	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
TRANSMISSION LINE AND MICROWAVES	2020102294		T=0	P=0	ECTS=0	5	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	Conduct studies and provide network types and components OSI Model, Telecommunications Standards, Equipment and Connection Types, Transmission systems: signal type, modulation, digitalization, transmission media, Multiplexing Physical layer standards: RS232, CCITT Protocol Link Type, Protocol Link Function, Standard Data link layer: BSC, HDLC, Network service, Switching Method, Packet Handling, Internetworking, Standard Network Layer, Types of Transport Service, Transport Protocol, Standard transport layer, session layer, presentation layer, Architecture and topology, Standard IEEE 802, Standard ANSI FDDI Topology and switching system, Signaling, Private Telephone Networks, SONET and PON, Broadband ISDN and ATM, Ad Hoc and WSN Protocol Structure, Ad Hoc and WSN mSimulation
References	**Main :**

1. Sharam Hekmat , 1C *Communication Networks* 1D , Pragsoft Corporation
   Behrouz A Forouzan, 1C *Data communication and Networking* 1D , McGraw-Hill, Fourth edition
   Nader F Mir, 2014, 1D *Computer and Communication Networking* 1D ,Prentice hall
   Kazem Sohraby,Daniel Minoli, Taieb Znati,2007, 1D *WIRELESS SENSOR NETWORKS* 1D, John Wiley & Sons, Inc.

	Supporters:
Supporting lecturer	Dr. Nurhayati, 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	-Show basic concepts of transmission lines and types of transmission lines	- 1. Describe a two-wire parallel transmission line 2. Show a coaxial transmission line 3. Show a waveguide 4. Describe a Microstrip 5. Describe a stripline	**Criteria:** -	- 2 X 50			0%
2	-Shows mode and transmission line equation	- 1. Identify propagation modes in transmission lines 2. Describe integrated circuit elements 3. Show distributed elements	**Criteria:** -	- · Discussion · Questions and answers, · Practice questions, Giving assignments 1 2 X 50			0%
3	-Shows mode and transmission line equation	- 1. Identify propagation modes in transmission lines 2. Describe integrated circuit elements 3. Show distributed elements	**Criteria:** -	- · Discussion · Question and answer, 2 X 50			0%
4	- 1. Identify characteristic parameters on transmission lines 2. Determine reflection coefficient 3. Identify impedance characteristics Determine VSWR	- 1. Characteristic parameters of the transmission line 2. Determine the reflection coefficient 3. Identify impedance characteristics 4. Determine VSWR	**Criteria:** -	- 2 X 50			0%
5	- 1. Identify the characteristic parameters of the transmission line 2. Determine the reflection coefficient 3. Identify the characteristic impedance 4. Determine the VSWR	- 1. Characteristic parameters of the transmission line 2. Determine the reflection coefficient 3. Identify the Impedance characteristics Determine the VSWR	**Criteria:** -	- 2 X 50			0%
6	- 1. Demonstrates short circuit measurement applications 2. Demonstrates open circuit measurement applications 3. Demonstrates quarter wavelength measurement applications Demonstrates half wavelength applications	- 1. Short circuit measurement applications 2. Open circuit measurement applications 3. Quarter wavelength measurement applications Half wavelength applications	**Criteria:** -	- 2 X 50			0%
7	- 1. Identify Smith chart graphs showing parametric equations	- 1. Identify Smith chart graphs showing parametric equations	**Criteria:** -	- 2 X 50			0%
8	-	-	**Criteria:** -	- 2 X 50			0%

9	-	-	**Criteria:** -	- 2 X 50			0%
10	-	-	**Criteria:** -	- 2 X 50			0%
11	-	-	**Criteria:** -	- 2 X 50			0%
12	-	-	**Criteria:** -	- 2 X 50			0%
13	-	-	**Criteria:** -	- 2 X 50			0%
14	-	-	**Criteria:** -	- 2 X 50			0%
15	-	-	**Criteria:** -	- 2 X 50			0%
16	-	-	**Criteria:** -	- 2 X 50			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.