



KURIKULUM 2016 PROGRAM STUDI S1 SISTEM KOMPUTER

CURRICULUM 2016
BACHELOR PROGRAM OF COMPUTER SYSTEMS



PENGESAHAN

APPROVAL

Kurikulum 2016

Program Studi S1 Sistem Komputer

The Curriculum of 2016
Bachelor Program of Sistem Komputer

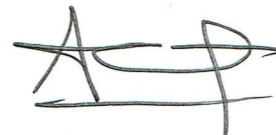
Bandung, Mei 2016

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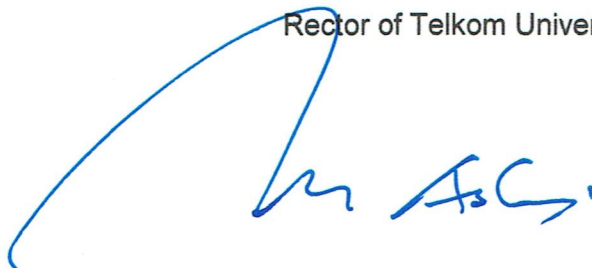
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PENGANTAR

INTRODUCTION

Buku kurikulum ini berisi sejarah, deskripsi, profil lulusan, capaian pembelajaran program, bahan kajian, pemetaan capaian pembelajaran prodi dengan beberapa standard akreditasi, struktur kurikulum, ekuivalensi kurikulum, skema transisi kurikulum serta deskripsi singkat mata kuliah program studi. Pembuatan buku ini bertujuan sebagai panduan bagi dosen beserta mahasiswa program studi S1 Sistem Komputer pada khususnya serta Universitas Telkom pada umumnya.

This book contains the history curriculum, program description, graduate profile, program learning outcomes, body of knowledge, mapping the program learning outcomes with several accreditation standards, curriculum structure, equivalence curriculum, curriculum transition schemes as well as a brief description of the course of study program. The aim of this book is a guide for faculty as well as students of S1 Computer Systems in particular, and the University of Telkom in general.

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1 SEJARAH, VISI, MISI, TUJUAN, SASARAN DAN STRATEGI PENCAPAIAN PROGRAM STUDI

1 HISTORY, VISION, MISSION, OBJECTIVES, GOALS DAN ACHIEVEMENTS STRATEGY OF PROGRAMS OF STUDY

1.1 Sejarah Program Studi S1 Sistem Komputer

Sekolah Tinggi Teknologi Telkom (STTTelkom) didirikan oleh Yayasan Pendidikan dan Pelatihan Teknologi dan Manajemen Telekomunikasi atau disingkat Yayasan Pendidikan Telkom (YPT) pada tanggal 28 September 1990. STTTelkom didirikan untuk menyiapkan tenaga-tenaga ahli di bidang informasi dan Telekomunikasi (Infokom) yang terampil dan berwawasan bisnis sebagai jawaban atas tuntutan perkembangan industri infokom yang begitu pesat. Fakultas Elektro dan Komunikasi merupakan pengembangan dari Departemen Teknik Elektro, yang merupakan departemen terbesar di dalam Institut Teknologi Telkom dilihat dari sumber daya manusia (Mahasiswa, Dosen, alumni) maupun dari sisi jumlah laboratorium, maupun dari kerjasama yang telah dijalin. Departemen Teknik Elektro didirikan seiring dengan berdirinya STT Telkom pada tahun 1990, yang sebelumnya bernama Jurusan Teknik Elektro. Pada saat itu Departemen Teknik Elektro hanya membuka 2 (dua) buah program Studi yaitu Program Studi S1 Teknik Telekomunikasi dan D3 Teknik Telekomunikasi. Pada tahun 2007, Jurusan Teknik Elektro berubah nama menjadi Departemen Teknik Elektro.

Upaya pengembangan Departemen Teknik Elektro terus dilakukan. Pada tahun 2007 diberi kepercayaan untuk membuka Program Studi baru, yaitu Program Teknik Elektro dan Teknik Komputer, berdasarkan **SK Mendikbud No. 108/D/T/2007**, tanggal 16 Januari 2007 kedua Program Studi tersebut diberi status ijin Operasional. Sehingga Departemen Teknik Elektro memiliki 5 (Lima) Program Studi yaitu :

1. Program Studi S1 Teknik Telekomunikasi
2. Program Studi S1 Teknik Elektro
3. Program Studi S1 Teknik Komputer
4. Program Studi D3 Teknik Telekomunikasi
5. Program Studi S2 Teknik Elektro

Seiring dengan perubahan status Institusi dari Sekolah Tinggi Teknologi Telkom menjadi Institut Teknologi Telkom (ITTelkom) pada tanggal 27 Nopember 2007, dan seiring dengan penambahan program studi di lingkungan Departemen Teknik Elektro maka pada tanggal 1 Pebruari 2009 Departemen Teknik Elektro berubah status menjadi Fakultas Elektro dan Komunikasi. Kemudian berdasarkan Keputusan Menteri Pendidikan dan kebudayaan RI Nomor 270/E/O/2013 Tentang Penggabungan Politeknik Telkom, Institut Teknologi Telkom, dan Institut Manajemen Telkom yang diselenggarakan oleh Yayasan Pendidikan Telkom Menjadi Universitas Telkom di Kabupaten Bandung Provinsi Jawa Barat, maka Prodi Sistem Komputer berada di Fakultas Teknik Universitas Telkom. Pada bulan April 2014 terjadi pemekaran Fakultas Teknik Universitas Telkom menjadi 3 Fakultas yakni Fakultas Teknik Elektro, Fakultas Rekayasa Industri, dan Fakultas Informatika. Oleh karena itu Fakultas Teknik Elektro memiliki 5 (lima) Program Studi yaitu :

1. Program Studi S1 Teknik Telekomunikasi
2. Program Studi S1 Teknik Elektro
3. Program Studi S1 Sistem Komputer
4. Program Studi S1 Teknik Fisika.

5. Program Studi S2 Teknik Elektro

Operasional penyelenggaraan Program Studi S1 Sistem Komputer dimulai pada bulan Agustus 2007. Program Studi Sistem Komputer terbentuk berdasarkan Program Studi Sarjana Teknik Telekomunikasi Peminatan Teknik Komputer kurikulum 2004. Sehingga kurikulum yang berlaku pada tahun 2007 diturunkan dari kurikulum 2004 Program Studi Teknik Telekomunikasi Peminatan Teknik Komputer. Kemudian seiring siklus perubahan kurikulum di ITTelkom tahun 2008 dan 2012 kurikulum Program Studi Sistem Komputer juga dievaluasi menghasilkan kurikulum 2008, dan kurikulum 2012 yang digunakan sampai tahun ajaran 2015-2016. Pada tahun 2011 Program Studi Sistem Komputer untuk pertama kali dilakukan proses akreditasi, dan berdasarkan SK Nomor 021/BAN-PT/Ak-XIV/S1/VIII/2011 Prodi Sistem Komputer mendapat peringkat akreditasi C dengan point 274 dengan masa berlaku 18 Agustus 2011 sampai dengan 18 Agustus 2016. Saat ini Prodi Sistem Komputer sedang melakukan proses reakreditasi BAN-PT.

1.1 Computer Engineering S1 Programs of Study History

Telkom School of Technology (STTTelkom) was established by the Foundation for Education and Training Technology and Telecommunications Management, or abbreviated as Telkom Education Foundation (YPT) on 28 September 1990. STTTelkom established to prepare experts in the field of Information and Communications (Infocom) skilled and insightful business in response to the demands of the development of information and communication industry is so rapid. Faculty of Electrical and Communication is the development of the Department of Electrical Engineering, which is the largest department at the Institut Teknologi Telkom views of human resources (Students, Faculty, Alumni) and in terms of the number of laboratories, as well as of cooperation that have been woven. Department of Electrical Engineering was established in line with the founding of STT Telkom in 1990, formerly known as the Department of Electrical Engineering. At that time the Department of Electrical Engineering is only open two (2) pieces Studies program, namely Program S1 D3 Telecommunication Engineering and Telecommunications Engineering. In 2007, the Department of Electrical Engineering changed its name to the Department of Electrical Engineering.

Department of Electrical Engineering development efforts must be made. In 2007, given the confidence to open a new study program, the Program of Electrical Engineering and Computer Engineering, based on the Ministry of Education Decree No. 108 / D / T / 2007, dated January 16, 2007 the Program was given the status of operations permits. So the Department of Electrical Engineering have 5 (five) Program are:

1. Undergraduate Program on Telecommunication Engineering
2. Undergraduate Program on Electrical Engineering
3. Undergraduate Program on Computer Engineering
4. Diploma 3 Degree on Telecommunication Engineering
5. Master Degree Program on Electrical Engineering

Along with the change in status of Institutions of Higher Colleges of Technology Telkom Telkom Institute of Technology (ITTelkom) on November 27, 2007, and along with the addition of courses in the Department of Electrical Engineering then on February 1, 2009 the Department of Electrical Engineering status changed into the Faculty of Electrical and Communications, Then based on the Ministry of Education and Culture No. 270 / E / O / 2013 About Merger Telkom Polytechnic Institute of Technology Telkom, and Telkom

Institute of Management organized by the Education Foundation of Telkom Become Telkom University in Bandung regency of West Java province, then Prodi Computer Systems is located at the Faculty of Engineering, University of Telkom. In April 2014 the creation of the Technical University of Telkom 3 yakni Faculty of Electrical Engineering, Faculty of Industrial Engineering, and Faculty of Informatics. Therefore, the Faculty of Electrical Engineering has five (5) Study Program, namely:

1. Undergraduate Program on Telecommunication Engineering
2. Undergraduate Program on Electrical Engineering
3. Undergraduate Program on Computer Engineering
4. Undergraduate Program on Physical Engineering
5. Master Degree Program on Electrical Engineering

Operational implementation S1 Studies Program Computer Systems began in August 2007. Studies Program Computer Systems Degree Program established by the Telecommunication Engineering Specialisation in Computer Engineering curriculum, 2004. Thus, the curriculum applicable in 2007 derived from the 2004 curriculum Specialisation Program Telecommunication Engineering Computer Engineering. Then as the cycle of curriculum changes in 2008 and 2012 IT Telkom curriculum Computer Systems Studies Program also evaluated curricula in 2008, and the curriculum in 2012 which was used until the academic year 2015-2016. In 2011 the Program of Computer System for the first time carried out the accreditation process, and berdasarkan Decree No. 021 / BAN-PT / Ak-XIV / S1 / VIII / 2011 Prodi Computer Systems received accreditation C with a point 274 with a validity period of 18 Agustus 2011 to by August 18, 2016. Currently, Prodi Computer Systems is in the process reaccreditation BAN-PT.

1.2 Visi Program Studi S1 Sistem Komputer

Visi Program Studi S1 Sistem Komputer :

Menjadi Program Studi S1 Sistem Komputer berstandar internasional yang menghasilkan lulusan dibidang komputer.

