



Universitas Negeri Surabaya
Faculty of Engineering,
Undergraduate Study Program in Informatics Engineering

Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight	SEMESTER	Compilation Date																																																																			
Wireless Networks and Mobile Computing	5520203028		T=3 P=0 ECTS=4.77	5	July 17, 2024																																																																			
AUTHORIZATION	SP Developer		Course Cluster Coordinator		Study Program Coordinator																																																																			
		Aditya Prapanca, S.T., M.Kom.																																																																			
Learning model	Project Based Learning																																																																							
Program Learning Outcomes (PLO)	PLO study program that is charged to the course																																																																							
	Program Objectives (PO)																																																																							
	PO - 1	Students are able to understand concepts and insights about Wireless Networks, Wireless Network development and Wireless Network implementation.																																																																						
	PO - 2	Students can design and implement Wireless Networks.																																																																						
	PLO-PO Matrix																																																																							
	<table border="1" style="margin-left: 20px;"> <tr><td>P.O</td></tr> <tr><td>PO-1</td></tr> <tr><td>PO-2</td></tr> </table>					P.O	PO-1	PO-2																																																																
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PO Matrix at the end of each learning stage (Sub-PO)																																																																								
	<table border="1" style="margin-left: 20px;"> <tr> <td rowspan="2">P.O</td> <td colspan="16">Week</td> </tr> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td> </tr> <tr> <td>PO-1</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>PO-2</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table>					P.O	Week																1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	PO-1																	PO-2																
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Short Course Description	This course discusses the concept of wireless networks, technology in wireless networks, their development and implementation of wireless networks including: the basics of wireless transmission and communication, types of wireless network technology which are included in wireless personal area networks (WPAN), wireless local area networks (WLAN), wireless Metropolitan area network (WWAN), Wireless network topology and infrastructure, and Security in Wireless Networks.																																																																							
References	Main :																																																																							
	<ol style="list-style-type: none"> 1. Fette B, Aiello R, Chandra P, Dobkin D M, Bensky A, Miron D, Lide D. A, Dowla F, Olexa R. 2008. RF & Wireless Technologies: Know It All. Elsevier. 2. Garg Vijay, 2007, Wireless Communication and Networking, Morgan Kaufmann. 3. Rappaport Theodore S, Wireless Communications Principles and Practice: Second Edition, Prentice Hall. 4. Purbo. Onno W, 2007, Jaringan Wireless di Dunia Berkembang. 																																																																							
	Supporters:																																																																							
Supporting lecturer	I Made Suartana, S.Kom., M.Kom.																																																																							
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	Knowing the Development of Wireless Technology	<ol style="list-style-type: none"> 1.Knowledge of wireless technology 2.Know the history of wireless development 3.Get to know wireless products 	Form of Assessment : Practical Assessment	Discussion Lectures 2 X 50			0%
2	Mastering Wave Theory	<ol style="list-style-type: none"> 1.Know the components that make up a wave (Frequency, Amplitude and Wavelength) 2.Be able to mention the characteristics of waves (Absorption, Reflection, Disfraction, Refraction, Interference and Noise) 	Form of Assessment : Practical Assessment	LectureDiscussion Making a 2 X 50 resume			0%
3	Mastering Wireless Theory	<ol style="list-style-type: none"> 1.Able to explain the function: Tx-Power 2.Rx-Sensitivity 3.Losses 4.EIRP 5.Line Of Sight 6.Fresnel Zone 	Form of Assessment : Practical Assessment, Test	LectureDiscussionCreating a 2 X 50 resume			0%
4	Mastering Antenna Theory	<ol style="list-style-type: none"> 1.Know the concept of antennas 2.Be able to explain antenna polarization 3.Able to explain antenna direction 4.Be able to give examples of various types of antennas 		LectureDiscussionCreating a 2 X 50 resume			20%
5	Know and be able to differentiate between Wifi standards and frequencies	<ol style="list-style-type: none"> 1.Can explain the differences between Standard IEEE 802.11 a/b/g/n and ac 2.Can mention the WiFi frequency channel 3.Know the function of the Band 		LectureDiscussionCreating a 2 X 50 resume			0%
6	Mastering various AP modes	<ol style="list-style-type: none"> 1.Know the function of: AP Bridge 2.Bridge 3.Stations 4.Station Pseudobridge 5.Station Bridge 6.WDS Stations 7.Alignment Only 8.Nstreme Dual Slave 9.WDS Slave 		LectureDiscussionCreating a 2 X 50 resume			0%
7	Mastering the Basic Use of Wireless Configuration	<ol style="list-style-type: none"> 1.Can configure AP Bridge and Station 2.Can monitor registration 	Form of Assessment : Practice / Performance	LectureDiscussionPractice 2 X 50			20%

8	UTS			2 X 50			0%
9	Mastering the Use of Wireless Bridge	<ol style="list-style-type: none"> 1.Understand the concept of network layer 2 2.Can configure wireless bridges 3.Can add ports to the bridge 4.Can perform connection tests 		LectureDiscussionPractice 2 X 50			0%
10	Mastering the Use of Wireless Routing	<ol style="list-style-type: none"> 1.Understand the concept of network layer 3 2.Can configure wireless routing 3.Can perform connection tests 	Form of Assessment : Participatory Activities, Project Results Assessment / Product Assessment	LectureDiscussionPractice 2 X 50			20%
11	Mastering the Use of Virtual AP	<ol style="list-style-type: none"> 1.Get to know the various virtual interfaces 2.Can create virtual AP 3.Can perform connection tests 		LectureDiscussionPractice 2 X 50			0%
12	Mastering Hotspot Use	<ol style="list-style-type: none"> 1.Understand the concept of hotspots 2.Can setup hotspot 3.Can add IP Binding 4.Can add Wallgarden IP 	Criteria: 20 Form of Assessment : Test	LectureDiscussionPractice 2 X 50			10%
13	Mastering the Use of User Manager	<ol style="list-style-type: none"> 1.Understand RADIUS technology 2.Able to use user manager 3.Able to integrate hotspot and user manager 	Form of Assessment : Participatory Activities, Project Results Assessment / Product Assessment	LectureDiscussionPractice 2 X 50			20%
14	Mastering the Use of WDS	<ol style="list-style-type: none"> 1.Understand the concept of WDS 2.Able to configure Dinamic WDS 3.Able to configure Static WDS 4.Able to configure AP WDS 5.Able to configure WDS Slave 	Forms of Assessment : Participatory Activities, Project Results Assessment / Product Assessment, Practical Assessment, Practical / Performance	LectureDiscussionPractice 2 X 50			10%
15	Mastering the Use of Network Tools	<ol style="list-style-type: none"> 1.Master the use of the tool: Torch 2.Scans 3.Freq Usage 4.Wifi Analyzer 5.Neighbours 6.Registration 	Form of Assessment : Assessment of Project Results / Product Assessment, Practices / Performance	LectureDiscussionPractice 2 X 50			10%
16			Form of Assessment : Participatory Activities, Tests				10%

Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
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1.	Participatory Activities	27.5%
2.	Project Results Assessment / Product Assessment	27.5%
3.	Practical Assessment	2.5%
4.	Practice / Performance	27.5%
5.	Test	15%
		100%

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** abilities in the process and student learning outcomes are specific and measurable statements that identify the abilities 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.