried out every semester to measure all indicators (weight 3) Assignments: carried out on each indicator (weight 3) Value Student End:</p> <p>3.Participation Score (2) x Assignment Score (3) x UTS Score (2) x UAS Score (3) divided by 10.</p>	Presentation, discussion and practice 2 X 50			0%
4	Able to understand the basics of transformers	<p>1.Explain the basics of transformers in electric power distribution systems</p> <p>2.Explains single phase transformers, substation distribution transformers</p>	<p><b>Criteria:</b></p> <p>1.The assessment criteria are carried out by looking at aspects:</p> <p>2.Participation: carried out by observing student activities (weight 2) UTS: carried out by assessment during the middle of the semester (weight 2) UAS: carried out every semester to measure all indicators (weight 3) Assignments: carried out on each indicator (weight 3) Value Student End:</p> <p>3.Participation Score (2) x Assignment Score (3) x UTS Score (2) x UAS Score (3) divided by 10.</p>	Presentation, discussion and practice 2 X 50			0%

5	Able to understand the basics of substation transformer distribution systems	1.Explain the basics of substation transformers for electric power distribution 2.Explain about autotransformers	<b>Criteria:</b> 1.The assessment criteria are carried out by looking at aspects: 2.Participation: carried out by observing student activities (weight 2) UTS: carried out by assessment during the middle of the semester (weight 2) UAS: carried out every semester to measure all indicators (weight 3) Assignments: carried out on each indicator (weight 3) Value Student End: 3.Participation Score (2) x Assignment Score (3) x UTS Score (2) x UAS Score (3) divided by 10.	Presentation, discussion and practice 2 X 50			0%
6	UTS			2 X 50			0%
7	Challenges and Opportunities for RENEWABLE ALTERNATIVE ENERGY in the ERA of EXPENSIVE ENERGY			2 X 50			0%
8	Challenges and Opportunities for RENEWABLE ALTERNATIVE ENERGY in the ERA of EXPENSIVE ENERGY (2)			2 X 50			0%
9	Understanding WIND POWER POWER PLANT			2 X 50			0%
10	Understanding HYDROELECTRIC POWER PLANTS			2 X 50			0%
11	Understanding Bioenergy POWER PLANT			2 X 50			0%
12							0%
13							0%
14							0%
15							0%
16							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.