	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
Fiber Optic Communication Systems	8320102170		**T=2**	**P=0**	**ECTS=3.18**	5	July 17, 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	General description of laser and fiber optic communication systems and their supporting components, fiber optic structure, types of fiber optics, light propagation in fiber optics, signal attenuation, signal dispersion modes and signal power amplification, optical source components, optical modulators and amplifiers optics, optical detectors, characteristics of optical fiber, process of splicing, joining, connectors. how to measure loss in fiber optics and optical system design fiber optic communication system technology.
References	**Main :**
	1. 1. Gerd, Keiser. 1991. Optical Fiber Communications , 2nd Edition. McGraw-Hill Singapore. 2. Harry, J., R., Dutton. 1998. Understanding Optical Communications. Prentice- Hall, Inc. 3. John M Senior. 2009. Optical Fiber Communication. Pearson Prentice hall. third edition 4. John Crissp. 2001. Introduction toFiber Optic. 2nd Edition. Newnes Oxford.
	Supporters:
Supporting lecturer	Dr. Nurhayati, S.T., M.T. Dr. Farid Baskoro, S.T., M.T. Pradini Puspitaningayu, S.T., M.T., Ph.D.

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	Explain the general description of the Fiber Optic Communication System and its supporting components		**Criteria:** The maximum score is 100 if answered correctly and precisely	Lectures, discussions and questions and answers 2 X 50			0%
2	Students are able to explain the general description of the Fiber Optic Communication System and its supporting components		**Criteria:** Maximum score is 100 if you answer both questions correctly and precisely	Lectures, discussions and questions and answers 2 X 50			0%
3	Students are able to describe signal losses and attenuation, signal dispersion modes and signal power gain		**Criteria:** The maximum score is if all are answered correctly	Lectures 2 X 50			0%
4	Describe signal losses and attenuation, signal dispersion modes and signal power gain		**Criteria:** Maximum score is 100, if all can be answered correctly and precisely	2 X 50			0%
5	Students are able to show the process of connecting, joining, connecting.		**Criteria:** The maximum score is 100, if answered correctly and precisely	2 X 50			0%
6	Students are able to show the process of connecting, joining, connecting.		**Criteria:** The maximum score is 100, if answered correctly and precisely	2 X 50			0%
7	students are able to understand optical receivers	students understand 1. Light detectors (Optical detectors) 2. Properties of Optical Receivers (Semiconductor material and device properties), Response Time 3. APD (Avalanche photodiodes) 4 Fiber optic receivers a. Receiver noise bReceiver design Fiber optic c. receiver packages		Lectures, 2 X 50 Google Meet media			0%
8	UTS			2 X 50			0%
9	Students are able to understand 1 Classification of Optical Communication Links a. digital transmission b. Analog transmission 2 System design 3 System installation	Students are able to understand 1 Classification of Optical Communication Links a. digital transmission b. Analog transmission 2 System design 3 System installation		Lectures, discussions, questions and answers 2 X 50			0%

10	Students are able to understand Fiber optic measurement techniques 1 Laboratory measurements a. Cutoff Wavelength b. Bandwidth c. Core Diameter d. Numerical Aperture e. Return Loss and Reflectance Field Measurements (Field measurements) 1.Optical Time-Domain Reflectometry 2 Power Meter	Students are able to understand Fiber optic measurement techniques 1 Laboratory measurements a. Cutoff Wavelength b. Bandwidth c. Core Diameter d. Numerical Aperture e. Return Loss and Reflectance Field Measurements (Field measurements) 1.Optical Time-Domain Reflectometry 2 Power Meter	**Criteria:** Maximum score if all answered correctly	Lecture, question and answer 2 X 50			0%
11	Students are able to understand Fiber optic measurement techniques 1 Laboratory measurements a. Cutoff Wavelength b. Bandwidth c. Core Diameter d. Numerical Aperture e. Return Loss and Reflectance Field Measurements (Field measurements) 1.Optical Time-Domain Reflectometry 2 Power Meter	Students are able to understand Fiber optic measurement techniques 1 Laboratory measurements a. Cutoff Wavelength b. Bandwidth c. Core Diameter d. Numerical Aperture e. Return Loss and Reflectance Field Measurements (Field measurements) 1.Optical Time-Domain Reflectometry 2 Power Meter	**Criteria:** Maximum score if all answered correctly	Lecture, question and answer 2 X 50			0%
12	Students are able to understand the steps for connecting fiber optics temporarily or permanently	understand the mechanics of splicing understand fusion splicing		lecture, question and answer 2 X 50			0%
13	Students are able to understand the steps for connecting fiber optics temporarily or permanently	understand the mechanics of splicing understand fusion splicing		lecture, question and answer 2 X 50			0%
14							0%
15							0%
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.