	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 Electronics	2020102401		T=2	P=0	ECTS=3.18	3	July 18, 2024

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

Learning model	Case Studies

Program Learning Outcomes (PLO)	**PLO study program that is charged to the course**	
	PLO-5	Able to apply knowledge of mathematics, natural sciences, information technology, and engineering to gain a thorough understanding of the principles of electrical engineering
	PLO-8	Able to apply engineering principles, identify, formulate and analyze data/information to solve problems in the electrical field
	Program Objectives (PO)	
	PO - 1	Students have knowledge of the basic concepts of digital engineering.
	PO - 2	Students understand the basic principles of logic gates and analyze related devices in circuits involving logic gates
	PO - 3	Students have knowledge of the principles of Boolean algebra and their application in digital-based circuits
	PO - 4	Students have knowledge of arithmetic circuit analysis and describe its application in planning digital-based circuits
	PO - 5	Students have the ability to analyze flipflop multiplexer and converter circuits and then describe their application in planning digital-based circuits

PLO-PO Matrix

P.O	PLO-5	PLO-8
PO-1		
PO-2		
PO-3		
PO-4		
PO-5		

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																
PO-2																
PO-3																
PO-4																
PO-5																

Short Course Description		Examining the theory of digital techniques, logic gates, flip flops, Boolean algebra, combinatorial circuit design, sequential circuits, counters and registers, and their applications in everyday life					
References	**Main :**						
		1. Tokheim, Roger L. 1995. Elektronika Digital Edisi Kedua . Jakarta: Erlangga 2. Barmawi. 1991. Rangkaian dan Sistem Analog dan Digital Jilid 2 . Jakarta: Erlangga 3. Dueck, Robert, Ken Reid. 2012. Digital Electronics . Delmar: Cengage Learning 4. Leach, Donald. 1997. Digital Principles and Appications Fifth Edition . New York: McGraw-Hill 5. Nur, Mohamad. 1977. Sistem Digital: Prinsip dan Pemakaian . Surabaya: Unipress IKIP Surabaya 6. Tocci, Ronald J. & Widmer, Neal S & Moss, Gregory L. 2011. Digital System: Principles and Application . New Jersey:Prentice-Hall					
	Supporters:						
Supporting lecturer		Dr. Meini Sondang Sumbawati, M.Pd. Yulia Fransisca, S.Pd., M.Pd.					

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			**Form of Assessment** : Participatory Activities	Introduction, Digital Systems concept 100 minutes			5%
2				Basic principles of digital electronics 100 minutes			0%
3	Students understand truth tables and logic gates		**Form of Assessment** : Participatory Activities, Tests	lecture, discussion 100 minutes		**Material:** truth tables and logic gates **References:**	0%
4	Students understand truth tables and logic gates		**Form of Assessment** : Participatory Activities, Tests	lecture, discussion 100 minutes			0%
5	Students can analyze the principles of Boolean algebra		**Form of Assessment** : Participatory Activities, Tests	lecture, discussion 100 minutes			0%
6	Students can analyze the principles of Boolean algebra						0%
7	Students can analyze the principles of Boolean algebra			offline			0%
8	UTS		**Form of Assessment** : Test			**Material:** UTS **Library:**	0%
9	Students are able to analyze combination series					**Material:** series of combinations **Library:**	0%
10	students are able to analyze half-adder, full-adder, half-subtractor, full-subtractor circuits					**Material:** half-adder, full-adder, half-subtractor, full-subtractor circuits **Library:**	0%

11	students are able to analyze the working principles of multiplexers and demultiplexers					**Material:** Multiplexers and Demultiplexers **Library:**	0%
12	students are able to analyze the working principles of flip-flops					**Material:** flip flop circuit **Library:**	0%
13	students are able to analyze the working principles of ADC-DAC					**Material:** working principle of ADC-DAC **Library:**	0%
14	Students are able to design digital-based electronic equipment and display it						0%
15	Students are able to design digital-based electronic equipment and display it						0%
16			**Form of Assessment** : Test	offline		**Material:** UAS **Literature:**	0%

Evaluation Percentage Recap: Case Study

No	Evaluation	Percentage
1.	Participatory Activities	5%
		5%

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.