	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
Real Time Control System	2020102207			T=2	P=0	ECTS=3.18	5	July 18, 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 that 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	Explanation and understanding of: Real time management system concepts, Sampling and discretization of controllers, PID controllers and anti-windup, concurrent programming, scheduling theory, fixed point arthmetic, interrupts and timing, integrated scheduling and control, discrete controllers.

References	**Main :**
	1. K. Ogata. 1997. Modern Control Engineering. New Jersey: Prentice Hall. 2. B. Shehu & M. Habsul. 1993. Control System Design Using Matlab. New Jersey: Prentice Hall. 3. J. Michel & Jacob. 1989. Industrial Control Electronica. New Jersey:Prentice Hall.
	Supporters:

Supporting lecturer	Muhamad Syariffuddien Zuhrie, S.Pd., 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)

No	Learning outcome	Indicator		Learning method			Percentage
1	Know the scope of the Real Time Control System lecture	Students can explain the concept of real time management systems		Lectures, discussions and questions and answers 2 X 50			0%
2	Able to explain the basic concepts of real time management systems and scheduling theory.	Students can explain control systems with real time scheduling.		Lectures, discussions and questions and answers 4 X 50			0%
3	Able to explain the basic concepts of real time management systems and scheduling theory.	Students can explain control systems with real time scheduling.		Lectures, discussions and questions and answers 4 X 50			0%
4	Able to design continuous PID controllers, controllers using a state space approach.	Can explain the design of a continuous PID controller, a controller using a state space approach.		Lectures, discussions and questions and answers 4 X 50			0%
5	Able to design continuous PID controllers, controllers using a state space approach.	Can explain the design of a continuous PID controller, a controller using a state space approach.		Lectures, discussions and questions and answers 4 X 50			0%
6							0%
7							0%
8							0%
9							0%
10							0%
11							0%
12							0%
13							0%
14							0%
15							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.