	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***	:	Jaringan Komputer Modern / *Modern Computer Networks*
2	**Course Code**	:	EE235151
3	**Kredit / *Credits***	:	3 SKS
4	**Semester / *Semester***	:	1

Deskripsi Mata Kuliah / *Course Description*

Mata kuliah ini mempelajari komputer modern, protokol dan teknologi internet of things yaitu teknologi terbaru pada bidang jaringan komputer yaitu kemampuan komunikasi tanpa memerlukan interaksi manusia ke manusia atau manusia ke komputer. IoT dapat tersusun dari beberapa sensor-sensor node yang dilengkapi oleh pemroses data, memori, baterai dan peralatan komunikasi wireless (Wireless Sensor Node/WSN). Sensor node tersebut mengirim data ke Sink dan sink mengirim data ke Server atau Cloud Storage melalui jaringan internet.

This course studies modern computers, protocols and internet of things technology, namely the latest technology in the field of computer networks, namely the ability to communicate without requiring human-to-human or human-to-computer interaction. IoT can be composed of several sensor nodes equipped with data processors, memory, batteries and wireless communication equipment (Wireless Sensor Node/WSN). The sensor node sends data to the Sink and the sink sends data to the Server or Cloud Storage via the internet network.

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-08) Mampu mengambil keputusan dalam konteks menyelesaikan masalah pengembangan ilmu pengetahuan dan teknologi yang memperhatikan dan menerapkan nilai humaniora berdasarkan kajian analisis atau eksperimental terhadap informasi dan data.

   (PLO-08) able to make decisions in the context of solving problems in the development of science and technology that pay attention to and apply humanities values based on analytical or experimental studies of information and data.

Capaian Pembelajaran Mata Kuliah / *Course Learning Outcomes*

1. Menguasai konsep jaringan komputer. / *Mastering the concept of computer networks.*
2. Menguasai konsep sensor networks. / *Mastering the concept of sensor networks.*
3. Mahasiswa mampu menjalankan program pada perangkat embedded. / *Students are able to run programs on embedded devices.*
4. Menguasai pemrograman dalam jaringan / *Mastering programming in networks*
5. Menguasai konsep cloud computing. / *Master the concept of cloud computing.*
6. Menguasai konsep aplikasi jaringan komputer modern / *Mastering the concept of modern computer network applications*

Pokok Bahasan / *Contents*

1. Internet dan Internet of Things: layers, protocol, paket, servis, kinerja paket jaringan , sensor networks./ *Internet and Internet of Things: layers, protocols, packets, services, network packet performance, sensor networks.*
2. Transport services: TCP, UDP, pemprograman skoet. / *Transport services: TCP, UDP, skoet programming.*
3. Network layer: algoritma routing,(Link, DV), IP-addresses, DNS, NAT dan router. / *Network layer: routing algorithms, (Link, DV), IP-addresses, DNS, NAT and routers.*
4. Local Area Networks, MAC level, link protocols. / *Local Area Networks, MAC level, link protocols.*
5. Jaringan bergerak: roaming dan handoffs, mobile IP. / *Mobile networks: roaming and handoffs, mobile IP.*
6. IoT: Aplikasi dan aristektur, kasus studi pada industry */ IoT: Applications and architectures, case studies in industry*

Prasyarat / *Pre-requisite*

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Pustaka / *Reference*

Utama / *Primary*:

1. Jan Holler, Vlasios Tsiatsis, Catherine Mulligan, Stefan Avesand, Stamatis Karnouskos, David Boyle, “From Machine-to-Machine to the Internet of Things: Introduction to a New Age of Intelligence”, 1st Edition, Academic Press, 2014.