			Document Code
(logo UNESA)	**Universitas Negeri Surabaya** **Faculty of Engineering,** **Bachelor of Information Systems Study Program**		

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
Computer network	5720103015		**T=3**	**P=0**	**ECTS=4.77**	3	July 17, 2024

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
	....	....	I Kadek Dwi Nuryana, S.T., M.Kom.

Learning model	Project Based Learning

Program Learning Outcomes (PLO)	PLO study program that is charged to the course	
	PLO-24	Mastering concepts and skills in computer programming languages;
	PLO-29	Able to apply knowledge in the fields of computing, computer networks and programming in accordance with scientific disciplines;
	Program Objectives (PO)	
	PO - 1	Students have knowledge of the basics of devices and protocol mechanisms in computer networks and have skills in calculating IP addresses and forming subnets.
	PO - 2	Students have the skills to configure network applications and have basic knowledge of wireless networks
	PLO-PO Matrix	

P.O	PLO-24	PLO-29
PO-1		
PO-2		

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																

Short Course Description	This course discusses the basics of constituent components as well as layers in the OSI model and TCP/IP suite. The constituent components include devices, data transmission mechanisms, and the arrangement of packages in the encapsulation process. The deepening of TCP/IP material emphasizes the IPv4 addressing method for each class as well as preparing subnets according to standards, implementing the application layer and introducing Wireless Networks.

References	Main :	
	1. James; Ross, Keith W. 2013.Computer Networking: A Top-down Approach, 6th Edition. USA: PearsonEducation, Inc. 2. Palmer, Michael. 2013.Hands-on: Networking Fundamental. USA: Cengage Learning.	
	Supporters:	

Supporting lecturer	Agus Prihanto, S.T., M.Kom. I Gusti Lanang Putra Eka Prismana, S.Kom., 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	Understand the concept of computer networks	1. Explains the basic concepts of Computer Networks including: interconnection, types of computer networks and topology in computer networks in networks 2. Explain the concept of protocols in networks 3. Explain the OSI model, and TCP/IP. 4. Defines the function of each layer in the three models and the protocols involved in each layer 5. Analyze the differences between the OSI and TCP/IP models	**Form of Assessment** : Participatory Activities	Approach: Scientific Model: Cooperative Method: Discussion, Presentation 2 X 50	Identify the parts of a computer network and their performance properties so that you can compile a summary of the 2 X 50 concept	**Material:** Computer network concepts **References:** *James; Ross, Keith W. 2013. Computer Networking: A Top-down Approach, 6th Edition. USA: PearsonEducation, Inc.*	2%
2	Understand the concept of computer network architecture and protocols.	1. Explain the concept of Computer Network Architecture 2. Explain the meaning of protocol 3. Explain the role of protocols in network communications 4. Distinguish between the OSI layer and TCP/IP models.	**Form of Assessment** : Participatory Activities	Approach: Scientific Model: Cooperative Method: Discussion, Presentation 2 X 50	Identify computer network architecture and protocols and present the results of 2 X 50 observations	**Material:** Concepts of computer network architecture and protocols **References:** *Palmer, Michael. 2013. Hands-on: Networking Fundamentals. USA: Cengage Learning.*	2%
3	Understand the Physical layer and components that make up a computer network	1. Distinguish the physical components of a Computer Network. 2. Applying physical topology and cabling in Computer Networks 3. Measuring Computer Network performance	**Form of Assessment** : Participatory Activities	Approach: Scientific Model: Cooperative Method: Discussion, Presentation 2 X 50	Identify the concepts and components that make up the Physical layer which will be presented later 2 X 50	**Material:** Physical Layers and components that make up a computer network. **Reference:** *James; Ross, Keith W. 2013. Computer Networking: A Top-down Approach, 6th Edition. USA: PearsonEducation, Inc.*	2%
4	Understand the concepts and working mechanisms of the main Data Link and Transport Layer protocols	1. Understand the role of protocols in the Data Link Layer 2. Distinguish between TCP and UDP protocols 3. Describes how TCP and UDP work briefly	**Form of Assessment** : Participatory Activities	Approach: Scientific Model: Cooperative Method: Discussion, Presentation 1 X 50	Identify the concepts and working mechanisms of the main data link and transport protocols and present the results of observations 1 X 50	**Material:** Data Link and Transport Layer **References:** *James; Ross, Keith W. 2013. Computer Networking: A Top-down Approach, 6th Edition. USA: PearsonEducation, Inc.*	2%

