



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

Document
Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight	SEMESTER	Compilation Date																																									
Electrical Energy Generation	8320103081		T=3 P=0 ECTS=4.77	7	July 18, 2024																																									
AUTHORIZATION	SP Developer		Course Cluster Coordinator		Study Program Coordinator																																									
		Dr. Nur Kholis, S.T., M.T.																																									
Learning model	Case Studies																																													
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;">P.O</td></tr> </table>				P.O																																								
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PO Matrix at the end of each learning stage (Sub-PO)																																														
	<table border="1" style="margin: auto;"> <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>														P.O	Week															1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
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	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16																														
Short Course Description	This Electrical Energy Generation course discusses understanding energy conversion, basic concepts of electrical energy generation, types of generation, generator operations, generator electrical systems, excitation systems, and parallel generator/interconnection work,																																													
References	Main :																																													
	1. Marsudi D. 2005. Pembangkit Energi Listrik . Jakarta : Erlangga. 2. UPPAL SL. 1990. Electrical Power . New Delhi : Khana Publisher. 3. Dandekar MM. 1991. Pembangkit Tenaga Air . Jakarta : UI-Press. 4. Kuwahara dan Arismunandar. 1994. Teknik Tenaga Listrik Jilid I dan III . Jakarta : Pradnya Paramita.																																													
	Supporters:																																													
Supporting lecturer	Prof.Dr. Tri Wrahatnolo, M.Pd., M.T. Prof. Dr. Joko, M.Pd., M.T. Widi Aribowo, S.T., 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	Understand and explain the concept of electric power generation.	<ol style="list-style-type: none"> 1.Explain the definition of the concept of electric power generation. 2.Explain the purpose of using electric power plants. 3.Explain the types of electric power plants based on their energy sources. 4.Explain the interconnection system and electric power quality. 	Criteria: Full marks are obtained if you do all the questions correctly.	Lectures, discussions and questions and answers 2 X 50			0%
2	Understand and analyze the concept of hydroelectric power plants (PLTA).	<ol style="list-style-type: none"> 1.Explain the classification of hydroelectric power plants based on water flow and water fall height. 2.Explain the main parts and functions for high head hydropower plants. 3.Explain the types of power produced by hydropower. 4.Explain the various types of water turbines. 5.Explain the efficiency of hydropower. 6.Explain the advantages and disadvantages of hydropower. 	Criteria: Full marks are obtained if you do all the questions correctly	Lectures, discussions, questions and answers, and practice questions. 2 X 50			0%
3	Understand and analyze the concept of hydroelectric power plants (PLTA).	<ol style="list-style-type: none"> 1.Explain the classification of hydroelectric power plants based on water flow and water fall height. 2.Explain the main parts and functions for high head hydropower plants. 3.Explain the types of power produced by hydropower. 4.Explain the various types of water turbines. 5.Explain the efficiency of hydropower. 6.Explain the advantages and disadvantages of hydropower. 	Criteria: Full marks are obtained if you do all the questions correctly	Lectures, discussions, questions and answers, and practice questions. 2 X 50			0%

4	Understand and analyze the concept of Diesel power plants (PLTD)	<ol style="list-style-type: none"> 1.Explain the various types of main SPD equipment 2.Explain the effect of the number of rounds on PLTD 3.Explain the operation of PLTD 4.Explain the PLTD cooling system 5.Explain maintenance and repair of PLTD 	Criteria: Full marks are obtained if you do all the questions correctly	Lectures, discussions, questions and answers. 2 X 50			0%
5	Understand and analyze the concept of Diesel power plants (PLTD)	<ol style="list-style-type: none"> 1.Explain the various types of main SPD equipment 2.Explain the effect of the number of rounds on PLTD 3.Explain the operation of PLTD 4.Explain the PLTD cooling system 5.Explain maintenance and repair of PLTD 	Criteria: Full marks are obtained if you do all the questions correctly	Lectures, discussions, questions and answers. 2 X 50			0%
6	Understand and analyze the concept of steam power plants (PLTU)	<ol style="list-style-type: none"> 1.Explain the principles and work cycles of PLTU 2.Explain the main types of equipment in PLTU 3.Describes equipment that handles the combustion process, cooling water and steam 4.Explain the obstacles in operating a PLTU 5.Explain the types of electrical wiring in a PLTU 	Criteria: Full marks are obtained if you do all the questions correctly	Lectures, discussions, questions and answers. 2 X 50			0%

7	Understand and analyze the concept of steam power plants (PLTU)	<ol style="list-style-type: none"> 1.Explain the principles and work cycles of PLTU 2.Explain the main types of equipment in PLTU 3.Describes equipment that handles the combustion process, cooling water and steam 4.Explain the obstacles in operating a PLTU 5.Explain the types of electrical wiring in a PLTU 	Criteria: Full marks are obtained if you do all the questions correctly	Lectures, discussions, questions and answers. 2 X 50		0%
8	Understand and analyze the concepts of gas power plants (PLTG) and steam gas power plants (PLTGU).	<ol style="list-style-type: none"> 1.Explain the electricity production process from PLTG 2.Explain the main equipment of PLTG 3.Explain the operation of PLTG 4.Explain the electricity production process at PLTGU 5.Explain the various types of auxiliary equipment at PLTGU 6.Explains the PLTGU configuration 	Criteria: Full marks are obtained if you do all the questions correctly	Lectures, discussions, questions and answers. 2 X 50		0%
9						0%
10						0%
11						0%
12						0%
13						0%
14						0%
15						0%
16						0%

Evaluation Percentage Recap: Case Study

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.