



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
Advanced Wireless Communications Networks	2020103049	Compulsory Study Program Subjects	T=3 P=0 ECTS=4.77	7	July 18, 2024
AUTHORIZATION	SP Developer		Course Cluster Coordinator	Study Program Coordinator	
	Dr. Raden Roro Hapsari Peni Agustin Tjahyaningtjas, S.Si., M.T. ; Dr. Lusia Rakhmawati, S.T., M.T.		Prof. Dr. I Gusti Putu Asto B., M.T.	Dr. Lusia Rakhmawati, S.T., M.T.	

Learning model	Case Studies
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Program Learning Outcomes (PLO)	PLO study program that is charged to the course																																																																																																																						
	Program Objectives (PO)																																																																																																																						
	PO - 1	Able to work in a team in solving Advanced Wireless Communication Network problems																																																																																																																					
	PO - 2	Able to communicate effectively both orally and in writing in presenting the results of Advanced Wireless Communication Network discussions																																																																																																																					
	PO - 3	Able to apply engineering principles, identify, formulate, and analyze data/information Advanced Wireless Communication Networks to solve problems in the fields of Telecommunications and Intelligent Computing																																																																																																																					
	PO - 4	Able to plan, complete and evaluate tasks related to Advanced Wireless Communication Networks																																																																																																																					
	PO - 5	Able to apply knowledge of mathematics and electrical engineering to gain a thorough understanding of the principles of Advanced Wireless Communications Networks																																																																																																																					
	PLO-PO Matrix																																																																																																																						
		<table border="1" style="margin: auto;"> <tr><td>P.O</td></tr> <tr><td>PO-1</td></tr> <tr><td>PO-2</td></tr> <tr><td>PO-3</td></tr> <tr><td>PO-4</td></tr> <tr><td>PO-5</td></tr> </table>	P.O	PO-1	PO-2	PO-3	PO-4	PO-5																																																																																																															
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PO Matrix at the end of each learning stage (Sub-PO)																																																																																																																							
	<table border="1" style="margin: auto;"> <thead> <tr> <th rowspan="2">P.O</th> <th colspan="16">Week</th> </tr> <tr> <th>1</th><th>2</th><th>3</th><th>4</th><th>5</th><th>6</th><th>7</th><th>8</th><th>9</th><th>10</th><th>11</th><th>12</th><th>13</th><th>14</th><th>15</th><th>16</th> </tr> </thead> <tbody> <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> <tr><td>PO-3</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-4</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-5</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> </tbody> </table>	P.O	Week																1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	PO-1																	PO-2																	PO-3																	PO-4																	PO-5																
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Short Course Description	Conducting an assessment of wireless communication concepts including voice coding techniques, multiple access techniques, wireless networks, wireless communication system standards, planning and designing wireless communication systems.
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References	Main :
	<ol style="list-style-type: none"> 1. W. Stallings. 2005. Wireless Communications and Networks. 2nd edition. McGraw Hill. 2. T.S. Rappaport. Wireless Communications Principles and Practice
	Supporters:

1. 1. Lazaar, Irwin. 1980. Electrical System Analysis and Design for Industrial Plants. New York. McGraw – Hill Book Company							
Supporting lecturer		Dr. Raden Roro Hapsari Peni Agustini Tjahyaningtjas, S.Si., M.T. EPPY YUNDRRA Dr. Lusia Rakhmawati, 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	Able to understand sound coding techniques	- Explain the characteristics of speech signals - Describe quantization techniques - Explain adaptive pulse code modulation (ADPCM) techniques - Identify speech coding for mobile communications	<p>Criteria:</p> <ol style="list-style-type: none"> The assessment criteria are carried out by looking at aspects: <ol style="list-style-type: none"> Participation: carried out by observing student activities (weight 2) UTS: carried out with an assessment during the middle of the semester (weight 2) UAS: carried out every semester to measure all indicators (weight 3) Task: carried out on each indicator (weight 3) Student Final Grade: Participation Score (2)%2 Lever Score (3)%2 UTS Score (2)%2 UAS Score (3) divided by 10. <p>Form of Assessment : Participatory Activities</p>	Presentation, group discussion and reflection 3 X 50		<p>Material: Meeting material 1 Reference:</p> <ol style="list-style-type: none"> W. Stallings. 2005. <i>Wireless Communications and Networks. 2nd edition. McGraw Hill.</i> T.S. Rappaport. <i>Wireless Communications Principles and Practice</i> 	8%

2	Able to understand sound coding techniques	- Explain the characteristics of speech signals - Describe quantization techniques - Explain adaptive pulse code modulation (ADPCM) techniques - Identify speech coding for mobile communications	Criteria: 1.The assessment criteria are carried out by looking at aspects: 2.1. Participation: carried out by observing student activities (weight 2) 3.2. UTS: carried out with an assessment during the middle of the semester (weight 2) 4.3. UAS: carried out every semester to measure all indicators (weight 3) 5.4. Task: carried out on each indicator (weight 3) 6.Student Final Grade: 7.Participation Score (2)%2 Lever Score (3)%2 UTS Score (2)%2 UAS Score (3) divided by 10. Form of Assessment : Participatory Activities	Presentation, group discussion and reflection 3 X 50		Material: Meeting material 2 References: 1. <i>W. Stallings. 2005. Wireless Communications and Networks. 2nd edition. McGraw Hill.</i> 2. <i>T.S. Rappaport. Wireless Communications Principles and Practice</i>	5%
3	Students are able to understand multiple access techniques for wireless communications	- Describe frequency division multiple access (FDMA) and time division (TDMA) techniques - Describe spread spectrum multiple access techniques - Describe radio packets - Explain cellular system capacity	Criteria: 1.The assessment criteria are carried out by looking at aspects: 2.1. Participation: carried out by observing student activities (weight 2) 3.2. UTS: carried out with an assessment during the middle of the semester (weight 2) 4.3. UAS: carried out every semester to measure all indicators (weight 3) 5.4. Task: carried out on each indicator (weight 3) 6.Student Final Grade: 7.Participation Score (2)%2 Lever Score (3)%2 UTS Score (2)%2 UAS Score (3) divided by 10.	Presentation, discussion and reflection 3 X 50		Material: Meeting material 3 References: 1. <i>W. Stallings. 2005. Wireless Communications and Networks. 2nd edition. McGraw Hill.</i> 2. <i>T.S. Rappaport. Wireless Communications Principles and Practice</i>	8%

