SEMESTER LEARNING PLAN

Courses		CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
Wireless System Applications*		2020102380		**T=0**	**P=0**	**ECTS=0**	7	July 18, 2024

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
	Dr. Lusia Rakhmawati, S.T., M.T.;Dr. Rr. Hapsari PeniAgustin T., S.Si. M.T	Prof. Dr. I Gusti Putu Asto B., M.T.	Dr. Lusia Rakhmawati, S.T., M.T.

Learning model	Case Studies

Program Learning Outcomes (PLO)	PLO study program that is charged to the course
	Program Objectives (PO)
	PO - 1 — Able to apply knowledge of Wireless Communication System Applications to gain a thorough understanding of engineering principles
	PLO-PO Matrix

P.O
PO-1

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
PO-1																

Short Course Description	Conducting studies on wireless communication implementation including channel coding techniques, multiple access techniques, wireless networks, wireless communication system standards, planning and designing wireless communication systems.

References	**Main :**
	1. W. Stallings. 2005. Wireless Communications and Networks. 2nd edition. McGraw Hill.
	Supporters:
	1. T.S. Rappaport. Wireless Communications Principles and Practice

Supporting lecturer	Dr. Raden Roro Hapsari Peni Agustin Tjahyaningtijas, S.Si., M.T. Dr. Lusia Rakhmawati, S.T., M.T.

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	Introduction to the implementation of wireless communication systems in the telecommunications and information industry.	1. Get to know the fields of telecommunications and information business 2. Review the types of digital modulation used in various communications standards 3. Review channel coding and detection 4. Reviewing multiplexing and multiple access methods 5. Plan industrial visits and guest lectures	**Criteria:** Activeness and accuracy of answers **Form of Assessment** : Participatory Activities	Presentation, group discussion and reflection 2 X 50		**Material:** Meeting material 1 **Reader:** *W. Stallings. 2005. Wireless Communications and Networks. 2nd edition. McGraw Hill.*	5%
2	Able to understand channel coding and forward error correction techniques in wireless communication systems.	1. Describe the working principle of block coding 2. Describe the principles of decoding and correction 3. Discuss other types of channel coding (convolutional code, reed-solomon, LDPC, turbo code, raptor, etc.) 4. Discuss the working principles of hard and soft decision/detection	**Criteria:** Activeness and accuracy of answers **Form of Assessment** : Participatory Activities	Presentation, group discussion and reflection 2 X 50		**Material:** Meeting material 1 **Reader:** *W. Stallings. 2005. Wireless Communications and Networks. 2nd edition. McGraw Hill.*	0%
3	Able to understand channel coding and forward error correction techniques in wireless communication systems.	1. Describe the working principle of block coding 2. Describe the principles of decoding and correction 3. Discuss other types of channel coding (convolutional code, reed-solomon, LDPC, turbo code, raptor, etc.) 4. Discuss the working principles of hard and soft decision/detection	**Criteria:** Activeness and accuracy of answers **Form of Assessment** : Participatory Activities	Presentation, discussion and reflection 2 X 50		**Material:** Meeting material 3 **Reader:** *TS Rappaport. Wireless Communications Principles and Practice*	0%
4	Students are able to understand multiple access techniques for wireless communications	1. Describe frequency division multiple access (FDMA) and time division (TDMA) techniques 2. Describe spread spectrum multiple access techniques 3. Describes radio packets 4. Describes the capacity of the cellular system	**Criteria:** Activeness and accuracy of answers **Form of Assessment** : Participatory Activities	Presentation, discussion and reflection 2 X 50		**Material:** Meeting material 4 **Bibliography:** *W. Stallings. 2005. Wireless Communications and Networks. 2nd edition. McGraw Hill.*	5%
5	determine system design concepts, cellular, explain frequency reuse, conclude, cellular system capacity, categorize grade of service (GoS)	1. Describe wireless networks and 2. Explain traffic routing on wireless networks 3. Explain integrated digital network (ISDN) services 4. Describe personal communication services (PCN) 5. Describes the protocol for network access	**Criteria:** Activeness and accuracy of answers **Form of Assessment** : Project Results Assessment / Product Assessment	Presentation, group discussion and reflection 2 X 50		**Material:** Meeting material 5 **Bibliography:** *W. Stallings. 2005. Wireless Communications and Networks. 2nd edition. McGraw Hill.*	5%

