	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
Microwave Engineering	8320103187		T=3	P=0	ECTS=4.77	6	July 18, 2024

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
	.....	.....	Dr. Nur Kholis, S.T., M.T.

Learning model	**Project Based Learning**
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 includes the development of essential knowledge, attitudes and skills about microwave engineering, especially to develop competency about microwave engineering. This course is divided into three main parts, each of which is focused on: (1) the general understanding and characteristics of microwave engineering, (2) the functions and models of microwave engineering, and (3) the implications of using microwave engineering.
References	**Main :**

1. Commscope. *Microwave Communication Basic The Theory, Practices And Technologies That Link The Wireless World* .
Zaiki Awang. 2014. *Microwave Systems Design* . ISBN 978-981-4451-23-9 ISBN 978-981-4451-24-6 (eBook) DOI 10.1007/978-981-4451-24-6 Springer Singapore Heidelberg New York Dordrecht London
Collin Robert E. 2008. *Foundations for Microwave Engeneering* , McGraw-Hill.
Helszajn Joseph. 1991. *Microwave Engineering : Passive, Active and Non Reciprocal Circuits* . McGraww Hill, London.

	Supporters:
Supporting lecturer	Dr. Edy Sulistiyo, 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	This course includes the development of essential knowledge, attitudes and skills about microwave engineering, especially to develop competency about microwave engineering. This course is divided into three main parts, each of which is focused on: (1) the general understanding and characteristics of microwave engineering, (2) the functions and models of microwave engineering, and (3) the implications of using microwave engineering.	1. After taking this course students are expected to: 2. Understand the concepts and theories about the function of microwave engineering 3. Develop critical thinking regarding the design and application of microwave techniques 4. Become an active learner and creator in building your own knowledge through direct study and study of microwave engineering practices.	**Criteria:** 1. 1. Participation in lectures: 16 meetings, weight 20% 2. 2. Mid-semester exam: 1 time, weight 20% 3. 3. Final semester exam: 1 time, weight 30% 4. 4. Presentation (including presentation materials): 1 time, 10% weight 5. 5. Task: 1 time, weight 20%	Direct learning, cooperative learning, PjBL, Lectures, Assignments, Discussions and Presentations 3 X 50			0%
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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.