Keterangan:

1. Berstandar Internasional : Mendapatkan akreditasi Internasional JABEE/IABEE dan publikasi-publikasi pada jurnal dan konferensi Internasional yang bereputasi.
Sebagai contoh beberapa publikasi dosen dan mahasiswa pada jurnal dan konferensi Internasional:
 - a. Journal of Automation and Control Engineering. Vol. 2, No. 4 (Muhammad Ary Murti, Agung Nugroho Jati)
 - b. ICTS 2014, The 8th International Conference on Information & Communication Technology and Systems. p 257-262 (Muhammad Faris Ruriawan, Yudha Purwanto, Surya Michrandi Nst.)
 - c. Prosiding Conference on Smart-Green Technology in Electrical and Information Systems. Bali. 14-15 November 2014 (M. Ary Murti, Agung Nugroho Jati)
 - d. The 16 International Conference on Advanced Communication Technology (ICACT2014) (Ali Muayyadi, Gelar Budiman, Rina Pudji Astuti)
 - e. International journal of computer networks & communication (IJCNC), ISSN : 0974-9322, MAret 2015, Vol.7 No.2 (Gelar Budiman, Ledy Novamizanti)

- f. International journal of computer networks & communication (IJCNC), ISSN : 0974-9322, Januari 2015, Vol.7 No.1 (Gelar Budiman, Ali Muayyadi, Rina Pudji Astuti)
 - g. Telkomnika Indonesian Journal of Electrical Engineering, 1 April 2015 (AGUNG NUGROHO JATI, LEDYA NOVAMIZANTI, MIRSA BAYU PRASETYO, Andy Ruhendy Putra)
 - h. 7th WACBE World Congress on Bioengineering (ANGGUNMEKA LUHUR PRASASTI, Richard Karel Willem Mengko)
 - i. dll.
2. Menghasilkan lulusan dibidang komputer yang dimaksud sesuai dengan standar ABET untuk bidang Teknik, khususnya ABET pada *2015-2016 Criteria for Accrediting Engineering Programs* :
- Program criteria apply to engineering programs that include “electrical,” “electronic(s),” “computer,” “communication(s),” telecommunication(s), or similar named Engineering.
- Kutipan isi pembahasan:
- The structure of the curriculum must provide both breadth and depth across the range of engineering topics implied by the title of the program.*
- The curriculum must include probability and statistics, including applications appropriate to the program name; mathematics through differential and integral calculus; sciences (defined as biological, chemical, or physical science); and engineering topics (including computing science) necessary to analyze and design complex electrical and electronic devices, software, and systems containing hardware and software components programs.*
3. Visi ini akan dicapai pada tahun 2018

1.2 Computer Engineering S1 Programs of Study Vision

Computer Engineering S1 Programs of Study Vision:

To be recognized as an international standard Bachelor of Engineering program of Computer Engineering that graduates engineers in the field of computers.

Description:

1. International Standard: Obtain international accreditation JABEE / IABEE and publications in reputable international journals and conferences .
For example some publications of lecturers and students in international journals and conferences:
 - a. Journal of Automation and Control Engineering. Vol. 2, No. 4 (Muhammad Ary Murti, Agung Nugroho Jati)
 - b. ICTS 2014, The 8th International Conference on Information & Communication Technology and Systems. p 257-262 (Muhammad Faris Ruriawan, Yudha Purwanto, Surya Michrandi Nst.)
 - c. Proceedings Conference on Smart-Green Technology in Electrical and Information Systems. Bali. 14-15 November 2014 (M. Ary Murti, Agung Nugroho Jati)
 - d. The 16 International Conference on Advanced Communication Technology (ICACT2014) (Ali Muayyadi, Gelar Budiman, Rina Pudji Astuti)

- e. International journal of computer networks & communication (IJCNC), ISSN : 0974-9322, MAret 2015, Vol.7 No.2 (Gelar Budiman, Ledy Novamizanti)
 - f. International journal of computer networks & communication (IJCNC), ISSN : 0974-9322, Januari 2015, Vol.7 No.1 (Gelar Budiman, Ali Muayyadi, Rina Pudji Astuti)
 - g. Telkomnika Indonesian Journal of Electrical Engineering, 1 April 2015 (AGUNG NUGROHO JATI, LEDYA NOVAMIZANTI, MIRSA BAYU PRASETYO, Andy Ruhendy Putra)
 - h. 7th WACBE World Congress on Bioengineering (ANGGUNMEKA LUHUR PRASASTI, Richard Karel Willem Mengko)
 - i. dll.
2. Produce graduates in the computer field in accordance with ABET standards for the field of Engineering, especially in 2015-2016 ABET Criteria for Accrediting Engineering Programs:
 Program criteria apply to engineering programs that include “electrical,” “electronic(s),” “computer,” “communication(s),” telecommunication(s), or similar named Engineering.
 Content excerpt:
*The structure of the curriculum must provide both breadth and depth across the range of engineering topics implied by the title of the program.
 The curriculum must include probability and statistics, including applications appropriate to the program name; mathematics through differential and integral calculus; sciences (defined as biological, chemical, or physical science); and engineering topics (including computing science) necessary to analyze and design complex electrical and electronic devices, software, and systems containing hardware and software components programs.*
3. This vision will be achieved by 2018.

1.3 Misi Program Studi S1 Sistem Komputer

Misi Program Studi S1 Sistem Komputer :

1. Menyelenggarakan pendidikan yang berstandar internasional untuk menghasilkan lulusan yang menguasai ilmu dan teknologi komputer.
2. Menyelenggarakan penelitian berkualitas internasional di bidang Sistem Komputer berbasis ilmu dan teknologi komputer dengan melibatkan mahasiswa secara aktif.
3. Menjalankan pengabdian masyarakat dengan prinsip menyebarluaskan ilmu dan teknologi komputer hasil penelitian kepada masyarakat luas dengan melibatkan mahasiswa secara aktif.
4. Membekali mahasiswa ilmu dan pengetahuan yang praktis, agar mampu bekerja, dan mengembangkan diri dan berwirausaha di bidang teknologi informasi dan komunikasi khususnya bidang komputer.

1.3 Computer Engineering S1 Programs of Study Mission

Computer Engineering S1 Programs of Study Mission:

1. Organizing an international standard education to produce graduates who mastered in computer engineering and technology.
2. Organizing an international qualified research in the field of computer engineering and technology with actively students involvement.
3. Running a community service by disseminating the research results of computer engineering and technology to the general public by actively involving students.
4. Providing knowledge and practical skills for students to be self-learners and entrepreneurs in the field of information and communication technology, particularly in the field of computers.

1.4 Tujuan Misi Program Studi S1 Sistem Komputer

Tujuan Program Studi S1 Sistem Komputer :

1. Menghasilkan lulusan yang memiliki kompetensi, mampu mengembangkan diri dan berwirausaha di bidang Sistem Komputer secara professional pada tingkat nasional maupun international.
2. Menghasilkan karya kreatif dan inovatif di bidang Sistem Komputer sesuai dengan tuntutan dan kebutuhan masyarakat pada tingkat nasional maupun international
3. Berkontribusi pada pengembangan industri dalam penerapan keilmuan sistem komputer.

1.4 Computer Engineering S1 Programs of Study Objectives

Computer Engineering S1 Programs of Study Objectives:

1. To produce graduates who have competence and ability to develop themselves and to be entrepreneurs in the field of Computer Engineering professionally both at national and international level.
2. To produce creative and innovative products in the field of Computer Engineering in accordance with the public needs and demands both at the national and international level.
3. To give contributions to the industrial development in the field of Computer Engineering.

1.5. Sasaran dan Strategi Pencapaian

Arah yang dituju oleh program studi S1 Sistem Komputer Universitas Telkom mencakup wacana-wacana strategis dalam penyelenggaraan dan pengembangan program studi, antara lain kepemimpinan, relevansi, suasana akademik, kinerja manajemen internal, keberlanjutan, efisiensi dan produktivitas. Wacana-wacana strategis tersebut menjadi acuan di dalam pengembangan program studi di masa yang akan datang yang dituangkan dalam rencana operasional, menjadi komitmen bersama seluruh elemen penyelenggara institusi. Hal tersebut sejalan dengan paradigma baru

manajemen Pendidikan Tinggi yang bertumpu pada kualitas, otonomi, akuntabilitas, akreditasi dan memiliki kesehatan organisasi yang baik dan kondusif bagi pelaksanaan Tridharma Perguruan Tinggi dan landasan perkembangan di masa depan

Mengacu ke visi dan misi tersebut dan sesuai dengan Rencana Strategis Fakultas Teknik Elektro, maka program Studi S1 Sistem Komputer telah menetapkan Rencana Operasional pengembangan untuk periode 5 tahun dari tahun 2014-2018. Rencana operasional tersebut secara umum mencakup implementasi dan aktualisasi tri dharma perguruan tinggi, yaitu:

1. Terciptanya tata kelola Program Studi sesuai prinsip *Good University Governance* (GUG).
2. Meningkatkan standar sistem pengajaran menjadi berkualitas untuk setiap bidang keilmuan pada sistem komputer melalui strategi menyesuaikan perkembangan teknologi informasi dan komunikasi komputer dalam kurikulum, proses belajar mengajar yang terstandarisasi dan meningkatkan kompetensi dan daya saing Program Studi melalui peningkatan kualitas dan kuantitas dosen dan peningkatan kualitas, kuantitas, dan daya saing lulusan untuk melayani industri, masyarakat, dan bangsa
3. Memperkuat budaya penelitian di kalangan civitas akademika yang bermanfaat bagi lingkungan dan perkembangan ilmu pengetahuan dan teknologi komputer serta kebutuhan masyarakat dan dunia industri. Penelitian menghasilkan karya-karya penelitian yang diakui secara internasional
4. Meningkatkan kegiatan pengabdian pada masyarakat yang dilandasi semangat kepedulian dan komitmen terhadap pencarian alternatif solusi untuk berbagai permasalahan dan kebutuhan masyarakat

Ada beberapa indikator yang dijadikan sasaran pencapaian dalam kurun waktu 5 tahun (2014 -2018)

A. Terciptanya tata kelola Program Studi sesuai prinsip *Good University Governance* (GUG).

Tata kelola Program Studi merupakan alat dan pendekatan yang efektif untuk menjamin semua proses di Program Studi baik akademik dan non akademik berjalan optimal, mematuhi norma-norma dan selaras menuju pencapaian visi misi Program Studi. Tata kelola Program Studi tentu saja mengacu pada Tata Kelola di level yang lebih tinggi yaitu Tata Kelola Fakultas Teknik Elektro. Di level Program Studi, keberadaan tata kelola Fakultas sangat penting untuk menjadi acuan peningkatan standar mutu Program Studi. Indikator program ini adalah tersertifikasi ISO, kepuasan *civitas academica* Program Studi, dan peningkatan poin akreditasi. Keberhasilan dari Tata Kelola adalah dilihat dari 5 kriteria yaitu transparansi, kredibel, akuntabel, bertanggung jawab dan adil.

Program kerja dari Program Studi S1 Sistem Komputer yang dilakukan untuk mencapai tujuan ini diantaranya adalah:

- (1) Penyusunan Rencana Operasional Program Studi 2014-2018;
- (2) Penataan organisasi Program Studi yang mengikuti standar GUG;
- (3) Penjaminan mutu yang berkelanjutan;
- (4) Pengembangan sarana informasi berbasis web (digitalisasi layanan).

B. Bidang Pendidikan

1. Terwujudnya sistem pengajaran yang terstandarisasi

Proses belajar mengajar yang dilaksanakan di Program Studi S1 Sistem Komputer ditujukan untuk memberikan nilai lebih kepada dosen dan mahasiswa. Oleh karena itu, diperlukan upaya terus menerus untuk mengembangkan media, konten dan *delivery* pengajaran yang terstandarisasi. Indikator pencapaian program ini adalah ketersediaan media pengajaran terstandarisasi, ketersediaan bahan ajar terstandarisasi, dan ketersediaan metode *delivery* terstandarisasi. Standar yang diacu adalah standar yang telah ditetapkan oleh **Bagian Pengembangan Pembelajaran (BPP) Universitas Telkom** yang disampaikan dalam kegiatan hibah metode pembelajaran dan hibah *e-learning* (media ajar). Dalam rangka mencapai sistem pengajaran yang terstandarisasi, Program Studi S1 Sistem Komputer melakukan program kerja sebagai berikut:

- (1) Evaluasi kurikulum;
- (2) Implementasi standar melalui hibah metode pembelajaran;
- (3) Program hibah konten pembelajaran;
- (4) Program hibah buku ajar.