6	explore path loss propagation, and compare outdoor and indoor propagation	1.Describe wireless networks and 2.Explain traffic routing on wireless networks 3.Explain integrated digital network (ISDN) services 4.Describe personal communication services (PCN) 5.Describes the protocol for network access	**Criteria:** Activeness and accuracy of answers **Form of Assessment** : Project Results Assessment / Product Assessment	PBL 2 X 50		**Material:** Meeting material 6 **Reader:** *TS Rappaport. Wireless Communications Principles and Practice*	5%
7	explore path loss propagation, and compare outdoor and indoor propagation	1.Describe wireless networks and 2.Explain traffic routing on wireless networks 3.Explain integrated digital network (ISDN) services 4.Describe personal communication services (PCN) 5.Describes the protocol for network access	**Criteria:** Activeness and accuracy of answers **Form of Assessment** : Project Results Assessment / Product Assessment	PBL 2 X 50		**Material:** Meeting material 6 **Reader:** *TS Rappaport. Wireless Communications Principles and Practice*	5%
8	explore path loss propagation, and compare outdoor and indoor propagation	1.Describe wireless networks and 2.Explain traffic routing on wireless networks 3.Explain integrated digital network (ISDN) services 4.Describe personal communication services (PCN) 5.Describes the protocol for network access	**Criteria:** Activeness and accuracy of answers **Form of Assessment** : Project Results Assessment / Product Assessment	PBL 2 X 50		**Material:** Meeting material 6 **Reader:** *TS Rappaport. Wireless Communications Principles and Practice*	5%
9	explore path loss propagation, and compare outdoor and indoor propagation	1.Describe wireless networks and 2.Explain traffic routing on wireless networks 3.Explain integrated digital network (ISDN) services 4.Describe personal communication services (PCN) 5.Describes the protocol for network access	**Criteria:** Activeness and accuracy of answers **Form of Assessment** : Project Results Assessment / Product Assessment	PBL 2 X 50		**Material:** Meeting material 6 **Reader:** *TS Rappaport. Wireless Communications Principles and Practice*	5%
10	explore path loss propagation, and compare outdoor and indoor propagation	1.Describe wireless networks and 2.Explain traffic routing on wireless networks 3.Explain integrated digital network (ISDN) services 4.Describe personal communication services (PCN) 5.Describes the protocol for network access	**Criteria:** Activeness and accuracy of answers **Form of Assessment** : Project Results Assessment / Product Assessment	PBL 2 X 50		**Material:** Meeting material 6 **Reader:** *TS Rappaport. Wireless Communications Principles and Practice*	5%
11	explore path loss propagation, and compare outdoor and indoor propagation	1.Describe wireless networks and 2.Explain traffic routing on wireless networks 3.Explain integrated digital network (ISDN) services 4.Describe personal communication services (PCN) 5.Describes the protocol for network access	**Criteria:** Activeness and accuracy of answers **Form of Assessment** : Project Results Assessment / Product Assessment	PBL 2 X 50		**Material:** Meeting material 6 **Reader:** *TS Rappaport. Wireless Communications Principles and Practice*	5%

12	explore path loss propagation, and compare outdoor and indoor propagation	1.Describe wireless networks and 2.Explain traffic routing on wireless networks 3.Explain integrated digital network (ISDN) services 4.Describe personal communication services (PCN) 5.Describes the protocol for network access	**Criteria:** Activeness and accuracy of answers **Form of Assessment** : Project Results Assessment / Product Assessment	PBL 2 X 50		**Material:** Meeting material 6 **Reader:** *TS Rappaport. Wireless Communications Principles and Practice*	5%
13	explore path loss propagation, and compare outdoor and indoor propagation	1.Describe wireless networks and 2.Explain traffic routing on wireless networks 3.Explain integrated digital network (ISDN) services 4.Describe personal communication services (PCN) 5.Describes the protocol for network access	**Criteria:** Activeness and accuracy of answers **Form of Assessment** : Project Results Assessment / Product Assessment	PBL 2 X 50		**Material:** Meeting material 6 **Reader:** *TS Rappaport. Wireless Communications Principles and Practice*	5%
14	explore path loss propagation, and compare outdoor and indoor propagation	1.Describe wireless networks and 2.Explain traffic routing on wireless networks 3.Explain integrated digital network (ISDN) services 4.Describe personal communication services (PCN) 5.Describes the protocol for network access	**Criteria:** Activeness and accuracy of answers **Form of Assessment** : Project Results Assessment / Product Assessment	PBL 2 X 50		**Material:** Meeting material 6 **Reader:** *TS Rappaport. Wireless Communications Principles and Practice*	5%
15	explore path loss propagation, and compare outdoor and indoor propagation	1.Describe wireless networks and 2.Explain traffic routing on wireless networks 3.Explain integrated digital network (ISDN) services 4.Describe personal communication services (PCN) 5.Describes the protocol for network access	**Criteria:** Activeness and accuracy of answers **Form of Assessment** : Project Results Assessment / Product Assessment	PBL 2 X 50		**Material:** Meeting material 6 **Reader:** *TS Rappaport. Wireless Communications Principles and Practice*	5%
16	explore path loss propagation, and compare outdoor and indoor propagation	1.Describe wireless networks and 2.Explain traffic routing on wireless networks 3.Explain integrated digital network (ISDN) services 4.Describe personal communication services (PCN) 5.Describes the protocol for network access	**Criteria:** Activeness and accuracy of answers **Form of Assessment** : Project Results Assessment / Product Assessment	PBL 2 X 50		**Material:** Meeting material 6 **Reader:** *TS Rappaport. Wireless Communications Principles and Practice*	5%

Evaluation Percentage Recap: Case Study

No	Evaluation	Percentage
1.	Participatory Activities	10%
2.	Project Results Assessment / Product Assessment	60%
		70%

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.