	Universitas Negeri Surabaya Faculty of Economics and Business Digital Business Undergraduate Study Program	Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
cloud computing	6120903035	Compulsory Study Program Subjects	T=0	P=0	ECTS=0	5	January 23, 2023

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
	Dr. Nanang Hoesen Hidroes Abbrori , Anita Safitri, M. Kom.	Riska Dhenabayu, S.Kom., M.M.	Hujjatullah Fazlurrahman, S.E., MBA.

Learning model: Project Based Learning

Program Learning Outcomes (PLO)

PLO study program that is charged to the course

Program Objectives (PO)

PO - 1	CPMK1 Students are able to explain, form opinions and differentiate regarding the Basic Concepts of Cloud Computing.
PO - 2	CPMK2 Students are able to study, evaluate and build Cloud Architecture and Resources
PO - 3	CPMK3 Students are able to analyze and provide considerations regarding the management of Cloud Computing

PLO-PO Matrix

P.O
PO-1
PO-2
PO-3

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																

Short Course Description: This course discusses and studies the basic theories and concepts of cloud computing, computing architecture, implementation of cloud computing, IAAS, SAAS and PAAS concepts, cloud computing development trends, concepts of securing cloud computing services, managing the use of cloud computing.

References

Main :

1. Rittinghouse , John. Cloud Computing : Management, Implementation and Security. Boca Raton, FL, USA: Taylor & Francis

Supporters:

	1. Jamil, M, dkk. 2016. Cloud Computing: Teori dan Aplikasi. Indonesia: Deepublish. 2. Afrianto, Dedy. 2017. The power of Own Cloud. : Andi Publishing 3. Surianarayanan , Chelliah. 2019. Essentials of Cloud Computing. Switzerland: Springer Nature Switzerland AG. 4. Borko Furht, Armando Escalante, 2010. Handbook of Cloud Computing: Springer
Supporting lecturer	Dr. Nanang Hoesen Hidroes Abbrori, S.T., M.T.I. Riska Dhenabayu, S.Kom., M.M. Anita Safitri, M. Kom.

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 explain, form opinions and differentiate regarding the Basic Concepts of Cloud Computing.	1.1.1 Appropriateness in explaining the definition of cloud computing 2.1.2 Suitability and accuracy in explaining and the ability to differentiate cloud models (public, private, hybrid)	**Criteria:** Holistic Rubric **Form of Assessment** : Participatory Activities		Discussion Lecture	**Material:** Cloud Computing **Bibliography:** *Rittinghouse, John. Cloud Computing: Management, Implementation and Security. Boca Raton, FL, USA: Taylor & Francis* **Material:** Cloud Computing **References:** *Jamil, M, et al. 2016. Cloud Computing: Theory and Applications. Indonesia: Deepublish.* **Material:** Cloud Computing **Reader:** *Afrianto, Dedy. 2017. The power of Own Cloud. : Andi Publishing* **Material:** Cloud Computing **Readers:** *Surianarayanan, Chelliah. 2019. Essentials of Cloud Computing. Switzerland: Springer Nature Switzerland AG.* **Material:** Cloud Computing **Bibliography:** *Borko Furht, Armando Escalante, 2010. Handbook of Cloud Computing: Springer*	10%

2	Students are able to explain, form opinions and differentiate regarding the Basic Concepts of Cloud Computing.	1.2.1. Accuracy and appropriateness in explaining the benefits and advantages of cloud services. 2.2.2. Accuracy and suitability in explaining and the ability to classify types of cloud services (SaaS, PaaS, and IaaS).	**Criteria:** Holistic Rubric **Form of Assessment** : Participatory Activities		Discussion Lecture	**Material:** Cloud Computing **Bibliography:** *Rittinghouse, John. Cloud Computing: Management, Implementation and Security. Boca Raton, FL, USA: Taylor & Francis* **Material:** Cloud Computing **References:** *Jamil, M, et al. 2016. Cloud Computing: Theory and Applications. Indonesia: Deepublish.* **Material:** Cloud Computing **Reader:** *Afrianto, Dedy. 2017. The power of Own Cloud. : Andi Publishing* **Material:** Cloud Computing **Readers:** *Surianarayanan, Chelliah. 2019. Essentials of Cloud Computing. Switzerland: Springer Nature Switzerland AG.* **Material:** Cloud Computing **Bibliography:** *Borko Furht, Armando Escalante, 2010. Handbook of Cloud Computing: Springer*	5%

