	Universitas Negeri Surabaya Faculty of Engineering , Information Technology Education Undergraduate Study Program					Document Code

SEMESTER LEARNING PLAN

Courses		CODE	Course Family		Credit Weight			SEMESTER	Compilation Date
Digital Systems		8320702086	Compulsory Study Program Subjects		T=2	P=0	ECTS=3.18	1	July 17, 2024
AUTHORIZATION		**SP Developer**		**Course Cluster Coordinator**			**Study Program Coordinator**		
		Drs. Bambang Sujatmiko, M.T.		....			Drs. Bambang Sujatmiko, M.T.		

Learning model	**Project Based Learning**		
Program Learning Outcomes (PLO)	**PLO study program which is charged to the course**		
	PLO-8	Mastering the concepts and implementation in developing software engineering, games, intelligent multimedia, and network computer engineering.	
	PLO-13	Able to develop innovative educational products or learning resources using scientific design-based strategies to support teaching activities that can be integrated with ICT.	
	Program Objectives (PO)		
	PLO-PO Matrix		
		P.O	PLO-8	PLO-13
	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	This course discusses the basic concepts of digital systems as the main components in computers, as well as analysis and design of simple digital systems. Understanding of analog and digital concepts, number systems, logic circuit analysis using Boolean algebra, simplification of Boolean functions, logic circuit design, flip-flops, arithmetic circuits, combinational circuits, Synchronous Sequential Logic, Registers, Counters, Memory, Algorithmic State Machines (ASM) and Asynchronous Sequential Logic (ASL)..

References	**Main :**
	1. Malvino, A.Paul. 1989. Elektronika Komputer Digital , Pengantar Mikrokomputer. Penerbit Erlangga. 2. Mano, Morris. 1988. Computer System Architecture, Second Edition. Prentica-Hall of India. New Delhi. 3. Tocci, Ronald J., Widmer, Neal S. 2011. Digital Systems Principles and Applications , 11th Edition. Prentice-Hall.
	Supporters:

Supporting lecturer	Drs. Bambang Sujatmiko, M.T. Aditya Prapanca, S.T., M.Kom. Harun Al Rosyid, 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	Describe digital systems and analog systems	1. Describe the differences between analog and digital systems. 2. Explain the application of digital systems in everyday life	**Criteria:** According to the assessment rubric	Assignment and questions and answers 2 X 50			0%
2	Calculating number conversions	1. Calculating the conversion of decimal to binary, octal, hexadecimal 2. Calculating the conversion of binary, octal, hexa-decimal, to decimal	**Criteria:** According to the assessment rubric	Assignment and discussion 2 X 50			0%
3	Basic gates (logic gates)	1. Calculating the conversion of decimal to binary, octal, hexadecimal 2. Calculating the conversion of binary, octal, hexa-decimal, to decimal	**Criteria:** According to the assessment rubric	Assignment and discussion 3 X 50			0%
4	Analyze the properties of logic gates	1. Describe the properties of logic gates (logic gates) 2. Simplify logic circuits using Boolean algebra	**Criteria:** According to the assessment rubric	Presentation, discussion 3 X 50			0%
5	Analyzing the properties of logic gates, KMap and Boolean Algebra	1. Describe the properties of logic gates (logic gates) 2. Simplify logic circuits using Boolean algebra	**Criteria:** According to the assessment rubric	Presentation, discussion 3 X 50			0%
6	Calculating with arithmetic logic	Describe how circuits work using arithmetic logic	**Criteria:** According to the assessment rubric	Discussion and assignment 3 X 50			0%
7	Designing a circuit using the Karnaugh Map method	Simplify circuits with the Karnaugh Map	**Criteria:** According to the assessment rubric	Discussion and assignment 3 X 50			0%
8	UTS		**Criteria:** According to the assessment rubric	2 X 50			0%
9	Analyze the properties of FLIP FLOP	1. Describe the characteristics of the types of Flip Flop 2. Analyze the circuit	**Criteria:** According to the assessment rubric	Practice questions and give assignments 2 X 50			0%
10	Analyze counter and register circuits	1. Describe the properties of counter and register circuits. 2. Design a counter application circuit	**Criteria:** According to the assessment rubric	Discussion and assignment 2 X 50			0%

11	Analyzing multiplexer and seven segment circuits	1. Describe the properties of multiplexer and seven segment circuits 2. Design multiplexer and seven segment application circuits	**Criteria:** According to the assessment rubric	Discussion and assignment 2 X 50			0%
12	Analyze the properties of FLIP FLOP	1. Explaining FLIP FLOP2. Analyze the properties of FLIP FLOP	**Criteria:** According to the assessment rubric	Demonstration of 3 X 50 digital tasks			0%
13	Analyze the properties of FLIP FLOP	1. Explaining FLIP FLOP2. Analyze the properties of FLIP FLOP	**Criteria:** According to the assessment rubric	Demonstration of 3 X 50 digital tasks			0%
14	Application of logic gates in digital circuits	1. Explaining Register Circuits 2. Applying in circuits	**Criteria:** According to the assessment rubric	Demonstration of 3 X 50 digital tasks			0%
15	Application of logic gates in digital circuits	1. Explain the Registers circuit. 2. Apply the Register circuit	**Criteria:** According to the assessment rubric	Demonstration of 3 X 50 digital tasks			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.