2. Tercapainya peningkatan kualitas, kuantitas dan daya saing lulusan di tingkat nasional dan internasional

Untuk mewujudkan visi menjadi Program Studi berstandar internasional di bidang Komputer, maka tentu saja dibutuhkan usaha riil untuk meningkatkan kuantitas dan kualitas jumlah lulusan Program Studi yang berkarir di level internasional. Peningkatan kuantitas dilakukan dengan menambah kuota calon mahasiswa sedangkan peningkatan kualitas dilakukan dengan meluncurkan program-program spesifik yang menciptakan atmosfer akademik global bagi seluruh mahasiswa Program Studi. Berikut adalah program kerja yang dilakukan oleh Program Studi S1 Sistem Komputer agar tercapai tujuan ini, diantaranya:

- (1) Pengembangan dan peningkatan sarana pembelajaran (penambahan laboratorium, ruang diskusi, Ruang *Study Group*, *Risearch Group*, buku, akses internet dan lain-lain);
- (2) Program *student exchange*;
- (3) Identifikasi lulusan tepat waktu setiap tingkat, sarjana, dan pemberian rekomendasi perlakuan.
- (4) Melaksanakan Tugas Akhir berkelompok (*Capstone Design*)

3. Tercapainya peningkatan kualitas dan kuantitas dosen

Dosen merupakan unsur utama dalam perencanaan dan pelaksanaan proses belajar mengajar. Dosen terus menerus meningkatkan diri dan mengembangkan diri agar mempunyai kompetensi yang memadai untuk menjadi Sumber Daya yang kompeten dan mempunyai talenta yang luar biasa, dimana dengan kualitas Dosen seperti ini Program Studi akan mampu menjadi Program Studi yang unggul dalam pelaksanaan proses belajar mengajar yang berkualitas dan pada gilirannya menghasilkan lulusan yang handal dan berkualitas. Dalam rangka tercapainya peningkatan kualitas dan kuantitas dosen, maka Program Studi S1 Sistem Komputer melakukan beberapa program kerja, diantaranya:

- (1) Pengembangan dosen melalui studi lanjut;
- (2) Pelaksanaan pelatihan dan sertifikasi kompetensi;
- (3) Pelaksanaan *research-camp* dan *doctoral-camp*;

- (4) Pemberian fasilitas dosen dalam mengikuti konferensi ilmiah;
- (5) Mendorong dosen untuk aktif mengikuti kompetisi/hibah eksternal;
- (6) Mendorong dosen untuk aktif bergabung dengan asosiasi/organisasi profesi;
- (7) Pembinaan dosen yang terencana dan terintegrasi serta akselerasi Jabatan Fungsional Akademik (JFA).

C. Bidang Penelitian

Terwujudnya budaya penelitian dikalangan civitas akademika yang bermanfaat bagi lingkungan dan dihasilkannya karya-karya penelitian yang diakui secara internasional.

Penelitian dapat bertujuan untuk pengembangan keilmuan, *solving problem* di proses belajar mengajar maupun tata kelola, termasuk pengembangan kolaborasi riset antar fakultas dan dengan perguruan tinggi atau instansi lain, baik di dalam maupun di luar negeri.

Pembentukan komunitas *Study Group* dan *Research Group* pada di lab melalui Kelompok Keahlian (KK) di fakultas (khususnya Kelompok Keahlian Rekayasa Komputer) akan diarahkan pada terbangunnya rumpun-rumpun ilmu untuk mendukung *roadmap* penelitian, pengajaran dan pengabdian kepada masyarakat, sehingga diharapkan Program studi dapat memberikan pemikiran dan solusi dari pengembangan ilmu, kajian dan riset untuk mengatasi kompleksitas permasalahan yang di hadapi oleh bangsa. Adapun Program kerja yang dilakukan oleh Program studi S1 Sistem Komputer agar tercapainya tujuan ini adalah sebagai berikut:

- (1) Peningkatan alokasi anggaran untuk penelitian;
- (2) Workshop penulisan karya ilmiah;
- (3) Peningkatan jumlah kerja sama Penelitian dengan universitas atau lembaga penelitian;
- (4) Workshop tentang HAKI/PATEN;
- (5) Workshop Penulisan Proposal Hibah.
- (6) Publikasi ilmiah mahasiswa dan dosen secara nasional dan internasional

D. Bidang Pengabdian Masyarakat

Terwujudnya kerja sama dalam bidang penelitian dan pengabdian kepada Masyarakat yang selaras dengan tujuan pembangunan nasional.

Kerja sama adalah merupakan suatu kegiatan untuk meningkatkan kompetensi dosen dan mahasiswa serta pihak terkait. kerja sama yang dilakukan dalam bidang penelitian dan pengabdian kepada masyarakat dengan berbagai kalangan industri dan pemerintahan tentunya juga akan berdampak terhadap tercapainya tujuan dari pembangunan nasional. Indikator ketercapaian program ini adalah dapat diukur dari rata-rata alokasi dana pengabdian masyarakat per dosen per tahun, jumlah produk/hasil karya yang bermanfaat bagi masyarakat, jumlah kegiatan yang bermanfaat bagi masyarakat, Akumulasi kegiatan pengabdian kepada masyarakat (abdimas) yang berkelanjutan (dalam bentuk kerja sama atau *memorandum of understanding* - MoU).

Untuk mencapai tujuan ini, Program Studi S1 Sistem Komputer melakukan beberapa program kerja, diantaranya:

- (1) Penyusunan *road-map* abdimas dan penelitian;
- (2) Penjalinan kerja sama dengan lembaga pendidikan tinggi lain
- (3) Penjalinan kerja sama dengan industri;

- (4) Pelaksanaan abdimas yang melibatkan seluruh sivitas akademik (dosen dan mahasiswa);

Adapun sasaran dan strategi pencapaiannya berdasarkan visi, misi dan tujuan disusun indikator pencapaiannya yang dapat dilihat pada Tabel 1.1.

Tabel 1.1 Sasaran dan Strategi Pencapaiannya

Sasaran dan Indikator		Nilai Awal	Target Pencapaian					Keterangan
			2014	2015	2016	2017	2018	
A. Terciptanya tata Kelola Program Studi sesuai prinsip <i>Good University Governance</i>								
1	Sertifikat ISO	0	0%	100%	100%	100%	100%	
2	Kepuasan <i>civitas academica</i> Program Studi	70%	75%	78%	80%	80%	80%	
3	Peningkatan point akreditasi	2010 C [274]	B [345]	B [355]	A [361]	A [365]	A [370] dan JABEE/I AABE	Poin Akreditasi 2011=304; Tahun 2012=325; tahun 2013=335
B. Terwujudnya sistem pengajaran yang terstandarisasi								
4	Ketersediaan Media Pengajaran terstandarisasi	30%	30%	45%	60%	85%	100%	
5	Ketersediaan Bahan Ajar terstandarisasi	40%	40%	60%	80%	90%	100%	
6	Ketersediaan Metode Delivery terstandarisasi	0	0	1	2	3	4 Metode Delivery	
C. Tercapainya peningkatan kualitas, kuantitas dan daya saing lulusan di tingkat nasional dan Internasional								
7	Tingkat kepuasan pengguna lulusan	70%	72%	75%	80%	85%	91%	
8	Waktu tunggu lulusan (dalam bulan)	4 bulan	3.5 bulan	3.3 bulan	3.0 bulan	2.8 bulan	2.5 bulan	
9	Rasio lulusan tepat waktu	20%	20%	B	35%	45%	60%	

Sasaran dan Indikator		Nilai Awal	Target Pencapaian					Keterangan
			2014	2015	2016	2017	2018	
10	Ratio lulusan dengan IPK > 3	10%	20%	25%	30%	35%	40%	
11	Persentase lulusan yang bekerja di perusahaan global	1%	1%	5%	10%	15%	20%	wisuda bekerja di perusahaan global
D. Tercapainya peningkatan kualitas dan kuantitas dosen								
12	Rasio jumlah dosen ber- JFA LK dan GB	1%	1%	2%	3%	4%	5%	5% dari total dosen ber- JFA LK dan GB
13	Rasio jumlah dosen berpendidikan S3	0%	0%	5%	10%	15%	20%	20% dari total dosen berpendidikan S3
14	Jumlah dosen yang mendapat hibah pengajaran, penelitian, abdimas, publikasi.	2	2	5	8	10	15	
15	Jumlah dosen yang menjadi anggota asosiasi profesi nasional dan internasional	10	10	15	20	25	30	
E. Terwujudnya budaya penelitian di kalangan civitas akademika yang bermanfaat bagi lingkungan dan dihasilkannya karya-karya penelitian yang diakui secara Internasional								
16	Jumlah alokasi dana penelitian per tahun (dalam ratus juta rupiah)	300	300	350	400	500	600	Akumulasi total dana penelitian = 2.1 Milyar

Sasaran dan Indikator		Nilai Awal	Target Pencapaian					Keterangan
			2014	2015	2016	2017	2018	
17	Akumulasi Jumlah publikasi ilmiah pada jurnal nasional terakreditasi serta jurnal Internasional dan prosiding internasional terindeks	20	20	30	40	50	75	Akumulasi publikasi 2014-2018 =215
18	Jumlah kolaborasi penelitian dengan pihak eksternal	0	0	1	2	3	4	Akumulasi jumlah penelitian 10
19	Akumulasi Jumlah kolaborasi publikasi dengan universitas atau lembaga penelitian	0	0	5	10	15	20	Akumulasi publikasi kolaborasi=50
20	Jumlah HAKI/PATEN	0	0	1	2	3	4	Akumulasi HAKI/Paten =10
21	Jumlah hibah penelitian	5	5	10	15	20	25	Akumulasi hibah penelitian=75
F. Terwujudnya kerja sama dalam bidang penelitian dan pengabdian kepada Masyarakat yang selaras dengan tujuan pembangunan nasional								
22	Rata-rata alokasi dana pengabdian masyarakat per dosen per tahun	3 juta	10 juta	12 juta	15 juta	18 juta	20 juta	Rata-rata dana =20 juta
23	Jumlah produk/hasil karya yang bermanfaat bagi masyarakat	1	1	2	3	4	5	Akumulasi Produk=15

Sasaran dan Indikator		Nilai Awal	Target Pencapaian					Keterangan
			2014	2015	2016	2017	2018	
24	Jumlah kegiatan yang bermanfaat bagi masyarakat	5	5	10	15	20	25	Akumulasi Kegiatan =75
25	Akumulasi kegiatan abdimas yang berkelanjutan (kerja sama MoU)	2	2	2	3	4	5	Akumulasi kerja sama MoU= 16 pihak

1.5. Goals and Achievements Strategy

Direction in which courses S1 Computer System Telkom University include strategic discourse in the implementation and development of programs of study, including leadership, relevance, academic atmosphere, internal management performance, sustainability, efficiency and productivity. The strategic discourses become the basis for program development in the future as outlined in the operational plan, became a common commitment of all elements of the organizers of the institution. This is in line with the new paradigm of management of Higher Education, which is based on quality, autonomy, accountability, accreditation and have good organizational health and conducive to the implementation of the three responsibilities of Higher Education and the foundation of future development.

Referring to the vision and mission and in accordance with the Strategic Plan of the Faculty of Electrical Engineering, the program S1 Computer Systems has set the development of the Operational Plan for the period of 5 years from 2014 to 2018. The operational plan generally covers the implementation and actualization tri dharma college, namely:

1. Creation of a governance study program according to the principles of Good University Governance (GUG).
2. Improving the standard of teaching system to be qualified for any field of science on the computer system through a strategy of adjusting the development of information technology and computer communications in the curriculum, the learning process is standardized and improve the competence and competitiveness of the Program by increasing the quality and quantity of lecturers and improving the quality, quantity, and competitiveness of graduates to serve the industry, communities, and nations.
3. Strengthen the culture of research among academics that benefit the environment and the development of science and computer technology as well as the needs of society and industry. Research produced works of internationally recognized research.

4. Increase community service activities are based on the spirit of awareness and commitment to the search for an alternative solution to the problems and needs of the community.

There are several indicators that were targeted achievement in a period of 5 years (2014 -2018)

A. Creation of a governance study program according to the principles of Good University Governance (GUG).

Governance Studies Program is a tool and an effective approach to ensure all processes in the study program both academic and non-academic running optimally, adhering to the norms and aligned towards achieving the vision and mission of study program. Governance Studies Program course referring to Governance at a higher level, namely Governance Faculty of Electrical Engineering. At the level study program, the existence of the Faculty governance is very important to be a reference standard of quality study program. Indicators of this program is certified ISO, civitas academica satisfaction study program, and increased points of accreditation. The success of Governance is looked upon from 5 criteria: transparency, credible, accountable, responsible and fair.

The work program of the Study Program S1 Computer Systems undertaken to achieve this goal include:

- (1) Operational Plan Formulation Study Program 2014-2018.
- (2) Organizing the Study Program follow the GUG standard.
- (3) Continuous Quality Assurance.
- (4) Development of web-based information tool (digitizing service).

