	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
Transmission Channel		8320102163		T=2	P=0	ECTS=3.18	6	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><tr><td>P.O</td></tr></table>
	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. Agus Budi Santoso, M.Pd. Dr. Nurhayati, S.T., M.T. Reza Rahmadian, S.ST., M.EngSc.

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	Students can find out the types and characteristics of Telecommunication Transmission channels	Can mention the various types of telecommunications transmission channels Can state the characteristics of transmission channels Can select the transmission channels used in a telecommunications system	**Criteria:** Oral Test assignment value	Presentations, Discussions and assignments. 2 X 50			0%
2	Students can find out the types and characteristics of Telecommunication Transmission channels	Can mention the various types of telecommunications transmission channels Can state the characteristics of transmission channels Can select the transmission channels used in a telecommunications system	**Criteria:** Oral Test assignment value	Presentations, Discussions and assignments. 2 X 50			0%
3	Students are able to analyze the Physical Layer	1. Determine Equipment Type and Connection 2. Describe the transmission system: signal type, modulation, digitalization, transmission media 3. Mentions Multiplexing 4. Determine physical layer standards: RS232, CCITT	**Criteria:** Task Completion	Problem Based Learning 2 X 50			0%
4	Students are able to analyze the Physical Layer	1. Determine Equipment Type and Connection 2. Describe the transmission system: signal type, modulation, digitalization, transmission media 3. Mentions Multiplexing 4. Determine physical layer standards: RS232, CCITT	**Criteria:** Task Completion	Problem Based Learning 2 X 50			0%
5	Students are able to explain telecommunications networks	a. Describe the Basics of Telecommunication Networks b. Shows conventional telephone operation c. Shows Signaling to the central telephone d. Describe Telephone Numbering e. Demonstrate Switching and Signaling f. Describe Local Area Network g. Shows Trunk network h. Describe telecommunications networks i. Telling Network Management j. Describe Traffic Techniques	**Criteria:** Oral test	Presentation, discussion and reflection 2 X 50			0%

No	Sub-PO	Indicators	Assessment Criteria / Forms	Learning			Weight
6	Students are able to explain telecommunications networks	a. Describe the Basics of Telecommunication Networks b. Shows conventional telephone operation c. Shows Signaling to the central telephone d. Describe Telephone Numbering e. Demonstrate Switching and Signaling f. Describe Local Area Network g. Shows Trunk network h. Describe telecommunications networks i. Telling Network Management j. Describe Traffic Techniques	**Criteria:** Oral test	Presentation, discussion and reflection 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.