	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
DIGITAL RANGE	2020103272		T=0	P=0	ECTS=0	3	July 17, 2024

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
	.....	.....	Dr. Lusia Rakhmawati, S.T., M.T.

Learning model	**Project Based Learning**
Program Learning Outcomes (PLO)	**PLO study program which 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	Examines the basic concepts of digital engineering, logic gates, Flip-Flops, Boolean Algebra, combinatorial circuit design, sequential circuits, counters and registers, as well as their applications in everyday life.
References	**Main :**
	1. 1.Tokheim. 1990 elektronika digital 2nd edition 2. Leach,donald 1997, digital principle and application 2. 1. Barmawi, 1991. Rangkaian dan Sistem Analog dan Digital. Jilid 2. Jakarta: Erlangga 3. Leach, Donald. 1997. Digital Principles and Applications . Fifth Edition. New York: McGraw-Hill
	Supporters:
Supporting lecturer	Dr. Nur Kholis, S.T., M.T. Dr. Lilik Anifah, S.T., M.T. Dr. Farid Baskoro, 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	1. Describe the differences between analog and digital systems. 2. Explain the application of digital systems in everyday life	1. Students are able to describe the differences between analog and digital systems. 2. Students are able to explain the application of digital systems in everyday life	**Criteria:** 1	Direct Instruction and discussion 3 X 50			0%
2	1. Students understand number conversions 2. Students are able to carry out number conversions	1. Students are able to explain number conversions 2. Students are able to carry out number conversions	**Criteria:** 1	Direct Instructin and practice questions 3 X 50			0%
3	Analyze the properties of logic gates	1. Students are able to describe the properties of logic gates (logic gates) 2. Students are able to simplify logic circuits using Boolean algebra	**Criteria:** 1	Direct instruction and practice questions 3 X 50			0%
4	Analyzing logic gate circuits	1. Students are able to design logic gate circuits 2. Students are able to simplify logic circuits using algebra	**Criteria:** 1	Direct Instruction and practice questions 3 X 50			0%
5	Master the Karnaugh Map method	Students are able to simplify circuits with the Karnaugh Map	**Criteria:** 1	Direct Instruction and practice questions 3 X 50			0%
6	Analyze the FLIP FLOP circuit	1. Students are able to describe the characteristics of the types of Flip Flop 2. Students are able to analyze circuits	**Criteria:** 1	Direct instruction and problem based learning 3 X 50			0%
7	Students are able to analyze the properties of FLIP FLOP	1. Students are able to describe the characteristics of the types of Flip Flop 2. Students are able to analyze circuits	**Criteria:** 1	Direct Instruction and Problem Based Learning 3 X 50			0%
8	UTS	UTS		Paper Based 3 X 50			0%
9	analyze the counter circuit	1 Students are able to describe the properties of counter circuits. Students are able to design a series of counter applications		Paper Base 3 X 50			0%

10	analyze and design counter circuits	1. Students are able to analyze and design analog counter up and counter down circuits		direct instructions 3 X 50			0%
11	analyze and design counter circuits	1. Students are able to analyze and design analog counter up and counter down circuits		direct instructions 3 X 50			0%
12	.1.Able to understand the meaning of registers 2. Able to analyze register circuits	.1. Students are able to understand the meaning of register. 2. Students are able to analyze a series of registers		direct instructions and paper base 3 X 50			0%
13	.1.Able to understand the meaning of registers 2. Able to analyze register circuits	.1. Students are able to understand the meaning of register. 2. Students are able to analyze a series of registers		direct instructions and paper base 3 X 50			0%
14	analyze multiplexer circuits	design and analyze multiplexer circuits		paper base and direct instructions 3 X 50			0%
15	1	1	**Criteria:** 1	1 3 X 50			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.