B. Field of Education

1. The realization of a standardized system of teaching

The learning process is carried out in S1 Studies Program of Computer System is intended to provide more value to faculty and students. Therefore, it needs continuous efforts to develop media, content and delivery of standardized teaching. Indicators of achievement of this program is the availability of standardized teaching media, the availability of standardized teaching materials, and the availability of a standardized method of delivery. The standards referred to are the standards set by the Education Development Division (BPP) Telkom University submitted in the grant activities and teaching methods grants e-learning (teaching media). In order to achieve a standardized teaching system, S1 Studies Computer Systems do work programs as follows:

- (1) Curriculum Evaluation.
- (2) Implementation of standards through a grant of learning methods.
- (3) The grant program of learning content.
- (4) The grant program of writing textbooks.

2. Achievement of improvements in the quality, quantity and competitiveness of graduates at national and international level

To realize the vision of becoming the international standard study program in the field of Computer, then of course it takes a real effort to improve the quantity and quality of graduates career study programs at the international level. Increasing the quantity is done by increasing the quota of prospective students while

improving the quality done by launching specific programs that create global academic atmosphere for all students study program. Here is the work done by the program S1 Studies Program of Computer System in order to achieve this goal, including:

- (1) Development and improvement of learning facilities (additional laboratories, discussion rooms, rooms of Study Group, Research Group, books, Internet access and others).
- (2) Student Exchange Program.
- (3) Identification of timely graduates for every level, scholars and provision of treatment recommendations.
- (4) Implement the final project in groups (Capstone Design).

3. Achievement of improvements in the quality and quantity of lecturers

Lecturer is a key element in the planning and implementation of the teaching and learning process. Lecturer constantly improve themselves and develop themselves in order to have sufficient competence to become Resource competent and has a remarkable talent, where the quality of the lecturers as this study program will be able to be a study program that excels in the implementation of the learning process quality and on turn produce a reliable and qualified graduates. In order to achieve an increase in quality and quantity of lecturers, the S1 Studies Computer Systems do some work programs, including:

- (1) Lecturer development through further studies.
- (2) Implementation of the training and certification of competence.
- (3) Implementation of research-camp and doctoral-camp.
- (4) Provision of facilities for Lecturer in following the scientific conferences.
- (5) Encourage lecturers to actively participate in the competition / external grants.
- (6) Encourages Lecturer to actively join associations / professional organizations.
- (7) Coaching Lecturer in a planned, integrated and accelerated the Position Functional Academic (JFA).

C. Field of Research

The realization of research culture among civitas academica that benefit the environment and it produced a recognized research works.

Research can aim for the scientific development, problem solving in the process of teaching and learning and governance, including the development of a research collaboration between faculties and colleges or other agencies, both at home and abroad.

The establishment of community Study Group and Research Group on at the lab through Research Groups (KK) in the faculty (especially Group Engineering Expertise Computer) will be directed at the establishment of clumps of science to support the roadmap of research, teaching and community service, so expect a program of study can provide ideas and solutions from the development of science, studies and research to overcome the complexity of the problems faced by the nation. The work program is conducted by the Computer Systems study program S1 in order to achieve this goal are as follows:

- (1) The increase in the budget allocation for research.
- (2) Workshop on writing scientific papers.

- (3) Increasing the number of research collaboration with universities or research institutes.
- (4) Workshop on Intellectual Property/Patent.
- (5) Grant Proposal Writing Workshop.
- (6) Scientific publications of students and lecturers nationally and internationally.

D. Field of Community Service

The realization cooperation in the field of research and dedication to the community in line with national development objectives.

Cooperation is an activity to enhance the competence of lecturers and students and stakeholders. cooperation undertaken in the field of research and community service with various industry and government would also have an impact on the attainment of the objectives of national development. Indicators of achievement of this program is that it can be measured from the average allocations of community service per Lecturer per year, the number of products / works that benefit society, the number of activities that benefit the community, accumulated community service activities (abdimas) sustainable (in the form of cooperation or memorandum of understanding - MoU).

To achieve this goal, S1 Studies Computer Systems do some work programs, including:

- (1) Roadmap formulation of research and dedication to community.
- (2) Cooperation interlacement with other higher education institutions.
- (3) Cooperation interlacement with industry.
- (4) Dedication to community implementation involving the entire civitas academica (lecturers and students).

The objectives and strategies for achievement based on the vision, mission and objectives have been developed indicators of achievement that can be seen in Table 1.1.

Table 1.1 The objectives and strategies for achievement

Indicator		Initial Value	Achievement Target					Description
			2014	2015	2016	2017	2018	
A. Creation of a governance study program according to the principles of Good University Governance (GUG)								
1	ISO Certificate	0	0%	100%	100%	100%	100%	
2	Satisfaction of <i>civitas academica</i> in Programs of Studi	70%	75%	78%	80%	80%	80%	

Indicator		Initial Value	Achievement Target					Description
			2014	2015	2016	2017	2018	
3	Increased accreditation points	2010 C [274]	B [345]	B [355]	A [361]	A [365]	A [370] and JABEE/I AABE	Acreditation Point 2011=304; Year of 2012=325; Year of 2013= 335
B. The realization of a standardized system of teaching								
4	Availability of a standardized education media	30%	30%	45%	60%	85%	100%	
5	Availability of a standardized education materials	40%	40%	60%	80%	90%	100%	
6	The availability of standardized Delivery Methods	0	0	1	2	3	4 Delivery Methods	
C. Achievement of improvements in the quality, quantity and competitiveness of graduates at national and international level								
7	Satisfaction level of the user of graduates	70%	72%	75%	80%	85%	91%	
8	Waktu tunggu lulusan (dalam bulan)	4 bulan	3.5 bulan	3.3 bulan	3.0 bulan	2.8 bulan	2.5 bulan	
9	Ratio of graduates on time	20%	20%	B	35%	45%	60%	
10	Ratio of graduates with GPA> 3	10%	20%	25%	30%	35%	40%	
11	The percentage of graduates working in global companies	1%	1%	5%	10%	15%	20%	Graduates working in global companies
D. Achievement of improvements in the quality and quantity of lecturers								
12	Ratio of the number of lecturers have an academic functional	1%	1%	2%	3%	4%	5%	5% of the lecturers have an academic functional

Indicator		Initial Value	Achievement Target					Description
			2014	2015	2016	2017	2018	
	position as associate professor and professor							position as associate professor and professor
13	Ratio of the number of lecturers with doctoral degree	0%	0%	5%	10%	15%	20%	20% of the total university lecturers have doctoral degree
14	Number of lecturers received grants of teaching, research, dedication to community, publications	2	2	5	8	10	15	
15	The number of lecturers who are members of national and international professional associations	10	10	15	20	25	30	
E. Realization of research culture among civitas academica that benefit the environment and produces internationally recognized research works								
16	Total allocation of research funding per year (in hundred million rupiahs)	300	300	350	400	500	600	Accumulation of total research funding = 2.1 billion

Indicator		Initial Value	Achievement Target					Description
			2014	2015	2016	2017	2018	
17	Accumulation of Number of scientific publications in indexed accredited national journals and international journals and international proceedings	20	20	30	40	50	75	Accumulation of publication 2014-2018 =215
18	Number of research collaborations with external parties	0	0	1	2	3	4	Accumulation of number of research= 10
19	Accumulation of Number of publications collaboration with universities or research institutes	0	0	5	10	15	20	Accumulation of collaboration publication =50
20	Number of intellectual property rights / PATENTS	0	0	1	2	3	4	Accumulation of intellectual property rights / PATENTS =10
21	The number of research grants	5	5	10	15	20	25	Accumulation of research grants = 75
F. Realization of cooperation in the field of research and dedication to the community in line with national development objectives								
22	The average allocation of community service funding per lecturer per year	3 million	10 million	12 million	15 million	18 million	20 million	The average fund =20 million

Indicator		Initial Value	Achievement Target					Description
			2014	2015	2016	2017	2018	
23	Number of products / works that benefit the community	1	1	2	3	4	5	Product Accumulation = 15
24	The number of activities that benefit the community	5	5	10	15	20	25	Activity Accumulation = 75
25	Accumulation of activities of dedication to community sustainably (MoU cooperation)	2	2	2	3	4	5	Accumulation of MoU cooperation = 16 interested parties

2 DESKRIPSI PROGRAM STUDI

2 Program Descriptions

2.1. Landasan Kurikulum

Prodi Sistem Komputer dalam membangun kurikulum 2016 mengaju kepada :

1. Struktur Kurikulum ABET Program Engineering

Menghasilkan lulusan dibidang komputer yang dimaksud sesuai dengan standar ABET untuk bidang Teknik, khususnya ABET pada *2015-2016 Criteria for Accrediting Engineering Programs* :

Program criteria apply to engineering programs that include “electrical,” “electronic(s),” “computer,” “communication(s),” telecommunication(s), or similar named Engineering.

Kutipan isi pembahasan:

The structure of the curriculum must provide both breadth and depth across the range of engineering topics implied by the title of the program.

The curriculum must include probability and statistics, including applications appropriate to the program name; mathematics through differential and integral calculus; sciences (defined as biological, chemical, or physical science); and engineering topics (including computing science) necessary to analyze and design complex electrical and electronic devices, software, and systems containing hardware and software components programs.

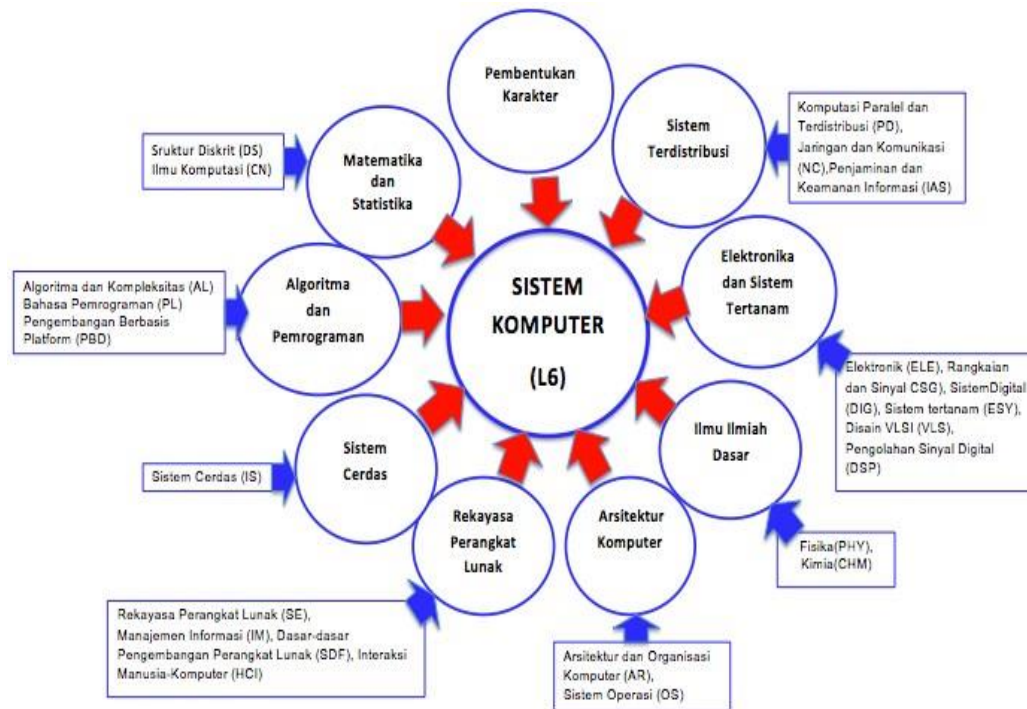
2. Mengaju Pada Buku “**Kerangka Kualifikasi Nasional Indonesia (KKNI) Rumpun Ilmu Informatika dan Komputer**” oleh Tim KKNI Aptikom, Yakni :

SISTEM KOMPUTER (Computer Engineering) , yang menekankan pada kemampuan individu dalam merancang dan mengembangkan perangkat keras berbasis digital (rekayasa perangkat keras/*hardware*), mencakup di antaranya:

- a. Terkait dengan desain dan konstruksi sistem berbasis komputer/digital.
- b. Mencakup studi mengenai perangkat keras, perangkat lunak, teknologi komunikasi, dan interaksi di antara komponen tersebut.
- c. Fokus pada teori, prinsip, dan praktek terapan ilmu elektronika serta matematika, untuk kemudian diimplementasikan dalam bentuk desain komputer atau teknologi lain berbasis digital.
- d. Belakangan ini berkembang menjadi ilmu yang mempelajari pula cara mendesain beragam peralatan berbasis digital yang banyak ditemui di pasar (*digital gadget*) dan beragam peralatan perangkat keras komunikasi yang banyak dipergunakan dalam jaringan komputer.
- e. Di samping itu, terkait pula dengan studi perancangan komponen berbasis digital (*embedded devices*).

