

Universitas Negeri Surabaya Faculty of Mathematics and Natural Sciences Undergraduate Physics Study Program

Document Code

SEMESTER LEARNING PLAN

Courses		CODE Course Family		Credit Weight			SEMESTER	Compilation Date				
ANTENNA AND PROPAGATION		4520102009		T=2	2 P=0	ECTS=3.18	8	July 18, 2024				
AUTHORIZATION		SP Developer		Course Cluster Coordinator		Study Program Coordinator						
							Prof. Dr. Munasir, S.Si., M.Si.					
Learning model	Case Studies											
Program Learning Outcomes	PLO study program that is charged to the course											
	Program Objectives (PO)											
(PLO)	PLO-PO Mat	trix										
	P.0											
	PO Matrix at	t the end of each le	arning s	tage (Su	b-PO)							
		P.O Week					1 1					
		1 2 3 4	4 5 6	6 7 8	9	10 11 1	.2 13 14	15 16				
Short Course Description	Transmitting/receiving antenna system which includes the type of antenna and antenna elements (radiator/driven element, parasitic elements), antenna power input from the transmission line, methods and techniques for supplying power from the transmission line to the antenna and vice versa (Feeding method), impedance matching between channels transmission and antenna, polarization of vertical waves (Radio Communication) and Horizontal Waves (Radio Bradcasting), antenna parameters (Physical Lenght, electrical length, directivity, pollar pattern, Gain and VSWR), calculations and measurement methods. Meanwhile, wave propagation includes the characteristics of radio waves, the influence of the sun on the propagation of radio waves, the phenomenon of solar radiation, solar flux, sunsport, types of radio wave propagation (absorption, virtual height, effect of Eart's magnetic Field, Radiation Angle, Skip Distance, Fading), Radio Wave Propagation in Frequency Bands VLF, LF, MF, HF (Ground Wave & Sky Wave), and VHF, UHF, SHF, EHF (line of sight, F2 layer Reflection, Sporadic-E Skip, Aurora Effect, Tropospheric Bending, Scatter Modes), Analysis and calculation of Power Loss as a function of distance (Path Loss) between Transmitter and Receiver, Planning Analysis and calculation of Minimum Signal Reception Levels in Rdio Communication Systems and Radio Systems Broadcast.											
References												
	 Constantine A. Balanis . 2015. Antenna theory: analysis and design . New Jersey: John Willey & Sons R.L. Freeman. 2006. Radio System Design for Telecommunication. New Jersey: John Willey & Sons J.S. Seybold. 2005. Introduction to RF Propagation. New Jersey: John Willey & Sons G. Barue. 2008. Microwave Engineering: Land and Space Radiocommunications. New Jersey: John Willey & Sons R.E. Collin . 1985. Antennas and Radio Wave Propagations. New York: McGraw-Hill. 											
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Supporting lecturer	Dzulkiflih, S.Si., M.T. Dr. Rohim Aminullah Firdaus, S.Pd, M.Si											

Week-	Final abilities of each learning stage (Sub-PO)	Evaluation		Lo Stu	Help Learning, earning methods, dent Assignments, [Estimated time]	Learning materials	Assessment
		Indicator	Criteria & Form	Offline (offline)	Online (<i>online</i>)	References]	Weight (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1							0%
2							0%
3							0%
4							0%
5							0%
6							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.