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5	Students are able to understand wireless networks	<ul style="list-style-type: none"> - Describe wireless networks and - Explain traffic routing on wireless networks - Explain integrated digital network (ISDN) services - Describe personal communications services (PCN) - Describe protocols for network access 	<p>Criteria:</p> <ol style="list-style-type: none"> 1. The assessment criteria are carried out by looking at aspects: 2.1. Participation: carried out by observing student activities (weight 2) 3.2. UTS: carried out with an assessment during the middle of the semester (weight 2) 4.3. UAS: carried out every semester to measure all indicators (weight 3) 5.4. Task: carried out on each indicator (weight 3) 6. Student Final Grade: 7. Participation Score (2)%2 Lever Score (3)%2 UTS Score (2)%2 UAS Score (3) divided by 10. <p>Form of Assessment : Participatory Activities</p>	Presentation, group discussion and reflection 3 X 50		<p>Material: Meeting material 5</p> <p>References:</p> <ol style="list-style-type: none"> 1. W. Stallings. 2005. <i>Wireless Communications and Networks</i>. 2nd edition. McGraw Hill. 2. T.S. Rappaport. <i>Wireless Communications Principles and Practice</i> 	5%

6	Students are able to understand wireless networks	<ul style="list-style-type: none"> - Describe wireless networks and - Explain traffic routing on wireless networks - Explain integrated digital network (ISDN) services - Describe personal communications services (PCN) - Describe protocols for network access 	<p>Criteria:</p> <ol style="list-style-type: none"> 1.The assessment criteria are carried out by looking at aspects: 2.1. Participation: carried out by observing student activities (weight 2) 3.2. UTS: carried out with an assessment during the middle of the semester (weight 2) 4.3. UAS: carried out every semester to measure all indicators (weight 3) 5.4. Task: carried out on each indicator (weight 3) 6.Student Final Grade: 7.Participation Score (2)%2 Lever Score (3)%2 UTS Score (2)%2 UAS Score (3) divided by 10. <p>Form of Assessment : Participatory Activities</p>	Presentation, group discussion and reflection 3 X 50		<p>Material: Meeting material 6 References:</p> <ol style="list-style-type: none"> 1. W. Stallings. 2005. <i>Wireless Communications and Networks</i>. 2nd edition. McGraw Hill. 2. T.S. Rappaport. <i>Wireless Communications Principles and Practice</i> 	5%
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15	Students are able to understand wireless networks	<ul style="list-style-type: none"> - Describe wireless networks and - Explain traffic routing on wireless networks - Explain integrated digital network (ISDN) services - Describe personal communications services (PCN) - Describe protocols for network access 	<p>Criteria:</p> <ol style="list-style-type: none"> 1.The assessment criteria are carried out by looking at aspects: 2.1. Participation: carried out by observing student activities (weight 2) 3.2. UTS: carried out with an assessment during the middle of the semester (weight 2) 4.3. UAS: carried out every semester to measure all indicators (weight 3) 5.4. Task: carried out on each indicator (weight 3) 6.Student Final Grade: 7.Participation Score (2)%2 Lever Score (3)%2 UTS Score (2)%2 UAS Score (3) divided by 10. <p>Form of Assessment : Participatory Activities</p>	Presentation, group discussion and reflection 3 X 50		<p>Material: Meeting material 15 References: 1. W. Stallings. 2005. <i>Wireless Communications and Networks</i>. 2nd edition. McGraw Hill. 2. T.S. Rappaport. <i>Wireless Communications Principles and Practice</i></p>	8%

16	Students are able to understand wireless networks	Able to solve written test questions correctly	Criteria: 1. The assessment criteria are carried out by looking at aspects: 2.1. Participation: carried out by observing student activities (weight 2) 3.2. UTS: carried out with an assessment during the middle of the semester (weight 2) 4.3. UAS: carried out every semester to measure all indicators (weight 3) 5.4. Task: carried out on each indicator (weight 3) 6. Student Final Grade: 7. Participation Score (2)%2 Lever Score (3)%2 UTS Score (2)%2 UAS Score (3) divided by 10.	Written Test 3 X 50		Material: Meeting material 1-15 References: 1. W. Stallings. 2005. <i>Wireless Communications and Networks</i> . 2nd edition. McGraw Hill. 2. T.S. Rappaport. <i>Wireless Communications Principles and Practice</i>	8%
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Evaluation Percentage Recap: Case Study

No	Evaluation	Percentage
1.	Participatory Activities	75%
2.	Test	4%
		79%

Notes

- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- Forms of assessment:** test and non-test.
- 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.
- 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.
- Learning materials** are details or descriptions of study materials which can be presented in the form of several main points and sub-topics.
- 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%.
- TM=Face to face, PT=Structured assignments, BM=Independent study.