Berikut roadmap bidang sistem komputer untuk jenjang S1, setara dengan KKNI level 6, yang dibuat berdasarkan: a. Ranah Topik (*Topic*

Area), b. Ranah Keilmuan, c. Bidang Kajian/*Area of Knowledge/Body of Knowledge*). Untuk Mata Kuliah Terkait tidak dimasukkan kedalam gambar 2.1 dibawah ini :



Gambar 2.1 Roadmap Ranah Keilmuan Sistem Komputer (S1)

3. Mengaju kepada Penyusunan kurikulum KKNi oleh Dikti. Sesuai dengan gambar 2.2 dibawah ini.



Gambar 2.2 Penyusunan kurikulum KKNi oleh Dikti

4. **Surat Keputusan Rektor Universitas Telkom Nomor: KR.234/AKD04/WR1/2015** "Tentang Pedoman Kegiatan Penyusunan Kurikulum 2016 Universitas Telkom" yang ditetapkan pada tanggal 24 Juni 2015.

2.1. Curriculum Foundation

Computer Systems Program build the 2016 curriculum are refer to:

1. ABET Curriculum Structure for Engineering Program

Produce graduates in computer field in accordance with ABET standards for the field of Engineering, in particular ABET in *2015-2016 Criteria for Accrediting Engineering Programs*:

Program criteria apply to engineering programs that include "electrical," "electronic(s)," "computer," "communication(s)," telecommunication(s), or similar named Engineering.

Quotation of the discussion content:

The structure of the curriculum must provide both breadth and depth across the range of engineering topics implied by the title of the program.

The curriculum must include probability and statistics, including applications appropriate to the program name; mathematics through differential and integral calculus; sciences (defined as biological, chemical, or physical science); and engineering topics (including computing science) necessary to analyze and design complex electrical and electronic devices, software, and systems containing hardware and software components programs.

2. Refers to the "Indonesian National Qualifications Framework (KKNI) Cluster of Information and Computer Science" by Aptikom KKNI Team, that is:

Computer Systems (Computer Engineering0, which emphasizes the individual's ability in designing and developing digital-based hardware (hardware engineering), includes:

- f. Associated with the design and construction of systems based on computer / digital.
- g. Study of hardware, software, communication technology, and the interaction between these components.
- h. Focus on theories, principles and practical applications of electronic science and mathematics, then it implemented in the form of computer design or other digital-based technology.
- i. Later it evolved into the science of how to design a variety of digital-based equipment that is commonly found on the market (digital gadgets) and a variety of communication hardware devices which are widely used in computer networks.
- j. In addition, the study also related to the design of components based on digital (embedded devices).

Here is a roadmap of computer systems field for bachelor program, equivalent with level 6 KKNI , which is based on: a. Topic Area, b. Scientific

sphere, c. Field of study / Area of Knowledge / Body of Knowledge). For Related Subjects not included in the figure 2.1 below :

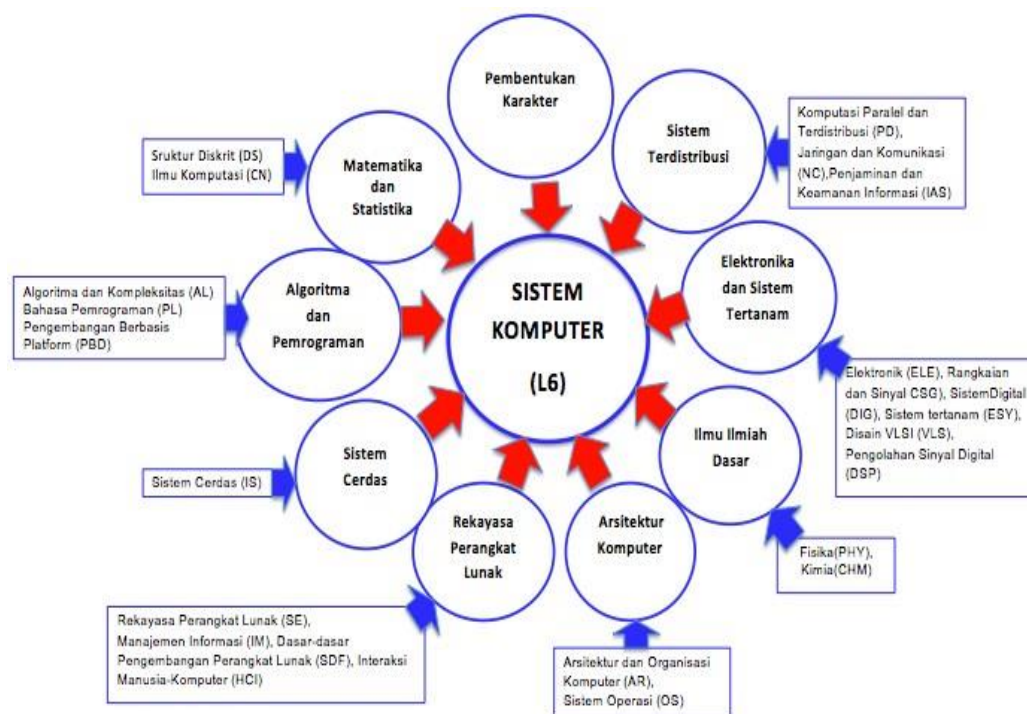


Figure 2.1 Roadmap Scientific Field of Bachelor Program of Computer Systems

3. Referring to the preparation of the KKNI curriculum by Higher Education. In accordance with Figure 2.2 below.



Figure 2.2 KKNI curriculum development by the Higher Education

4. Rector Decree of Telkom University Number: **KR.234/AKD04/WR1/2015** "About the Event Guidelines Telkom University 2016 Curriculum Arrangement" which was set on June 24, 2015

2.2 Capaian Program (*Program Outcome/PO*) – S1 Sistem Komputer

Capaian Program Prodi S1 Sistem Komputer Mengaju Pada ABET dan Buku “**Kerangka Kualifikasi Nasional Indonesia (KKNI) Rumpun Ilmu Informatika dan Komputer**” oleh Tim KKNI Aptikom sebagai berikut :

Tabel 2.1 Capaian Program dari Program Studi S1 Sistem Komputer

No	Capaian Program Spesifik	Dimensi Capaian Program Umum
1.	Mengidentifikasi dan menjelaskan struktur dasar dan organisasi berbagai sistem komputer. Melakukan rancang bangun sistem komputer (Hardware/embedded system), sistem-sistem sederhana berbasis mikrokomputer dan jaringan komputer, dan robotika dengan menggunakan metode, teknik dan alat bantu sesuai kebutuhan pengguna Melakukan rancang bangun sistem cerdas dengan menggunakan metode, teknik dan alat bantu sesuai kebutuhan pengguna Melakukan rancang bangun untuk Komputasi Bergerak (<i>Mobile Computing System</i>) pada jaringan global dengan menggunakan metode, teknik dan alat bantu sesuai kebutuhan pengguna	Penguasaan bidang Komputasi dan Hardware
2.	Menerapkan pengetahuan dasar ilmiah dan mekanisme kerja komputer sehingga mampu memecahkan masalah melalui pembuatan model solusi sistem berbasis komputer.	Berpikir kritis dan taat kaidah ilmiah
3.	Menggunakan teknik, ketrampilan dan alat bantu yang modern yang diperlukan dalam bidang teknik Komputer	Kecakapan menggunakan teknik dan perangkat komputasi
4.	Memahami tanggungjawab etika dan profesi, serta memahami dampak dari solusi teknik dalam konteks ekonomi, lingkungan dan social secara global.	Terlibat secara profesional dan sosial
5.	Berkomunikasi secara efektif pada berbagai kalangan	Komunikasi yang efektif
6.	Memiliki kesadaran untuk mengembangkan diri sepanjang hayat.	Pembelajaran sepanjang hayat
7.	Bekerja-sama secara efektif baik sebagai anggota maupun pemimpin tim kerja.	Kepemimpinan dan kerja tim lintas disiplin
8.	Mengidentifikasi kebutuhan untuk menjadi seorang wirausaha di bidang teknologi informasi dan komunikasi	Cakap berwirausaha
9.	Dapat melanjutkan studi ke jenjang yang lebih tinggi.	Studi lanjut

2.2 Program Outcome (PO) of Bachelor Program of Computer Systems

Program Outcome of Computer Systems Bachelor Program refer to ABET and “Indonesian National Qualifications Framework (KKNI) Cluster of Information and Computer Science” by Aptikom KKNI Team as follows:

Table 2.1 Program Outcome of Computer Systems Bachelor Program

No	Specific Program Outcome	Dimension of General Program Outcome
1.	Identify and explain basic structure and organisation of various computer systems. Conduct a design of computer systems (hardware / embedded systems), simple systems based on microcomputer and computer network, and robotics by using the methods, techniques and tools according to the needs of the user. Conduct a smart system design by using methods, techniques and tools according to user's needs. Conduct a design for Mobile Computing System on global networks by using methods, techniques and tools according to the needs of the user.	Mastery of Computing and Hardware
2.	Applying basic scientific knowledge and working mechanism of the computer so they can solve problems through system solution modelling based on computer.	Critical thinking and scientific principles obedient.
3.	Using the techniques, skills and modern tools necessary in the field of computer engineering.	Skills to use techniques and computing devices.
4.	Understanding the ethics and professional responsibility, and understand the impact of engineering solutions in the context of economic, environmental and social globally.	Involved professionally and socially.
5.	Communicate effectively in various circles.	Effective communication.
6.	Have the awareness to develop themselves a lifelong.	Lifelong learning.
7.	Collaborate effectively both as a member and leader of the work team.	Leadership and cross-disciplinary teamwork.
8.	Identifying the need to be an entrepreneur in the field of information and communication technology.	Able to take entrepreneurial.
9.	Can continue their studies to a higher level.	Further studies.

3 PROFIL LULUSAN

3 GRADUATE PROFIL

3.1 Bagian Profil Akademik Lulusan

Berikut dipaparkan gambaran akademik lulusan program studi S1 Sistem Komputer :

Tabel 3.1 Profil mahasiswa reguler dan lulusan dalam lima tahun terakhir

Tahun Akademik	Jumlah Mahasiswa Baru		Jumlah Lulusan		IPK Lulusan Reguler			Persentase Lulusan Reguler dengan IPK :		
	Regular bukan Transfer	Transfer ⁽³⁾	Regular bukan Transfer	Transfer ⁽³⁾	Min	Rat	Mak	< 2,75	2,75-3,50	> 3,50
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
2010/2011	116	0	16	0	3,01	3,25	3,61	0	93,75	6,25
2011/2012	170	3	39	0	2,46	3,12	3,75	10,26	79,49	10,26
2012/2013	174	4	110	0	2,25	2,95	3,65	32,73	62,73	4,55
2013/2014	180	8	110	5	2,17	2,94	3,62	24,11	70,54	5,36
2014/2015	191	5	153	2	2,22	2,94	3,69	27,44	67,68	4,88
Jumlah	831	20	424	7	2,42	3,04	3,66	18,91	74,84	6,26

Berdasarkan tabel 3.1 tentang profil lulusan secara akademik dapat disimpulkan sebagai berikut:

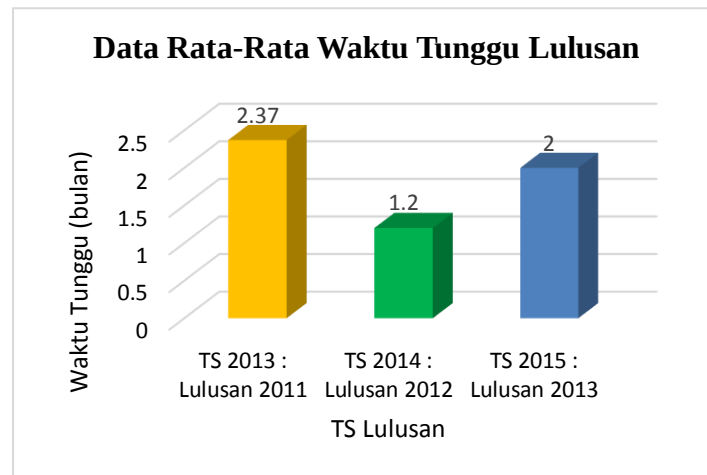
- Berdasarkan data di kolom (7), dapat dilihat bahwa **rata-rata Indeks Prestasi Kumulatif (IPK) mahasiswa selama 5 tahun terakhir adalah 3,04**.
- Berdasarkan data di kolom (10), bahwa pencapaian IPK lulusan berada pada rentang 2,75 – 3.50 rata-rata sebesar 74.84% Hal ini berarti bahwa hampir 75% lulusan memiliki kompetensi yang cukup tinggi.

