

Course Code	TKIE163101
Course Name	Network and Data Communications
Course Instructors	Sujoko Sumaryono; Wahyu Dewanto; I Wayan Mustika; Widyawan
Course Type	Required
Course Classification	Engineering Topics
Credit / Contact Hour per Week	2 / 100 minutes per Week
Course Description	After following this course students are expected to have sufficient principle to design, analyze, and configure the data network system to develop knowledge in this field independently.
Prerequisites Courses	-
Covered Student Outcome	Fundamental and Engineering Knowledge (a) Development of Engineering Solution (b) Modern Tools Utilization (e)
Learning Outcome	<ol style="list-style-type: none"> 1. Students are able to explain the relevance of Network and Data Communication courses for the next course and its contribution to the communication system and lecture rules used. 2. Students are able to explain the basic principles of communication and aspects that need to be considered in data transmission. 3. Students are able to explain the importance of data received by the recipient in a safe and intact state with a simple encoding method. 4. Students are able to explain various aspects of data communication digitally. 5. Students are able to explain various aspects and signalling protocol over the data path. 6. Students are able to analyze and configure communication channels efficiently with the multiplexing process.
Topic	<p>Topic 1 : Introduction</p> <ul style="list-style-type: none"> - Models of communication in general <p>Topic 2: Aspects in data transmission</p> <ul style="list-style-type: none"> - Concepts and terminology in data transmission - Transmission of digital and analog data - Media transmission and constraints - Bandwidth and data rate <p>Topic 3: Simple data encoding</p> <ul style="list-style-type: none"> - Encoding of Digital data-digital signal - Encoding of digital data-analog signal - Encoding of analog data digital signal - Encoding of Analog-data analog signal <p>Topic 4: Digital data communication techniques</p> <ul style="list-style-type: none"> - Asynchronous and synchronous transmission - Error detection techniques - The interface and its process <p>Topic 5 : Full data path</p> <ul style="list-style-type: none"> - Network configuration and topology - Basic Flow control and Error control - Data path control protocol <p>Topic 6 : Multiplexing Process</p> <ul style="list-style-type: none"> - Frequency Division Multiplexing, Time Division, and Code Division <p>Topic 7: The basic network of data communications</p> <ul style="list-style-type: none"> - Network communication and various switching - Basics of Circuit switching and Packet Switching - Basics of Signalling in communication <p>Topic 8 : Basics of Local and Metropolitan Area Networks</p> <ul style="list-style-type: none"> - LAN / MAN technology - A wide range of network topologies and protocols - Media access control protocol

	<p>Topic 9 : Packet Switching in Networks)</p> <ul style="list-style-type: none"> - Characteristics and performance - Various Routing Techniques - Various Flow Control Techniques <p>Topic 10 : Network Protocols</p> <ul style="list-style-type: none"> - OSI Model Protocol and TCP / IP - X-25, Frame Relay and Cell Relay <p>Topic 11: Internetworking</p> <ul style="list-style-type: none"> - The principle of Internetworking - Network Connection Devices - Backbone Network and Virtual LAN <p>Topic 12 : Network Addressing</p> <ul style="list-style-type: none"> - IPv4 and IPv6 - Domain name system 												
Direct Assessment	<table border="1"> <thead> <tr> <th>Direct Assessment Plan</th> <th>Measured Learning Outcome</th> </tr> </thead> <tbody> <tr> <td>Mid Exam</td> <td>LO1, LO3</td> </tr> <tr> <td>Final Exam</td> <td>LO3, LO4,LO5</td> </tr> <tr> <td>Quiz and assignment</td> <td>LO2, LO4</td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> </tbody> </table>	Direct Assessment Plan	Measured Learning Outcome	Mid Exam	LO1, LO3	Final Exam	LO3, LO4,LO5	Quiz and assignment	LO2, LO4				
Direct Assessment Plan	Measured Learning Outcome												
Mid Exam	LO1, LO3												
Final Exam	LO3, LO4,LO5												
Quiz and assignment	LO2, LO4												
Indirect Assesment	Questionnaire and direct communication												
References	<p>[1] Stallings, W., 1994, Data and Computer Communications, 4th Edition, Prentice Hall. International Editions, Singapore</p> <p>[2] Forouzan, B.A., 2007, Data Communications and Networking, 4th Edition, McGraw Hill International Edition, Singapore</p>												