



INSTITUT TEKNOLOGI SEPULUH NOPEMBER (ITS)
FAKULTAS TEKNOLOGI ELEKTRO DAN INFORMATIKA CERDAS
DEPARTEMEN TEKNIK ELEKTRO
Program Studi Magister (S2) Teknik Elektro

1	Nama Mata Kuliah / Course Name	: Teknik Jaringan Komunikasi / <i>Communication Network Engineering</i>
2	Course Code	: EE235232
3	Kredit / Credits	: 3 SKS
4	Semester / Semester	: 2

Deskripsi Mata Kuliah / Course Description

Mempelajari teori, perancangan, penerapan dan pengelolaan teknologi jaringan antar workstation di kantor (LAN), antar kantor dalam area metropolitan (MANs), di seluruh kota (WAN) dan juga jaringan internasional (GAN). Juga tentang jaringan kabel dan nirkabel, termasuk teknologi akses Internet broadband, teknologi interkoneksi, konvergensi jaringan, cara pengelolaan/konfigurasi peralatan jaringan dan layanan di berbagai lingkungan jaringan.

Studying the theory, design, implementation and management of network technology between workstations in the office (LAN), between offices in metropolitan areas (MANs), across cities (WAN) and also international networks (GAN). Also about wired and wireless networks, including broadband Internet access technology, interconnection technology, network convergence, how to manage/configure network equipment and services in various network environments.

Capaian Pembelajaran Lulusan (CPL) Yang Dibebankan Mata Kuliah / Program Learning Outcomes Charged to The Course

1. (CPL-02) Mampu mengembangkan dan memecahkan permasalahan ipteks dalam bidang keilmuannya melalui riset dengan pendekatan inter atau multidisiplin hingga menghasilkan karya inovatif dan teruji, serta mendapat pengakuan nasional dan internasional.

(PLO-02) Able to develop and solve science and technology problems in their scientific fields through research with an inter or multidisciplinary approach to produce innovative and tested work, and receive national and international recognition.
2. (CPL-04) Mampu menguasai konsep, prinsip keilmuan secara komprehensif, prinsip rekayasa, dan pengetahuan faktual tentang Teknologi Informasi untuk mengembangkan prosedur dan strategi yang diperlukan pada analisis dan perancangan sistem terkait bidang Teknik Elektro.

(PLO-04) Able to master concepts, scientific principles comprehensively, engineering principles, and factual knowledge about Information Technology to develop procedures and strategies required in the analysis and design of systems related to the field of Electrical Engineering.

3. (CPL-05) Mampu mengimplementasikan penyelesaian permasalahan rekayasa yang memperhatikan faktor-faktor ekonomi, kesehatan dan keselamatan publik, kultural, sosial dan lingkungan.

(PLO-05) Able to implement engineering problem solving that takes into account economic, public health and safety, cultural, social and environmental factors.

Capaian Pembelajaran Mata Kuliah / Course Learning Outcomes

1. Menguasai konsep dasar dasar-dasar jaringan, protokol TCP / IP (pengalamatan, routing dan transport), keamanan Internet. / *Master the basic concepts of networking fundamentals, TCP / IP protocols (addressing, routing and transport), Internet security.*
2. Mampu menganalisis kualitas layanan dalam jaringan internet dan melakukan trouble shooting jika terjadi permasalahan dalam jaringan. / *Able to analyze the quality of service in an internet network and perform troubleshooting if problems occur in the network.*
3. Mampu menggunakan tool dan software admin jaringan untuk manajemen jaringan termasuk security jaringan dan pembagian bandwidth / *Able to use network admin tools and software to manage networks including network security and bandwidth sharing.*
4. Menunjukkan sikap bertanggungjawab atas pekerjaan di bidang keahliannya secara mandiri. / *Demonstrate a responsible attitude towards work in his/her field of expertise independently.*
5. Mampu bekerja sama untuk dapat memanfaatkan semaksimal mungkin potensi yang dimiliki. / *Able to work together to make the most of the potential that is available.*

Pokok Bahasan / Contents

1. Konsep, arsitektur dan protokol jaringan / *Network concepts, architecture and protocols*
2. Topologi fisik jaringan / *Physical network topology*
3. Perangkat-perangkat jaringan / *Network devices*
4. 7 layer OSI dan 4 layer TCP/IP / *7 OSI layers and 4 TCP/IP layers*
5. IP address, subnetting dan Domain name system / *IP address, subnetting and Domain name system*
6. Routing / *Routing*
7. Manajemen, monitoring dan manajemen trafik jaringan / *Network traffic management, monitoring and management*
8. Kualitas layanan jaringan (QOS) / *Network quality of service (QOS)*
9. Troubleshooting jaringan / *Network troubleshooting*
10. Keamanan jaringan / *Network security*

Prasyarat / Pre-requisite
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Pustaka / Reference
Utama / <i>Primary</i>: 1. D. Comer, Internetworking With TCP/IP, Volume 1: Principles Protocols, and Architecture, 5th edition, 2006. 2. D. Medhi and K. Ramasamy, Network Routing, Mogran Kaufmann, 2007. 3. M. Hassan and R. Jain, High Performance TCP/IP Networking: Concepts, Issues, and Solutions, Prentice-Hall, 2003. 4. G. Varghese, Network Algorithmics, Mogran Kaufmann, 2004. Pendukung / <i>Supporting</i>: 1. Forouzan, B. A., Fegan, S. C., & Coombs, C. (2006). "Data Communications and Networking." McGraw-Hill. 2. Stallings, W. (2013). "Data and Computer Communications." Pearson.