							Document Code
	Universitas Negeri Surabaya **Faculty of Engineering,** **Electrical Engineering Undergraduate Study Program**						

SEMESTER LEARNING PLAN

Courses		CODE	Course Family		Credit Weight		SEMESTER	Compilation Date
Biometrics		2020103017			T=3 P=0 ECTS=4.77		6	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**
	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	This course provides basic knowledge about biometrics and its applications related to systems for recognizing human body shape characteristics. The material that will be taught in this course is about image processing for facial recognition, fingerprint recognition, voice recognition and iris recognition. After taking this course, students are expected to be able to understand the basics of biometrics, and be able to apply image processing programs to biometrics.

References	Main :
	1. Nugroho, Eko. 2009. BIOMETRIKA : MENGENAL SISTEM IDENTIFIKASI MASA DEPAN. Andi. 2. Jain, Flynn, Ross. 2008. Handbook of Biometrics. Springer US. 3. Gonzales & Woods. 2010. Digital Image Processing using MATLAB. Tata McGraw-Hill.
	Supporters:

Supporting lecturer	Dr. Lilik Anifah, S.T., M.T. Arif Widodo, S.T., M.Sc.

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	Understand the basics of biometrics and its history.	1. Know the basics of biometrics. 2. Understand the history of biometrics.		DiscoveryDiscussionScientific 3 X 50			0%

2	Able to understand and differentiate performance metrics in biometrics.	1. Understand the concept of false match rate. 2. Understand the concept of false non-match rate. 3. Understand the concept of receiver operating characteristics. 4. Understand the concept of equal error rate. 5. Understand the concept of failure to enroll rate. 6. Understand the concept of failure to capture rate. 7. Understand the concept of template capacity		DiscoveryDiscussionScientific 3 X 50			0%
3	Able to understand and differentiate performance metrics in biometrics.	1. Understand the concept of false match rate. 2. Understand the concept of false non-match rate. 3. Understand the concept of receiver operating characteristics. 4. Understand the concept of equal error rate. 5. Understand the concept of failure to enroll rate. 6. Understand the concept of failure to capture rate. 7. Understand the concept of template capacity		DiscoveryDiscussionScientific 3 X 50			0%
4	Able to understand and differentiate performance metrics in biometrics.	1. Understand the concept of false match rate. 2. Understand the concept of false non-match rate. 3. Understand the concept of receiver operating characteristics. 4. Understand the concept of equal error rate. 5. Understand the concept of failure to enroll rate. 6. Understand the concept of failure to capture rate. 7. Understand the concept of template capacity		DiscoveryDiscussionScientific 3 X 50			0%

No							
5	Able to understand and differentiate performance metrics in biometrics.	1. Understand the concept of false match rate. 2. Understand the concept of false non-match rate. 3. Understand the concept of receiver operating characteristics. 4. Understand the concept of equal error rate. 5. Understand the concept of failure to enroll rate. 6. Understand the concept of failure to capture rate. 7. Understand the concept of template capacity		DiscoveryDiscussionScientific 3 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: Case Study

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.