	Universitas Negeri Surabaya Faculty of Engineering, Electrical Engineering Undergraduate Study Program	Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
Use and Regulation of Electric Motors	2020102114		T=2	P=0	ECTS=3.18	6	July 18, 2024

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
	.....	.....	Dr. Lusia Rakhmawati, 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

	P.O

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

Short Course Description	This course contains the working characteristics of alternating and direct current electric motors, load functions and characteristics, selection and suitability of electric motor and load characteristics, starting methods, speed regulation and braking of electric motors with contactor relays, programmable logical control (PLC) , economical calculation of energy use in electric machines, park transformation method in electric motors, modeling and simulation of electric motor performance in the dqn axis with park transformation.
References	**Main :**
	1. Chilikin, 1970, Electric Drive, MIR Publisher Moscow 2. Stephen L. Hermann, 2010, Electric Motor Control, International Edition, Delmar Publisher 3. BL Theraja, 1984, Electrical Engineering HandBook, McGrawHill, Bombay, India
	Supporters:
Supporting lecturer	Prof. Dr. Joko, M.Pd., M.T. Dr. Subuh Isnur Haryudo, S.T., M.T. Mahendra Widyartono, S.T., M.T. Yulia Fransisca, S.Pd., 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 the role of an electric motor as the main driver of a machine based on rotation and torque characteristics	1		Direct Learning 2 X 50			0%
2	Able to understand the role of an electric motor as the main driver of a machine based on rotation and torque characteristics			Live Learning 2 X 50			0%
3	Able to select the type of electric motor according to a certain type of load to ensure stability. Able to understand the basics of calculating loads when using electric machines			2 X 50			0%
4	Able to understand and create various methods of starting electric motors			Live Learning 2 X 50			0%
5	Able to understand and create various methods of starting electric motors			2 X 50			0%
6	Able to understand and create various methods of controlling the speed of electric motors			2 X 50			0%
7							0%
8							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.