



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

1	Nama Mata Kuliah / <i>Course Name</i>	: Komputasi Awan / <i>Cloud Computing</i>
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2	Course Code	: EE255251
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3	Kredit / Credits	: 3 SKS
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4	Semester / Semester	: 2
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Deskripsi Mata Kuliah / Course Description

Pada mata kuliah ini, mahasiswa akan mempelajari komputasi cloud, mulai dari aplikasi dan administrasi hingga pemrograman dan infrastruktur. Sasaran utama adalah teknik pemrograman paralel untuk komputasi cloud dan sistem terdistribusi berskala besar yang membentuk infrastruktur cloud. Topiknya meliputi komputasi cloud secara garis besar, sistem cloud, pemrosesan paralel cloud, sistem penyimpanan terdistribusi, virtualisasi, keamanan di sistem cloud, dan sistem operasi multicore.

In this course, students will learn cloud computing, from applications and administration to programming and infrastructure. The main focus is parallel programming techniques for cloud computing and large-scale distributed systems that form the cloud infrastructure. Topics include cloud computing in general, cloud systems, cloud parallel processing, distributed storage systems, virtualization, security in cloud systems, and multicore operating systems.

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

1. (CPL-02) Mampu mengembangkan teori/ konsepsi/ gagasan baru dan memecahkan permasalahan ipteks dalam bidang keilmuan nya melalui riset dengan pendekatan inter, multi dan transdisiplin hingga menghasilkan karya kreatif, original, dan teruji, serta mendapat pengakuan nasional dan internasional.

(PLO-02) Able to develop new theories/concepts/ideas and solve science and technology problems in their scientific fields through research with inter, multi and transdisciplinary approaches to produce creative, original and tested works, and receive national and international recognition.

2. (CPL-03) 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 memperhatikan prinsip keberlanjutan.

(PLO-03) Able to manage self-learning, and develop oneself as a lifelong learner to compete at national and international levels, in order to make a real contribution to solving problems while paying attention to the principle of sustainability.

3. (CPL-04) Mampu menguasai filosofi yang mendasari konsep, prosedur, prinsip keilmuan, prinsip rekayasa, dan pengetahuan faktual untuk mengembangkan prosedur dan strategi yang diperlukan pada analisis dan perancangan sistem terkait bidang teknik elektro menggunakan teknologi informasi dan komunikasi. <i>(PLO-04) Able to master the philosophy underlying concepts, procedures, scientific principles, engineering principles, and factual knowledge to develop procedures and strategies required in the analysis and design of systems related to electrical engineering using information and communication technology.</i>
Capaian Pembelajaran Mata Kuliah / Course Learning Outcomes
1. Mampu memahami konsep dasar komputasi awan, evolusi, paradigma, penerapan, manfaat, serta tantangannya saat ini dan masa depan. / <i>Able to understand the basic concepts of cloud computing, evolution, paradigms, implementation, benefits, and current and future challenges.</i> 2. Mampu menguasai konsep dan prinsip dalam desain data center. / <i>Able to master the concepts and principles in data center design.</i> 3. Mampu menguasai teknik pengelolaan cloud dan penerapan perangkat lunak cloud. / <i>Able to master cloud management techniques and cloud software implementation.</i> 4. Mampu menguasai teknologi penyimpanan awan dan sistem file terdistribusi yang relevan. / <i>Able to master relevant cloud storage and distributed file system technologies.</i> 5. Mampu menguasai database NoSQL dan penyimpanan objek. / <i>Able to master NoSQL databases and object storage.</i> 6. Mampu menguasai model pemrograman berbasis cloud. / <i>Able to master cloud-based programming models.</i>
Pokok Bahasan / Contents
1. Pengenalan Cloud Computing / <i>Pengenalan Cloud Computing</i> 2. Arsitektur dan jenis layanan Cloud Computing / <i>Arsitektur dan jenis layanan Cloud Computing</i> 3. Cloud Computing Security / <i>Cloud Computing Security</i> 4. Cloud Computing Security 2 / <i>Cloud Computing Security 2</i> 5. Distributed Storage / <i>Distributed Storage</i> 6. Distributed Shared Memory / <i>Distributed Shared Memory</i> 7. Virtualization / <i>Virtualization</i> 8. Distributed File System / <i>Distributed File System</i> 9. Cluster Management / <i>Cluster Management</i> 10. Container / <i>Container</i> 11. Map Reduce / <i>Map Reduce</i> 12. Data Center / <i>Data Center</i>
Prasyarat / Pre-requisite
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Pustaka / Reference
Utama / <i>Primary:</i> 1. Cloud Computing : Management, Implementation and Security : John Rittinghouse 2. Cloud Computing : A Practical Approach : Toby Velte 3. Introducing Windows Azure : Henry Li