



Universitas Negeri Surabaya
Faculty of Engineering,
Mechanical Engineering Education Undergraduate Study
Program

Document
Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight	SEMESTER	Compilation Date																																																																	
Electrical Engineering	8320302171		T=2 P=0 ECTS=3.18	5	July 17, 2024																																																																	
AUTHORIZATION	SP Developer		Course Cluster Coordinator		Study Program Coordinator																																																																	
		Ir. Wahyu Dwi Kurniawan, S.Pd., M.Pd.																																																																	
Learning model	Project Based Learning																																																																					
Program Learning Outcomes (PLO)	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: 30px;"></td><td style="width: 30px; text-align: center;">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: 30px;"></td> <td colspan="15" style="text-align: center;"> <table border="1" style="margin: auto;"> <tr> <td style="width: 30px; height: 30px;"></td> <td colspan="15" style="text-align: center;">Week</td> </tr> <tr> <td style="width: 30px;"></td> <td style="width: 30px; text-align: center;">1</td> <td style="width: 30px; text-align: center;">2</td> <td style="width: 30px; text-align: center;">3</td> <td style="width: 30px; text-align: center;">4</td> <td style="width: 30px; text-align: center;">5</td> <td style="width: 30px; text-align: center;">6</td> <td style="width: 30px; text-align: center;">7</td> <td style="width: 30px; text-align: center;">8</td> <td style="width: 30px; text-align: center;">9</td> <td style="width: 30px; text-align: center;">10</td> <td style="width: 30px; text-align: center;">11</td> <td style="width: 30px; text-align: center;">12</td> <td style="width: 30px; text-align: center;">13</td> <td style="width: 30px; text-align: center;">14</td> <td style="width: 30px; text-align: center;">15</td> <td style="width: 30px; text-align: center;">16</td> </tr> </table> </td> </tr> </table>					PO Matrix at the end of each learning stage (Sub-PO)																	<table border="1" style="margin: auto;"> <tr> <td style="width: 30px; height: 30px;"></td> <td colspan="15" style="text-align: center;">Week</td> </tr> <tr> <td style="width: 30px;"></td> <td style="width: 30px; text-align: center;">1</td> <td style="width: 30px; text-align: center;">2</td> <td style="width: 30px; text-align: center;">3</td> <td style="width: 30px; text-align: center;">4</td> <td style="width: 30px; text-align: center;">5</td> <td style="width: 30px; text-align: center;">6</td> <td style="width: 30px; text-align: center;">7</td> <td style="width: 30px; text-align: center;">8</td> <td style="width: 30px; text-align: center;">9</td> <td style="width: 30px; text-align: center;">10</td> <td style="width: 30px; text-align: center;">11</td> <td style="width: 30px; text-align: center;">12</td> <td style="width: 30px; text-align: center;">13</td> <td style="width: 30px; text-align: center;">14</td> <td style="width: 30px; text-align: center;">15</td> <td style="width: 30px; text-align: center;">16</td> </tr> </table>																Week																1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
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Short Course Description	Understanding the study of the use of electrical terms, electrical resistance, power work and electrical power, usability or efficiency, accumulators, Kirchoff's second law, electric charge, electric power generation systems, the concept of electromagnetic induction, various types of induction motors, AC/DC generators, transformers.																																																																					
References	Main :																																																																					
	1. Suryatmo .F, Dasar-Dasar Teknik Listrik, Rineka Cipta, Jakarta, 1992. Berahim, Hamzah, Teknik Tenaga Listrik Dasar, Jakarta, Graha Ilmu, 2011. Bird, J. O. and A. J. C. May, 1989, Electrical and Electronic Principles 3 Checkbook 2nd ed., BH Newnes: Oxford. Bird, J. O., 2014, Electrical and Electronic Principles and Technology 5th ed., Routledge: London. Robertson, C. R., 2008, Fundamental Electrical and Electronic Principles 3rd ed., Elsevier.																																																																					
	Supporters:																																																																					
Supporting lecturer	Heru Arizal, S.Pd., M.M., 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 understand types of electric current and their characteristics	Students can explain the types of electric current and their characteristics		lectures and discussions 2 X 50			0%
2	Understand the system and distribution of electrical energy	Students can understand the system and distribution of electrical energy		Lectures, discussions and questions and answers 2 X 50			0%
3	Able to install 1 phase and 3 phase electrical systems	Students can install 1 phase and 3 phase electrical systems		Lectures, discussions and questions and answers 2 X 50			0%
4	Understand the working principles of 1 phase and 3 phase transformers	Students can explain the working principle of a transformer		Lectures, discussions and questions and answers 2 X 50			0%
5	Skilled in testing the performance of 1 phase and 3 phase transformers	Students can test the performance of 1 phase and 3 phase transformers		Lectures, discussions, questions and answers and practicum 2 X 50			0%
6	Understand the principles of DC generators and their components	Students can explain the working principles of DC generators and their components		Lectures, discussions and questions and answers 2 X 50			0%
7	Understand the principles of AC generators and their components	Students can explain the working principles of AC generators and their components		Lectures, discussions and questions and answers 2 X 50			0%
8	UTS			2 X 50			0%
9	Skilled in measuring DC generator performance with loading	Students can measure the performance of DC generators with loading		Lectures, discussions, questions and answers and practicum 2 X 50			0%
10	Skilled in synchronous generator measurements	students can carry out measurements of synchronous generators		Lectures, discussions, questions and answers and practicum 2 X 50			0%
11	Skilled in parallel performance measurement of synchronous generators	Students are skilled at measuring the performance of parallel synchronous generators		Lectures, discussions, questions and answers and practicum 2 X 50			0%

12	Understand the principles of DC motors and their components	Students can understand the principles of DC motors and their components		Lectures, discussions and questions and answers 2 X 50			0%
13	Skilled in measuring V, I of DC motors with loading	Students are skilled at measuring V, I of DC motors with loading		Lectures, discussions, questions and answers and practicum 2 X 50			0%
14	skilled at measuring V, I starting induction motors	students are skilled at measuring V, I starting induction motors		Lectures, discussions, questions and answers and practicum 2 X 50			0%
15	Understanding power electronic systems in electrical engineering	Students can explain power electronic systems in electrical engineering		Lectures, discussions and questions and answers 2 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** abilities in the process and student learning outcomes are specific and measurable statements that identify the abilities 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.