Tabel 3.2 Data jumlah mahasiswa reguler tujuh tahun terakhir

Tahun Masuk	Jumlah Mahasiswa Reguler per Angkatan pada Tahun*							Jumlah Lulusan s.d. TS (dari Mahasiswa Reguler)
	TS-6	TS-5	TS-4	TS-3	TS-2	TS-1	TS	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
TS-6 (08/09)	(a)=153	152	144	131	121	47	(b)=5	(c)=119
TS-5 (09/10)		146	142	121	107	48	13	104
TS-4 (10/11)			116	108	106	89	25	80
TS-3 (11/12)				(d)=170	148	135	92	(f)=38
TS-2 (12/13)					174	166	(e)=135	
TS-1 (13/14)						180	163	
TS (14/15)							191	

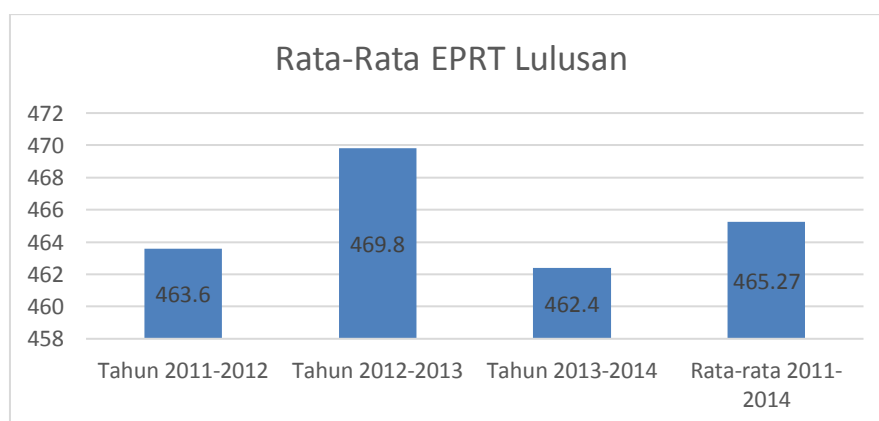
Berdasarkan tabel 3.2, jumlah mahasiswa yang diterima di tahun ajaran 2011/2012 (TS-3) adalah **170** orang mahasiswa. Sementara jumlah mahasiswa yang diterima di tahun ajaran 2011/2012 dan telah lulus di tahun ajaran 2014/2015 (TS) adalah sebanyak **38** orang. Dengan demikian **prosentase kelulusan tepat waktu** yang dicapai adalah **22,35%**.

Gambar 3.1 dibawah ini menunjukkan Indikator Masa Tunggu Lulusan untuk memperoleh pekerjaan pertama rata-rata untuk 4 (empat) kali periode wisuda adalah 1,85 bulan. Kurun waktu tunggu ini merupakan bukti kuat bahwa lulusan Prodi S1 Sistem Komputer sesuai dengan kebutuhan pasar.



Gambar 3.1 Masa Tunggu Lulusan

Pada gambar 3.2 dibawah dapat dilihat bahwa pencapaian skor ePrT rata-rata sebesar 465,20 pada rentang waktu 2012 sampai dengan 2014. Pencapaian ini sudah sesuai dengan target institusi skor EPRT minimal 450.



Gambar 3.2 Rata-rata EPRT Lulusan

3.1 Academic Graduate Profile

In the following section presented an academic overview of Computer Systems Bachelor Program graduate :

Table 3.1 Profile of the regular students and graduates in the past five years

Academic Years	Number of Freshmen		Number of Graduates		GPA Regular Graduates			Percentage of Regular Graduates with GPA :		
	Regular not Transfer	Transfer ⁽³⁾	Regular not Transfer	Transfer ⁽³⁾	Min	Average	Max	< 2,75	2,75-3,50	> 3,50
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
2010/2011	116	0	16	0	3,01	3,25	3,61	0	93,75	6,25
2011/2012	170	3	39	0	2,46	3,12	3,75	10,26	79,49	10,26
2012/2013	174	4	110	0	2,25	2,95	3,65	32,73	62,73	4,55
2013/2014	180	8	110	5	2,17	2,94	3,62	24,11	70,54	5,36
2014/2015	191	5	153	2	2,22	2,94	3,69	27,44	67,68	4,88
Total	831	20	424	7	2,42	3,04	3,66	18,91	74,84	6,26

According to the table 3.1 about academic graduate profile can be summarized as follows:

- c. Based on the data in column (7), it can be seen that the mean of grade point average (GPA) of students over the last 5 years was 3.04.
- d. Based on the data in column (10), the achievement of the graduates GPA that in the range of 2.75 - 3:50 on average by 74.84%. This means that almost 75% of graduates have a high enough competence.

Table 3.2 The number of regular students in the last seven years

Year in	Number of Regular Students per Class in year*							Number of Graduates until TS (from regular students)
	TS-6	TS-5	TS-4	TS-3	TS-2	TS-1	TS	
(1)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
TS-6 (08/09)	(a)=153	152	144	131	121	47	(b)=5	(c)=119
TS-5 (09/10)		146	142	121	107	48	13	104
TS-4 (10/11)			116	108	106	89	25	80
TS-3 (11/12)				(d)=170	148	135	92	(f)=38
TS-2 (12/13)					174	166	(e)=135	
TS-1 (13/14)						180	163	
TS (14/15)							191	

Based on table 3.2, the number of students accepted in the 2011/2012 academic year (TS-3) was 170 students. While the number of students accepted in the 2011/2012 academic

year and have graduated in the 2014/2015 academic year (TS) are 38 people. Thus the on time completion percentage achieved was 22.35%.

Figure 3.1 below shows the graduates Waiting Period Indicator to obtain the first employment average for four (4) times graduation period was 1.85 months. The period of waiting is strong evidence that Computer System Bachelor Program graduates in accordance with market needs.

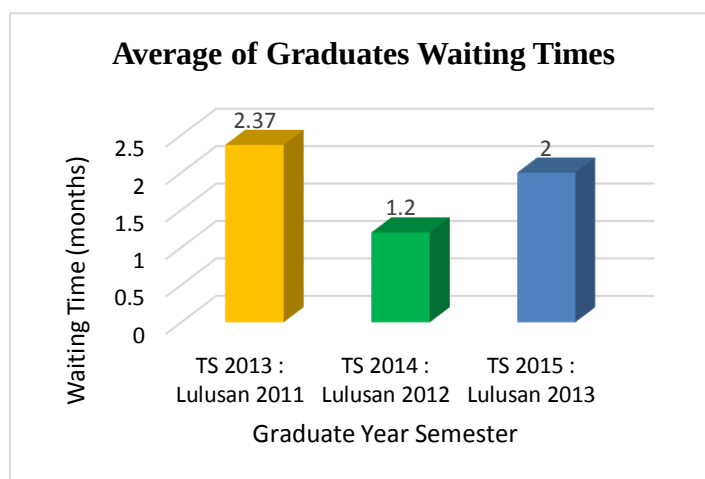


Figure 3.1 Graduates Waiting Time

In the figure 3.2 below we can see that the average ePrT score achievement is 465.20 in the period 2012 to 2014. This achievement is in conformity with the EPRT institutions target score of at least 450.

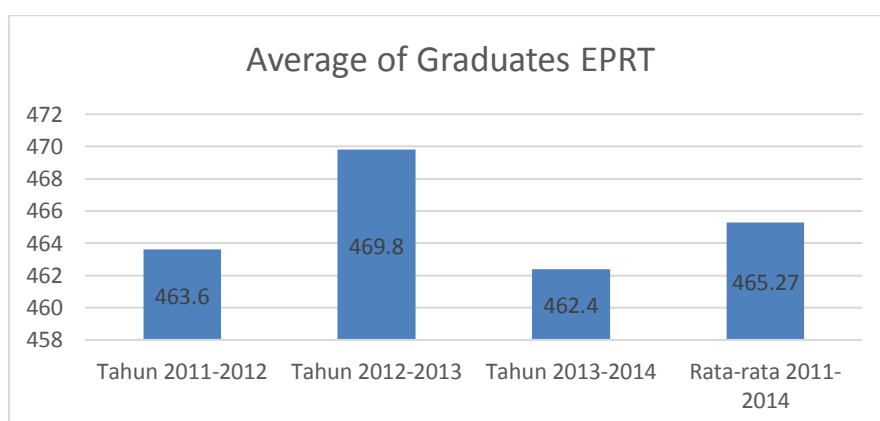


Figure 3.2 Average of Graduates EPRT

3.2 Kepuasan Pemanfaatan Lulusan oleh Pengguna

Kepuasan pemanfaat lulusan dilakukan oleh Direktorat Pusat Pengembangan Karir & Pengelolaan Alumni secara teratur yaitu *tracer study* yang dilakukan satu tahun setelah wisuda. Dari hasil survei tersebut, beberapa temuan indikator berikut yang dikatakan

sangat baik yaitu penggunaan teknologi informasi. Sedangkan indikator yang ditingkatkan adalah integritas (etika dan moral) serta penguasaan bahasa Inggris. Tracer alumni ini dilakukan setiap semester sesuai periode wisuda, dengan mengambil sampel wisudawan yang dilakukan satu tahun setelah mereka lulus. Data diperoleh dari survei alumni, Focus Group Discussion (FGD), dan kuesioner. Hasil-hasil dari *tracer study* ini dapat dipergunakan sebagai masukan untuk perbaikan kurikulum dan proses pembelajaran.