3	Students are able to explain, form opinions and differentiate regarding the Basic Concepts of Cloud Computing.	1.3.1. Suitability in explaining the trend of cloud computing and its development in the business world in the future. 2.3.2. Suitability in explaining how cloud computing is implemented in the business world, what digital businesses do with cloud computing.	**Criteria:** Holistic Rubric **Form of Assessment** : Participatory Activities		Discussion Lecture	**Material:** Cloud Computing **Bibliography:** *Rittinghouse, John. Cloud Computing: Management, Implementation and Security. Boca Raton, FL, USA: Taylor & Francis* **Material:** Cloud Computing **References:** *Jamil, M, et al. 2016. Cloud Computing: Theory and Applications. Indonesia: Deepublish.* **Material:** Cloud Computing **Reader:** *Afrianto, Dedy. 2017. The power of Own Cloud. : Andi Publishing* **Material:** Cloud Computing **Readers:** *Surianarayanan, Chelliah. 2019. Essentials of Cloud Computing. Switzerland: Springer Nature Switzerland AG.* **Material:** Cloud Computing **Bibliography:** *Borko Furht, Armando Escalante, 2010. Handbook of Cloud Computing: Springer*	5%

4	Students are able to study, evaluate and design Cloud Computing Architecture and Resources using Microsoft Azure.	1.4.1. Suitability in explaining Microsoft Azure cloud computing architecture. 2.4.2. Suitability and accuracy in explaining the main components of the Microsoft Azure cloud computing architecture.	**Criteria:** Holistic Rubric **Form of Assessment** : Participatory Activities		Discussion Lecture	**Material:** Cloud Computing **Bibliography:** *Rittinghouse, John. Cloud Computing: Management, Implementation and Security. Boca Raton, FL, USA: Taylor & Francis* **Material:** Cloud Computing **References:** *Jamil, M, et al. 2016. Cloud Computing: Theory and Applications. Indonesia: Deepublish.* **Material:** Cloud Computing **Reader:** *Afrianto, Dedy. 2017. The power of Own Cloud. : Andi Publishing* **Material:** Cloud Computing **Readers:** *Surianarayanan, Chelliah. 2019. Essentials of Cloud Computing. Switzerland: Springer Nature Switzerland AG.* **Material:** Cloud Computing **Bibliography:** *Borko Furht, Armando Escalante, 2010. Handbook of Cloud Computing: Springer*	5%

5	Students are able to study, evaluate and design Cloud Computing Architecture and Resources using Microsoft Azure.	1. 5.1. Suitability and accuracy in explaining virtualization and data virtualization with Microsoft Azure 2. 5.2. Ability to practice and create virtual machines and virtual networks	**Criteria:** Holistic Rubric **Form of Assessment** : Participatory Activities		Discussion Lecture	**Material:** Cloud Computing **Bibliography:** *Rittinghouse, John. Cloud Computing: Management, Implementation and Security. Boca Raton, FL, USA: Taylor & Francis* **Material:** Cloud Computing **References:** *Jamil, M, et al. 2016. Cloud Computing: Theory and Applications. Indonesia: Deepublish.* **Material:** Cloud Computing **Reader:** *Afrianto, Dedy. 2017. The power of Own Cloud. : Andi Publishing* **Material:** Cloud Computing **Readers:** *Surianarayanan, Chelliah. 2019. Essentials of Cloud Computing. Switzerland: Springer Nature Switzerland AG.* **Material:** Cloud Computing **Bibliography:** *Borko Furht, Armando Escalante, 2010. Handbook of Cloud Computing: Springer*	5%

6	Students are able to study, evaluate and design Cloud Computing Architecture and Resources using Microsoft Azure.	1. 6.1. Appropriateness in explaining Azure cloud storage. 2. 6.2. Ability to practice and create virtual machines and virtual networks. 3. 6.3. Ability to practice, design and create cloud architecture and its components using Azure.	**Criteria:** Holistic Rubric **Form of Assessment** : Participatory Activities		Discussion Lecture	**Material:** Cloud Computing **Bibliography:** *Rittinghouse, John. Cloud Computing: Management, Implementation and Security. Boca Raton, FL, USA: Taylor & Francis* **Material:** Cloud Computing **References:** *Jamil, M, et al. 2016. Cloud Computing: Theory and Applications. Indonesia: Deepublish.* **Material:** Cloud Computing **Reader:** *Afrianto, Dedy. 2017. The power of Own Cloud. : Andi Publishing* **Material:** Cloud Computing **Readers:** *Surianarayanan, Chelliah. 2019. Essentials of Cloud Computing. Switzerland: Springer Nature Switzerland AG.* **Material:** Cloud Computing **Bibliography:** *Borko Furht, Armando Escalante, 2010. Handbook of Cloud Computing: Springer*	5%