5	Understand the concept and structure of IPv4 addresses	1. Explain the classes in IPv4 addresses 2. Able to convert IPv4 addresses from decimal to binary and vice versa 3. Applying addressing to the network using IPV4	**Form of Assessment** : Participatory Activities	Approach: Scientific Model: Cooperative Method: Discussion, Presentation 4 X 50	Observe slides on the concept and arrangement of IPv4 addresses and have group discussions about the concept material and arrangement of IPv4 addresses 4 X 50	**Material:** IPv4 Address **Bibliography:** *Palmer, Michael. 2013.Hands-on: Networking Fundamentals. USA: Cengage Learning.*	2%
6	Understand the concept and structure of IPv4 addresses	1. Explain the classes in IPv4 addresses 2. Able to convert IPv4 addresses from decimal to binary and vice versa 3. Applying addressing to the network using IPV4	**Form of Assessment** : Participatory Activities	Approach: Scientific Model: Cooperative Method: Discussion, Presentation 4 X 50	Identify and summarize the concept of IPv4 address structure and present it 4 X 50	**Material:** IPv4 Address **Bibliography:** *Palmer, Michael. 2013.Hands-on: Networking Fundamentals. USA: Cengage Learning.*	2%
7	Understand the concept and structure of IPv4 addresses	1. Explain the classes in IPv4 addresses 2. Able to convert IPv4 addresses from decimal to binary and vice versa 3. Applying addressing to the network using IPV4	**Form of Assessment** : Participatory Activities	Approach: Scientific Model: Cooperative Method: Discussion, Presentation 4 X 50	Develop a sub-network addressing process and present the results of 4 X 50 observations	**Material:** Sub-network addressing **Bibliography:** *James; Ross, Keith W. 2013. Computer Networking: A Top-down Approach, 6th Edition. USA: PearsonEducation, Inc.*	2%
8	UTS		**Form of Assessment** : Test	UTS 3 X 50	UTS 3 X 50	**Material:** UTS **Library:**	20%
9	Understand the routing process	1. Explain the principles of routing	**Form of Assessment** : Participatory Activities	Approach: Scientific Model: Cooperative Method: Discussion, Presentation 4 X 50	Observe the routing process slide and identify the 4 X 50 routing addressing process	**Material:** Routing **Reader:** *James; Ross, Keith W. 2013. Computer Networking: A Top-down Approach, 6th Edition. USA: PearsonEducation, Inc.*	2%
10	Understand the routing process	1. Explain the principles of routing	**Form of Assessment** : Participatory Activities	Approach: Scientific Model: Cooperative Method: Discussion, Presentation 4 X 50	Develop the routing addressing process and present the results of 4 X 50 observations	**Material:** Routing **Reader:** *James; Ross, Keith W. 2013. Computer Networking: A Top-down Approach, 6th Edition. USA: PearsonEducation, Inc.*	2%
11	Understand the concepts and working mechanisms of the TCP/IP application layer	1. Explain the concept of network application architecture 2. Briefly describes how HTTP, DNS, DHCP, and FTP work	**Form of Assessment** : Participatory Activities	Approach: Scientific Model: Cooperative Method: Discussion, Presentation 2 X 50	Identify the concepts and working mechanisms of the TCP/IP application layer and present the results of 2 X 50 observations	**Material:** Working mechanisms of the TCP/IP application layer. **Reader:** *James; Ross, Keith W. 2013. Computer Networking: A Top-down Approach, 6th Edition. USA: PearsonEducation, Inc.*	2%
12	Able to apply Application Layer configuration	1. Apply DHCP configuration to the network 2. Apply HTTP configuration to the network 3. Implement FTP and file sharing configuration on the network.	**Form of Assessment** : Participatory Activities	Approach: Scientific Model: Cooperative Method: Discussion, Presentation 4 X 50	Observe the application layer configuration process slide and identify the 4 X 50 application layer configuration process	**Material:** Application Layer Configuration **Reference:** *Palmer, Michael. 2013.Hands-on: Networking Fundamentals. USA: Cengage Learning.*	2%

No	Sub-PO	Indicators	Form of Assessment	Learning Method	Assessment Criteria	Material/Reference	Weight
13	Able to apply Application Layer configuration	1. Apply DHCP configuration to the network 2. Apply HTTP configuration to the network 3. Implement FTP and file sharing configuration on the network.	**Form of Assessment** : Participatory Activities	Approach: Scientific Model: Cooperative Method: Discussion, Presentation 4 X 50	Configure the application layer and present the results of the 4 X 50 configuration	**Material:** Application Layer Configuration **Reference:** *Palmer, Michael. 2013.Hands-on: Networking Fundamentals. USA: Cengage Learning.*	2%
14	Understand network applications on Linux and Windows Operating Systems	1. Explain the network features of the Linux and Windows operating systems 2. Implement networking features on Linux and Windows operating systems	**Form of Assessment** : Participatory Activities	Approach: Scientific Model: Cooperative Method: Discussion, Presentation 2 X 50	Compiling network applications on Linux and Windows 2 X 50	**Material:** Understanding network applications on the Linux and Windows Operating Systems **Reader:** *James; Ross, Keith W. 2013. Computer Networking: A Top-down Approach, 6th Edition. USA: PearsonEducation, Inc.*	3%
15	Understand the basic concepts of wireless networks and network security	1. Explain the working principle of WiFi 2. Explain the working principle of Bluetooth 3. Explain the concept of network security.	**Form of Assessment** : Participatory Activities	Approach: Scientific Model: Cooperative Method: Discussion, Presentation 2 X 50	Develop basic concepts of wireless networks and present the results of 2 X 50 observations	**Material:** Basic concepts of wireless networks and network security **Reader:** *James; Ross, Keith W. 2013. Computer Networking: A Top-down Approach, 6th Edition. USA: PearsonEducation, Inc.*	3%
16	UAS		**Form of Assessment** : Project Results Assessment / Product Assessment	UAS 3 X 50	UAS 3 X 50	**Material:** UAS **Literature:**	50%

Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
1.	Participatory Activities	30%
2.	Project Results Assessment / Product Assessment	50%
3.	Test	20%
		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.