Tabel 3.3 Hasil rekap tracer study beberapa perusahaan terhadap lulusan Prodi S1 Sistem Komputer

NO	Nama	Bidang	Elemen Penilaian*							Nilai (%)
			1	2	3	4	5	6	7	
1	PT. Berka HardayaperBasa		S B	S B	S B	S B	S B	S B	B	96%
2	PT. BFI FINANCE INDONESIA TBK	LEASING	S B	S B	B	B	S B	S B	S B	93%
3	PT. COMPUTRADE TECHNOLOGY INTERNATIONAL	SERVICE & DISTRIBUTION IT	B	S B	B	B	B	B	B	79%
4	PT. COMPUTRADE TECHNOLOGY INTERNATIONAL	IT	B	B	B	B	B	B	B	75%
5	PT. COMPUTRADE TECHNOLOGY INTERNATIONAL	SERVICE & DISTRIBUTION IT	B	B	B	B	B	B	B	75%
6	PT. DATACOMM DIANGRAHA	IT SERVICE	B	B	B	S B	B	S B	S B	86%
7	PT. DATACOMM DIANGRAHA	MANAGED IT SERVICE	B	B	B	B	B	B	B	75%
8	PT. HUAWEI TECH INVESTMENT	TELEKOMUNIKASI ICT	B	S B	B	S B	B	B	B	82%
9	PT. INDOMARCO PRISMATAMA	RETAIL	S B	S B	S B	S B	S B	S B	B	96%
10	PT. MEDIATRAC SISTEM KOMUNIKASI	JASA ICT	S B	B	B	S B	B	B	B	82%
11	PT. Telkom Indonesia		S B	S B	S B	S B	B	S B	S B	96%
12	PT. ZTE INDONESIA	TELEKOMUNIKASI	S B	S B	S B	S B	B	S B	S B	96%
Jumlah										1032%
Rata-rata										86,01%

Tabel 3.4 Tanggapan Pihak pengguna terhadap Lulusan dan Rencana Tindak Lanjut oleh Program Studi

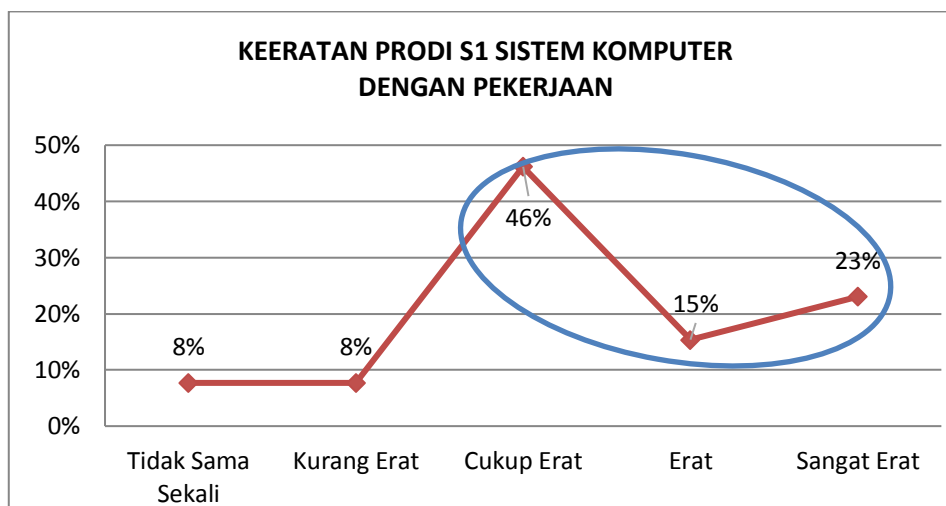
No.	Jenis Kemampuan	Tanggapan Pihak Pengguna				Rencana Tindak Lanjut oleh Program Studi
		Sangat Baik	Baik	Cukup	Kurang	
		(%)	(%)	(%)	(%)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Integritas (etika dan moral)	50%	50%	0%	0%	Menggiatkan kegiatan-kegiatan sederhana yang mampu meningkatkan kualitas etika dan moral mahasiswa seperti: Mentoring

No.	Jenis Kemampuan	Tanggapan Pihak Pengguna				Rencana Tindak Lanjut oleh Program Studi
		Sangat Baik	Baik	Cukup	Kurang	
		(%)	(%)	(%)	(%)	
						Kejujuran dalam quiz, UTS, dan UAS Punishment yg sesuai Berdoa sebelum dan sesudah
2	Keahlian berdasarkan bidang ilmu (profesionalisme)	58%	42%	0%	0%	Melakukan evaluasi rutin terhadap kurikulum prodi Mengoptimalkan fasilitas sertifikasi internasional untuk mahasiswa prodi Menggiatkan kegiatan study group dan research group di prodi Meningkatkan motivasi dan jumlah partisipasi mahasiswa prodi pada lomba-lomba terkait bidang Sistem Komputer
3	Bahasa Inggris	33%	67%	0%	0%	Mengoptimalkan test EPrT dan ECCT sebagai sarana peningkatan kemampuan bahasa Inggris mahasiswa Melaksanakan Sidang Tugas Akhir dengan menggunakan bahasa Inggris
4	Penggunaan Teknologi Informasi	58%	42%	0%	0%	Registrasi dan perwalian dengan sistem online Tugas kuliah selalu melibatkan software ataupun browsing dengan internet
5	Komunikasi	25%	75%	0%	0%	Menjadikan presentasi sebagai salah satu penilaian tugas kuliah di sebagian mata kuliah prodi
6	Kerjasama tim	50%	50%	0%	0%	Melaksanakan praktikum mata kuliah dalam format berkelompok Memberikan penugasan-penugasan mata kuliah dalam bentuk kelompok
7	Pengembangan diri	33%	67%	0%	0%	Mengoptimalkan peran Transkrip Aktifitas Kemahasiswaan (TAK) untuk mendorong mahasiswa agar mau

No.	Jenis Kemampuan	Tanggapan Pihak Pengguna				Rencana Tindak Lanjut oleh Program Studi
		Sangat Baik	Baik	Cukup	Kurang	
		(%)	(%)	(%)	(%)	
						mengembangkan diri di dalam organisasi-organisasi mahasiswa di kampus Meningkatkan motivasi dan jumlah partisipasi mahasiswa prodi pada lomba-lomba
Total		308%	392%	0%	0%	

Berdasarkan tabel 3.3 dan tabel 3.4 menunjukkan bahwa pengguna lulusan prodi S1 Sistem Komputer menunjukkan baik terhadap 7 elemen kompetensi.

Gambar 3.3 dibawah ini menunjukkan grafik prosentase kesesuaian bidang pekerjaan dengan bidang keahlian tahun 2013



Gambar 3.3 Grafik Kesesuaian Bidang Pekerjaan dengan Bidang Keahlian

Sebanyak **46%** responden menyatakan bahwa antara apa yang diberikan di bangku perkuliahan dengan apa yang mereka temui di dunia kerja memiliki hubungan yang **cukup erat**, sebanyak **15%** menyatakan **erat** dan **23%** menyatakan **sangat erat**. Dari ketiga keeratan tersebut maka dapat disimpulkan sebanyak **84%** responden menyatakan bahwa pekerjaan mereka saat ini sudah sesuai dengan bidang ilmunya.

3.2 Graduates Utilization Satisfaction by User

Graduates beneficiary satisfaction conducted by the Directorate of Career Development & Alumni Management Center regularly ie tracer study conducted one year after graduation. From the results of the survey, some findings of following indicators were said to be very good, that the use of information technology. While the enhanced indicator is the integrity (ethics and

morals) and mastery of the English language. Alumni Tracer is done every semester according to graduation period, by taking a sample of graduates conducted one year after their graduation. Data are obtained from a survey of alumni, Focus Group Discussion (FGD), and questionnaires. The results of the tracer can be used as input for the improvement of the curriculum and the learning process.

Table 3.3 Recapitulation result of tracer study by some companies to Computer Systems Bachelor Program graduates

NO	Name	Field	Score Element*							Score (%)
			1	2	3	4	5	6	7	
1	PT. Berka HardayaperBasa		S B	S B	S B	S B	S B	S B	B	96%
2	PT. BFI FINANCE INDONESIA TBK	LEASING	S B	S B	B	B	S B	S B	S B	93%
3	PT. COMPUTRADE TECHNOLOGY INTERNATIONAL	SERVICE & DISTRIBUTION IT	B	S B	B	B	B	B	B	79%
4	PT. COMPUTRADE TECHNOLOGY INTERNATIONAL	IT	B	B	B	B	B	B	B	75%
5	PT. COMPUTRADE TECHNOLOGY INTERNATIONAL	SERVICE & DISTRIBUTION IT	B	B	B	B	B	B	B	75%
6	PT. DATACOMM DIANGRAHA	IT SERVICE	B	B	B	S B	B	S B	S B	86%
7	PT. DATACOMM DIANGRAHA	MANAGED IT SERVICE	B	B	B	B	B	B	B	75%
8	PT. HUAWEI TECH INVESTMENT	TELEKOMUNIKAS I ICT	B	S B	B	S B	B	B	B	82%
9	PT. INDOMARCO PRISMATAMA	RETAIL	S B	S B	S B	S B	S B	S B	B	96%
10	PT. MEDIATRAC SISTEM KOMUNIKASI	JASA ICT	S B	B	B	S B	B	B	B	82%
11	PT. Telkom Indonesia		S B	S B	S B	S B	B	S B	S B	96%
12	PT. ZTE INDONESIA	TELEKOMUNIKAS I	S B	S B	S B	S B	B	S B	S B	96%
Jumlah										1032%
Average										86,01%

Table 3.4 Respons of user to graduates and Follow-up Plan by Program

No.	Ability Types	The response of Users				Follow-up Plan by Program
		Very Good	Good	Enough	Less	
		(%)	(%)	(%)	(%)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Integrity (ethics and morals)	50%	50%	0%	0%	Intensify simple activities that can improve the

No.	Ability Types	The response of Users				Follow-up Plan by Program
		Very Good	Good	Enough	Less	
		(%)	(%)	(%)	(%)	
						quality of student ethics and morals such as: honesty mentoring in the quiz, UTS and UAS, the appropriate punishment, Pray before and after
2	(profesionalisme) Expertise based on science field (professionalism)	58%	42%	0%	0%	Conduct regular evaluation to the Program curriculum Optimizing international certification facilities for program students Intensify activities of study groups and research groups in Bachelor Program Increase motivation and the amount of student participation in the contests related to the field of Computer Systems
3	English Proficiency	33%	67%	0%	0%	Optimizing EPrT and ECCT tests as a means of improving English language skills of students Implement Final Session in English
4	Information Technology Usage	58%	42%	0%	0%	Registration and trust with online system Coursework assignments always involves software or browsing the internet
5	Communication	25%	75%	0%	0%	Making a presentation as one coursework vote in most subjects of Bachelor Program
6	Teamwork	50%	50%	0%	0%	Implement practical subjects in a group format Provide assignments courses into groups
7	Self development	33%	67%	0%	0%	Optimizing the role of Student Activities Transcript (TAK) to encourage students to develop themselves in the student organizations on campus

No.	Ability Types	The response of Users				Follow-up Plan by Program
		Very Good	Good	Enough	Less	
		(%)	(%)	(%)	(%)	
						Meningkatkan motivasi dan jumlah partisipasi mahasiswa prodi pada lomba-lomba Increase the motivation and the amount of student participation in the contests
Total		308%	392%	0%	0%	

Based on Table 3.3 and Table 3.4 it can be shown that the user of Computer Systems Bachelor Program graduates responds good against the seven elements of competence.

Figure 3.3 below shows a percentage graph of the work field conformity with areas of expertise in 2013.

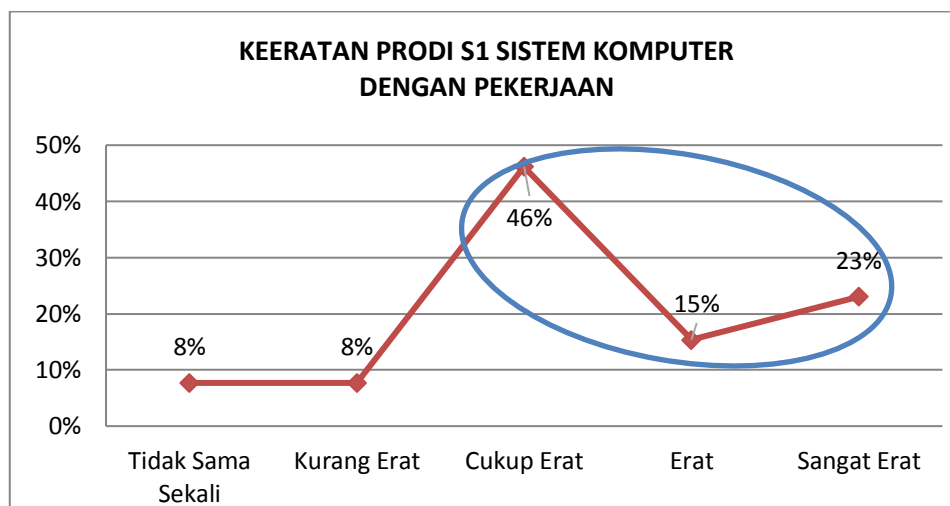


Figure 3.3 Graph of the work field conformity with areas of expertise

As many as 46% of respondents said that between what is given in the lecture bench with what they encounter in the workplace has a fairly close relationship, as much as 15% declared closely and 23% said very closely. From the three closeness it can be concluded as much as 84% of respondents stated that their current job is in conformity with the field of knowledge.

