	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
Cloud Computing	2020102386	Compulsory Study Program Subjects	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	**Case Studies**	
Program Learning Outcomes (PLO)	**PLO study program that is charged to the course**	
	Program Objectives (PO)	
	PO - 1	Students are able to describe, analyze and design cloud computing technology infrastructure: History, Definition, Types and Structure of Cloud Computing, Cloud Computing Components and Their Advantages and Disadvantages, Working Methods, Working Systems and Working Principles of Cloud Computing and Cloud Computing Terms, Live Migration, Types of Migration, and Cloud Layers, Cloud Implementation and Applications, Cloud Computing Services, Cloud Computing Utilities, Cloud Computing Web Services, Cloud Computing Network Topology, Cloud Computing Software, Cloud Storage, Distributed Storage, Virtualization Technology in Cloud Computing , Cloud Computing Security, Cloud Computing in Industry 4.0 and Society 5.0
	PLO-PO Matrix	

P.O
PO-1

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																

Short Course Description	This course uses a case study learning model which discusses, describes and analyzes and designs cloud computing technology infrastructure 1. History, Definition, Types and Structure of Cloud Computing 2. Cloud Computing Components and Their Advantages and Disadvantages 3. How it Works, Working Systems, and Working Principles of Cloud Computing and Cloud Computing Terms 4. Live Migration, Types of Migration, and Cloud Layers 5. Cloud Implementation and Applications 6. Cloud Computing Services 7. Cloud Computing Utilities 8. Cloud Computing Web Services 9. Topology Cloud Computing Network 10. Cloud Computing Software 11. Cloud Storage 12. Distributed Storage 13. Virtualization Technology in Cloud Computing 14. Cloud Computing Security 15. Cloud Computing in Industry 4.0 and Society 5.0	
References	**Main :**	
	1. 1. Cloud Computing : Management, Implementation and Security : John Rittinghouse 2. 2. Cloud Computing : A Practical Approach : Toby Velte	
	Supporters:	
	1. 3. Introducing Windows Azure : Henry Li	
Supporting lecturer	Miftahur Rohman, 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	Students are able to describe the history, definition, types and structure of cloud computing.	Evaluation Rubric	**Criteria:** Evaluation Rubric **Form of Assessment** : Participatory Activities	Lectures are conducted using the lecture and question and answer method for 2x50 minutes		**Material:** History, Definition, Types and Structure of Cloud Computing **References:** *1. Cloud Computing: Management, Implementation and Security: John Rittinghouse*	3%
2	Students are able to describe the components of cloud computing and their advantages and disadvantages	Evaluation Rubric	**Criteria:** Evaluation Rubric **Form of Assessment** : Participatory Activities	Lectures are conducted using the lecture and question and answer method for 2x50 minutes		**Material:** Cloud Computing Components and Their Advantages and Disadvantages, **Reference:** *2. Cloud Computing: A Practical Approach: Toby Velte*	3%
3	Students are able to describe the working methods, working systems and working principles of cloud computing as well as cloud computing requirements	Evaluation Rubric	**Criteria:** Evaluation Rubric **Form of Assessment** : Participatory Activities	Lectures are conducted using the lecture and question and answer method for 2x50 minutes		**Material:** How it Works, Working Systems, and Working Principles of Cloud Computing and Terms of Cloud Computing **References:** *1. Cloud Computing: Management, Implementation and Security: John Rittinghouse*	3%
4	Students are able to describe Live Migration, Types of Migration, and Cloud Layers	Evaluation Rubric	**Criteria:** Evaluation Rubric **Form of Assessment** : Participatory Activities	Lectures are conducted using the lecture and question and answer method for 2x50 minutes		**Material:** Live Migration, Types of Migration, and Cloud Layers **Library:** *1. Cloud Computing: Management, Implementation and Security: John Rittinghouse*	3%
5	Students are able to describe Cloud Implementation and Applications	Evaluation Rubric	**Criteria:** Evaluation Rubric **Form of Assessment** : Participatory Activities	Lectures are conducted using the lecture and question and answer method for 2x50 minutes		**Material:** Cloud Implementation and Applications **References:** *2. Cloud Computing: A Practical Approach: Toby Velte*	3%

