



INSTITUT TEKNOLOGI SEPULUH NOPEMBER (ITS)  
FAKULTAS TEKNOLOGI ELEKTRO DAN INFORMATIKA CERDAS  
DEPARTEMEN TEKNIK ELEKTRO  
Program Studi Sarjana (S1) Teknik Elektro

*INSTITUT TEKNOLOGI SEPULUH NOPEMBER (ITS)  
FACULTY OF INTELLIGENT ELECTRICAL & INFORMATICS TECHNOLOGY  
DEPARTMENT OF ELECTRICAL ENGINEERING  
Bachelor Degree Program in Electrical Engineering*

1	<b>Nama Mata Kuliah / Course Name</b> : Rekayasa Internet / <i>Internet Engineering</i>
2	<b>Kode Mata Kuliah / Course Code</b> : EL234501
3	<b>Kredit / Credits</b> : 3 SKS
4	<b>Semester / Semester</b> : 7

#### **Deskripsi Mata Kuliah / Course Description**

Matakuliah Rekayasa Internet membahas masalah rekayasa internet secara umum yang mencakup Taksonomi, karakteristik, prinsip dan sejarah internet, layanan dan aplikasi internet, keuntungan dan resikonya dari layanan dan aplikasi internet. Pada mata kuliah ini juga dibahas lebih dalam yang dalam terkait rekayasa internet mencakup konsep client-server, arsitektur Internet, Protocol Internet (IP), Routing (statis dan dinamis), IP Switching, dan Mobility. / *The Internet Engineering course discusses the general aspects of internet engineering, including its taxonomy, characteristics, principles, and history. It covers internet services and applications, their benefits, and associated risks. The course delves deeper into internet engineering, encompassing topics like the client-server concept, internet architecture, Internet Protocol (IP), routing (static and dynamic), IP switching, and mobility.*

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

CPL 1 Mampu menunjukkan sikap dan karakter yang mencerminkan: ketakwaan kepada Tuhan Yang Maha Esa, etika dan integritas, berbudi pekerti luhur, peka dan peduli terhadap masalah sosial dan lingkungan, menghargai perbedaan budaya dan kemajemukan, menjunjung tinggi penegakan hukum mendahulukan kepentingan bangsa dan masyarakat luas, melalui kreatifitas dan inovasi, eksekusi, kepemimpinan yang kuat, sinergi, dan potensi lain yang dimiliki untuk mencapai hasil yang maksimal / *Being able to demonstrate attitudes and characteristics that reflect: devotion to the One Almighty God, ethics and*

*integrity, noble virtues, sensitivity and care towards social and environmental issues, appreciation of cultural diversity and inclusivity, upholding the rule of law with a priority on the interests of the nation and the wider community, through creativity and innovation, excellence, strong leadership, synergy, and other potentials possessed to achieve maximum results.*

CPL 3 Mampu mengelola pembelajaran diri sendiri, dan mengembangkan diri sebagai pribadi pembelajar sepanjang hayat untuk bersaing di tingkat nasional, maupun internasional, dalam rangka berkontribusi nyata untuk menyelesaikan masalah dengan mengimplementasikan teknologi informasi dan komunikasi dan memperhatikan prinsip keberlanjutan serta memahami kewirausahaan berbasis teknologi / *Able to manage one's own learning and continually self-develop as a lifelong learner to compete at the national and international levels, with the goal of making a tangible contribution to problem-solving by implementing information and communication technology and considering sustainability principles, as well as understanding technology-based entrepreneurship.*

CPL 5 Mampu mendesain komponen, sistem, dan proses yang logis dan realistis sesuai dengan spesifikasi yang ditentukan dengan mempertimbangkan aspek keselamatan, sosial, budaya, lingkungan, dan ekonomi / *Able to design components, systems, and processes that are logical and realistic in accordance with specified specifications, while considering safety, social, cultural, environmental, and economic aspects.*

CPL 6 Mampu mengkaji dan memanfaatkan matematika, ilmu pengetahuan alam dan teknologi serta mengidentifikasi, memformulasikan dan menyelesaikan permasalahan di bidang teknik elektro / *Able to evaluate and utilize mathematics, natural sciences, and technology, as well as identify, formulate, and solve problems in the field of electrical engineering.*

#### **Capaian Pembelajaran Mata Kuliah / Course Learning Outcomes**

1. Mampu menjelaskan konsep dasar dasar-dasar jaringan, protokol TCP / IP (pengalamatan, routing dan transport), pemrograman jaringan, pemrograman web, layanan web, server web dan keamanan / *Capable of explaining the basic concepts of networks, TCP/IP protocols (addressing, routing, and transport), network programming, web programming, web services, web servers, and security.*
2. Mahasiswa akan dapat membangun Jaringan Area Lokal sederhana (LAN) / *Students will be able to build a simple Local Area Network (LAN).*
3. Melakukan konfigurasi dasar untuk router dan switch, dan menerapkan skema pengalamatan IP. / *Performing basic configuration for routers and switches and implementing IP addressing schemes.*
4. Mampu mengkonfigurasi peralatan-peralatan jaringan internet seperti router dan server / *Able to configure internet network equipment such as routers and servers.*
5. Mampu menggunakan tool dan software admin jaringan untuk manajemen jaringan termasuk security jaringan dan pembagian bandwidth / *Capable of using network administration tools and software to manage networks, including network security and bandwidth allocation.*

**Pokok Bahasan / Contents**

1. Konsep dan sejarah internet / *Internet Concepts and History*
2. Client server
3. Arsitektur Internet / *Internet Architecture*
4. Protocol Internet / *Internet Protocols*
5. Routing
6. IP Switching
7. Mobility

**Prasyarat / Pre-requisite****Pustaka / Reference**

1. D. Comer, Internetworking With TCP/IP, Volume 1: Principles Protocols, and Architecture, 5th edition, 2006.
2. D. Medhi and K. Ramasamy, Network Routing, Mognan Kaufmann, 2007.
3. G. Varghese, Network Algorithmics, Mognan Kaufmann, 2004.
4. M. Hassan and R. Jain, High Performance TCP/IP Networking: Concepts, Issues, and Solutions, Prentice-Hall, 2003.