7	Students are able to study, evaluate and design Cloud Computing Architecture and Resources using Microsoft Azure.	1.7.1. Appropriateness in explaining Azure cloud security. 2.7.2. Compatibility in designing and configuring Azure cloud security.	**Criteria:** Holistic Rubric **Form of Assessment** : Participatory Activities		Discussion Lecture	**Material:** Cloud Computing **Bibliography:** *Rittinghouse, John. Cloud Computing: Management, Implementation and Security. Boca Raton, FL, USA: Taylor & Francis* **Material:** Cloud Computing **References:** *Jamil, M, et al. 2016. Cloud Computing: Theory and Applications. Indonesia: Deepublish.* **Material:** Cloud Computing **Reader:** *Afrianto, Dedy. 2017. The power of Own Cloud. : Andi Publishing* **Material:** Cloud Computing **Readers:** *Surianarayanan, Chelliah. 2019. Essentials of Cloud Computing. Switzerland: Springer Nature Switzerland AG.* **Material:** Cloud Computing **Bibliography:** *Borko Furht, Armando Escalante, 2010. Handbook of Cloud Computing: Springer*	5%

8	Students prepare an Internship Activity Plan Report at the company		**Criteria:** Holistic Rubric **Form of Assessment** : Project Results Assessment / Product Assessment			**Material:** Cloud Computing **Bibliography:** *Rittinghouse, John. Cloud Computing: Management, Implementation and Security. Boca Raton, FL, USA: Taylor & Francis* **Material:** Cloud Computing **References:** *Jamil, M, et al. 2016. Cloud Computing: Theory and Applications. Indonesia: Deepublish.* **Material:** Cloud Computing **Reader:** *Afrianto, Dedy. 2017. The power of Own Cloud. : Andi Publishing* **Material:** Cloud Computing **Readers:** *Surianarayanan, Chelliah. 2019. Essentials of Cloud Computing. Switzerland: Springer Nature Switzerland AG.* **Material:** Cloud Computing **Bibliography:** *Borko Furht, Armando Escalante, 2010. Handbook of Cloud Computing: Springer*	10%

9	1.Students carry out internship activities at companies 2.Students are able to design cloud computing architecture and security according to real problems and needs in the business world	1.Able to analyze real problems and needs in the business world, specifically in the company where you are interning 2.Able to design cloud computing architecture according to the problems and needs of the internship company 3.Able to design cloud security according to the problems and needs of the internship company 4.Able to provide considerations for the implementation and management of cloud computing in accordance with the problems and needs of internship partners	**Criteria:** Holistic Rubric **Form of Assessment** : Assessment of Project Results / Product Assessment, Practices / Performance			**Material:** Cloud Computing **Bibliography:** *Rittinghouse, John. Cloud Computing: Management, Implementation and Security. Boca Raton, FL, USA: Taylor & Francis* **Material:** Cloud Computing **References:** *Jamil, M, et al. 2016. Cloud Computing: Theory and Applications. Indonesia: Deepublish.* **Material:** Cloud Computing **Reader:** *Afrianto, Dedy. 2017. The power of Own Cloud. : Andi Publishing* **Material:** Cloud Computing **Readers:** *Surianarayanan, Chelliah. 2019. Essentials of Cloud Computing. Switzerland: Springer Nature Switzerland AG.* **Material:** Cloud Computing **Bibliography:** *Borko Furht, Armando Escalante, 2010. Handbook of Cloud Computing: Springer*	5%

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16	Students prepare a Final Report on Internship Activities		**Criteria:** Holistic Rubric **Form of Assessment** : Assessment of Project Results / Product Assessment, Practices / Performance			**Material:** Cloud Computing **Bibliography:** *Rittinghouse, John. Cloud Computing: Management, Implementation and Security. Boca Raton, FL, USA: Taylor & Francis* **Material:** Cloud Computing **References:** *Jamil, M, et al. 2016. Cloud Computing: Theory and Applications. Indonesia: Deepublish.* **Material:** Cloud Computing **Reader:** *Afrianto, Dedy. 2017. The power of Own Cloud. : Andi Publishing* **Material:** Cloud Computing **Readers:** *Surianarayanan, Chelliah. 2019. Essentials of Cloud Computing. Switzerland: Springer Nature Switzerland AG.* **Material:** Cloud Computing **Bibliography:** *Borko Furht, Armando Escalante, 2010. Handbook of Cloud Computing: Springer*	15%

Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
1.	Participatory Activities	40%
2.	Project Results Assessment / Product Assessment	50%
3.	Practice / Performance	10%
		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** abilities in the process and student learning outcomes are specific and measurable statements that identify the abilities 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.