6	Students are able to describe Cloud Computing Services	Evaluation Rubric	**Criteria:** Evaluation Rubric **Form of Assessment** : Participatory Activities	Lectures are conducted using the lecture and question and answer method for 2x50 minutes		**Material:** Cloud Computing Services **References:** *1. Cloud Computing: Management, Implementation and Security: John Rittinghouse*	3%
7	Students are able to describe the Utility of Cloud Computing	Evaluation Rubric	**Criteria:** Evaluation Rubric **Form of Assessment** : Participatory Activities	Lectures are conducted using the lecture and question and answer method for 2x50 minutes		**Material:** Utility Cloud Computing **References:** *1. Cloud Computing: Management, Implementation and Security: John Rittinghouse*	3%
8	Midterm exam	Evaluation Rubric	**Criteria:** Evaluation Rubric **Form of Assessment** : Participatory Activities, Tests	Mid-term exam via written exam for 2x50 minutes		**Material:** Library Questions **:** *1. Cloud Computing: Management, Implementation and Security: John Rittinghouse* **Material:** Library Questions **:** *2. Cloud Computing: A Practical Approach: Toby Velte*	20%
9	Students are able to describe Web Service Cloud Computing	Evaluation Rubric	**Criteria:** Evaluation Rubric **Form of Assessment** : Participatory Activities	Lectures are conducted using the lecture and question and answer method for 2x50 minutes		**Material:** Web Service Cloud Computing **References:** *1. Cloud Computing: Management, Implementation and Security: John Rittinghouse*	3%
10	Students are able to describe Cloud Computing Network Topology	Evaluation Rubric	**Criteria:** Evaluation Rubric **Form of Assessment** : Participatory Activities	Lectures are conducted using the lecture and question and answer method for 2x50 minutes		**Material:** Cloud Computing Network Topology **References:** *1. Cloud Computing: Management, Implementation and Security: John Rittinghouse*	3%
11	Students are able to describe Cloud Computing Software	Evaluation Rubric	**Criteria:** Evaluation Rubric **Form of Assessment** : Participatory Activities	Lectures are conducted using the lecture and question and answer method for 2x50 minutes		**Material:** Cloud Computing Software **References:** *2. Cloud Computing: A Practical Approach: Toby Velte*	3%

12	Students are able to describe Cloud Storage	Evaluation Rubric	**Criteria:** Evaluation Rubric **Form of Assessment** : Participatory Activities	Lectures are conducted using the lecture and question and answer method for 2x50 minutes		**Material:** Cloud Storage **References:** *1. Cloud Computing: Management, Implementation and Security: John Rittinghouse*	3%
13	Students are able to describe Distributed Storage	Evaluation Rubric	**Criteria:** Evaluation Rubric **Form of Assessment** : Participatory Activities	Lectures are conducted using the lecture and question and answer method for 2x50 minutes		**Material:** Distributed Storage **References:** *1. Cloud Computing: Management, Implementation and Security: John Rittinghouse*	3%
14	Students are able to describe Virtualization Technology in Cloud Computing	Evaluation Rubric	**Criteria:** Evaluation Rubric **Form of Assessment** : Participatory Activities	Lectures are conducted using the lecture and question and answer method for 2x50 minutes		**Material:** Virtualization Technology in Cloud Computing **References:** *1. Cloud Computing: Management, Implementation and Security: John Rittinghouse*	3%
15	Students are able to describe Cloud Computing Security	Evaluation Rubric	**Criteria:** Evaluation Rubric **Form of Assessment** : Participatory Activities	Lectures are conducted using the lecture and question and answer method for 2x50 minutes		**Material:** Cloud Computing Security **References:** *1. Cloud Computing: Management, Implementation and Security: John Rittinghouse*	11%
16	UAS	Evaluation Rubric	**Criteria:** Evaluation Rubric **Form of Assessment** : Test	The exam is carried out behind closed doors using a written exam method lasting 2 x 50 minutes		**Material:** Library Questions **:** *1. Cloud Computing: Management, Implementation and Security: John Rittinghouse* **Material:** Library Questions **:** *2. Cloud Computing: A Practical Approach: Toby Velte*	30%

Evaluation Percentage Recap: Case Study

No	Evaluation	Percentage
1.	Participatory Activities	60%
2.	Test	40%
		100%

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.