3.3 Profil Umum Lulusan

Berdasarkan hasil Evaluasi dan Tracer Studi , Profil Lulusan terdiri atas kategori:

1. Insinyur Perangkat Keras
2. Insinyur Perangkat Keras
3. Insinyur Jaringan Komputer
4. Spesialis Keamanan Komputer
5. Pemrogram Sistem

6. Peneliti
7. Wirausaha Teknologi

3.3 Graduate General Profile

Based on the results of the Evaluation and Tracer Study, Graduate Profile consists of categories:

1. Hardware Engineer
2. Network Engineer
3. Computer Security Specialists
4. Systems Programmer
5. Researcher
6. Technopreneur

4 CAPAIAN PEMBELAJARAN

4 LEARNING OUTCOME

4.1 Capaian Pembelajaran (*Learning Outcome/LO*) S1 Sistem Komputer

Dalam membahas capaian pembelajaran terlebih dahulu dibahas keterkaitan ranah topik, ranah keilmuan, dan mata kuliah seperti terlihat pada tabel 4.1 dibawah ini:

Tabel 4.1 Keterkaitan Ranah Topik, Ranah Keilmuan dan Mata Kuliah pada Program Studi S1 Sistem Komputer (catatan: “ranah keilmuan” berdasarkan pada ACM-IEEE 2013, ACM-CCCE 2004)

No.	Ranah Topik (Topic Area)	Ranah Keilmuan*	Mata Kuliah Terkait
1	Pembentukan Karakter		Pendidikan Agama dan Etika, Pancasila dan Kewarganegaraan, Bahasa Indonesia, Bahasa Inggris dan Bahasa Inggris II, Pengenalan Sistem Komputer
2	Matematika & Statistika	Struktur Diskrit (DS), Ilmu Komputasi (CN),	Kalkulus 1 A, Kalkulus 2 A, Matematika Diskrit, Metode Numerik, Matriks dan Ruang Vektor, Probabilitas dan Statistik A, Logika Matematika B
3	Ilmu Ilmiah Dasar (Basic Science)	Fisika(PHY), Kimia(CHM)	Fisika 1 A, Fisika 2 A, Kimia, Konsep Pengenalan Sains dan Teknologi A
4	Algoritma dan Pemrograman	Algoritma dan Kompleksitas (AL), Bahasa Pemrograman (PL), Pengembangan Berbasis Platform (PBD)	Algoritma dan Pemrograman B, Pemrograman Berorientasi Objek B
5	Sistem Cerdas	Sistem Cerdas (IS)	Kecerdasan Buatan B, Robotika dan Sistem Cerdas, Pembelajaran Mesin (Machine Learning), Computer Vision A,
6	Rekayasa Perangkat Lunak	Rekayasa Perangkat Lunak (SE), Manajemen Informasi (IM), Dasar-dasar Pengembangan Perangkat Lunak (SDF), Interaksi Manusia-Komputer (HCI)	Desain Basis Data, Dasar Perancangan Perangkat Lunak, Interaksi Mesin Manusia.
7	Arsitektur Komputer	Arsitektur dan Organisasi Komputer (AR), Sistem Operasi (OS)	Organisasi Komputer, Arsitektur Komputer, Sistem Operasi B.
8	Sistem Terdistribusi	Komputasi Paralel dan Terdistribusi (PD), Jaringan dan Komunikasi (NC), Penjaminan dan Keamanan Informasi (IAS)	Jaringan Komputer dan Data I, Jaringan Komputer dan Data II, Keamanan Sistem Komputer, Komputasi Bergerak, Jaringan Masa Depan, Komputasi Paralel, Antrian

			dan Rekayasa Trafik, Komputer Forensik
9	Elektronika dan Sistem Tertanam	Elektronik (ELE), Rangkaian dan Sinyal CSG), Sistem Digital (DIG), Sistem tertanam (ESY), Disain VLSI (VLS), Pengolahan Sinyal Digital (DSP)	Elektronika, Rangkaian listrik Dasar, Desain Sistem digital, Sistem Tertanam, Mikroprosesor dan Antarmuka, Pengolahan Sinyal Digital, Koding dan Kompresi Data, Sistem Multimedia, Sistem Kendali Mekanika
10	Kecakapan Hidup	Isu Sosial dan Praktik Profesional (SP)	Literasi TIK, Ekonomi Teknik B, Studium General, Manajemen Proyek, Kewirausahaan, Geladi, Kerja Praktik, Tugas Akhir

* (Bidang Kajian/ *Knowledge Area/Body of Knowledge*)

Program Studi S1 Sistem Komputer ditujukan menghasilkan lulusan yang memiliki capaian pembelajaran (*Learning Outcome/LO*):

SIKAP sebagai berikut :

- Bertaqwa kepada Tuhan Yang Maha Esa dan mampu menunjukkan sikap religius;
- Pendidikan luas yang diperlukan untuk memahami dampak dari solusi teknis di dalam konteks global, ekonomi, lingkungan, dan social. (ABET)
- Pemahaman terhadap tanggung jawab secara profesional dan beretika (ABET)
- Menginternalisasi semangat kemandirian, kejuangan, dan kewirausahaan

PENGETAHUAN sebagai berikut :

- Kemampuan untuk mengaplikasikan matematika, sains, dan rekayasa.(ABET)
- Kemampuan menganalisis, merancang, dan membangun (meng-*coding*) sistem perangkat lunak untuk sistem berbasis mikro komputer dan jaringan komputer
- Kemampuan merancang Jaringan Komputer dan Sistem Keamanan Komputer
- Kemampuan merancang dan membangun sistem multimedia

KETERAMPILAN UMUM sebagai berikut :

- Kemampuan untuk merancang dan melakukan eksperimen, serta menganalisis dan menginterpretasikan data. (ABET)
- Kemampuan untuk merancang sebuah sistem, komponen, atau proses untuk memenuhi kebutuhan yang diinginkan dalam batasan konstrain yang realistis, seperti ekonomi, lingkungan, social, politik, kesehatan dan keselamatan, kelayakan manufaktur, dan keberlanjutan. (ABET)
- Kemampuan untuk berperan di dalam team multi disiplin. (ABET)
- Kemampuan untuk mengidentifikasi, memformulasikan, dan memecahkan masalah-masalah rekayasa. (ABET)
- Kemampuan untuk berkomunikasi secara efektif. (ABET)
- Pengakuan akan kebutuhan dan kemampuan untuk terlibat dalam belajar seumur hidup. (ABET)
- Pengetahuan isu-isu kontemporer. (ABET)
- Kemampuan untuk menggunakan teknik, keterampilan, dan peralatan modern, yang diperlukan untuk praktek dalam rekayasa. (ABET)

KETERAMPILAN KHUSUS sebagai berikut :

- q. Kemampuan merancang sistem komputer (Hardware/embedded system), sistem-sistem sederhana berbasis mikrokomputer dan jaringan computer
- r. Kemampuan merancang dan membangun sistem cerdas dan robotika
- s. Kemampuan untuk Komputasi Bergerak (*Mobile Computing System*) pada jaringan global

Capaian pembelajaran Program Studi Sistem Komputer untuk memenuhi kualifikasi lulusan Sarjana Program Studi Sistem Komputer merujuk ABET dan KKNI level 6 dengan merujuk pada capaian pembelajaran yang direkomendasikan oleh Dikti (Panduan Penyusunan Capaian Pembelajaran) dan APTIKOM level 6 terlihat pada tabel 4.2.

Tabel 4.2 Capaian Pembelajaran dari Program Studi S1 Sistem Komputer

No	Ranah Topik	Capaian Pembelajaran
1.	Pembentukan Karakter	a. Bertaqwa kepada Tuhan Yang Maha Esa dan mampu menunjukkan sikap religius;
		b. Pendidikan luas yang diperlukan untuk memahami dampak dari solusi teknis di dalam konteks global, ekonomi, lingkungan, dan social
		c. Pemahaman terhadap tanggung jawab secara professional dan beretika.
		d. Menginternalisasi semangat kemandirian, kejuangan, dan kewirausahaan
2.	Matematika dan Statistika, Ilmu Alam Dasar (Basic Science)	e. Kemampuan untuk mengaplikasikan matematika, sains, dan rekayasa.
3.	Elektronika dan Sistem Tertanam, Sistem terdistribusi (Sistem Komputer), Rekayasa Perangkat Lunak, Arsitektur Komputer, Sistem Cerdas, Algoritma dan Pemrograman	f. Kemampuan menganalisis, merancang, dan membangun (meng- <i>coding</i>) sistem perangkat lunak untuk sistem berbasis mikro komputer dan jaringan computer
		g. Kemampuan merancang Jaringan Komputer dan Sistem Keamanan Komputer
		h. Kemampuan merancang dan membangun sistem multimedia
		i. Kemampuan untuk merancang dan melakukan eksperimen, serta menganalisis dan menginterpretasikan data.
		j. Kemampuan untuk merancang sebuah sistem, komponen, atau proses untuk memenuhi kebutuhan yang diinginkan dalam batasan konstrain yang realistis, seperti ekonomi, lingkungan, social, politik, kesehatan dan keselamatan, kelayakan manufaktur, dan keberlanjutan.
		l. Kemampuan untuk mengidentifikasi, memformulasikan, dan memecahkan masalah-masalah rekayasa
4.	Sistem Cerdas	p. Kemampuan untuk menggunakan teknik, keterampilan, dan peralatan modern, yang diperlukan untuk praktek dalam rekayasa
		r. Kemampuan merancang dan membangun sistem cerdas dan robotika

No	Ranah Topik	Capaian Pembelajaran
5.	Arsitektur Komputer, Elektronika dan Sistem tertanam	q. Kemampuan merancang sistem komputer (Hardware/embedded system), sistem-sistem sederhana berbasis mikrokomputer dan jaringan computer
6.	Sistem terdistribusi	s. Kemampuan untuk Komputasi Bergerak (<i>Mobile Computing System</i>) pada jaringan global
7	Kecakapan Hidup (<i>Success Skills</i>)	k. Kemampuan untuk berperan di dalam team multi disiplin
		m. Kemampuan untuk berkomunikasi secara efektif.
		n. Pengakuan akan kebutuhan dan kemampuan untuk terlibat dalam belajar seumur hidup.
		o. Pengetahuan isu-isu kontemporer.

Kemudian capaian pembelajaran dipetakan ke dalam aspek kompetensi sesuai dengan tabel 4.3.

Tabel 4.3 Jumlah Capaian Pembelajaran Per Aspek Kompetensi

Tabel 4.3 Jumlah Capaian Pembelajaran Per Aspek Kompetensi			
No.	Aspek Kompetensi	Ranah Topik	Jumlah Capaian Pembelajaran
1.	Sikap	Pembentukan Karakter	4
2.	Pengetahuan	Ilmu Matematika	1
		Ilmu Alamiah Dasar(Basic Science)	
3.	Pengetahuan dan Keterampilan Umum	Algoritma dan Pemrograman	7
		Sistem Cerdas	
		Rekayasa Perangkat Lunak	
		Arsitektur Komputer	
		Sistem Terdistribusi	
		Elektronika dan Sistem Tertanam	
		Kecakapan hidup (Success Skills)	4
4	Keterampilan Khusus	Sistem Cerdas	1
		Arsitektur Komputer	1
		Elektronika dan Sistem Tertanam	
		Sistem Terdistribusi	1
Jumlah			19

4.1 Learning Outcome of Bachelor Program of Computer Engineering Field

In discussing the learning achievements, the prior topic discussed are linkages realm, the realm of science, and courses as shown in Table 4.1 below:

Table 4.1 The linkage between the Topic Area, Domain of Knowledge and Courses in Computer Systems Bachelor Program (note: "domain of knowledge" is based on the ACM-IEEE 2013, ACM-CCCE 2004)

No.	Topic Area	Domain of Knowledge*	Related Courses
1	Character Building		Religion Education and Ethics, Pancasila and Citizenship, Indonesian, English and English II, Introduction to Computer Systems
2	Mathematics & Statistics	Discrete Structures (DS), Computational Sciences (CN),	Calculus IA, Calculus IIA, Discrete Mathematics, Numerical Methods, Matrices and Vector Spaces, Probability and Statistics A, Mathematical Logical Mathematics B
3	Basic Science	Physics (PHY), Chemistry (CHM)	Physics 1 A, Physics 2 A, Chemistry, The introduction of the concept of Science and Technology A
4	Algorithm and Programming	Algorithms and Complexity (AL), Programming Languages (PL), Platform Based Development (PBD)	Algorithms and Programming B, Object-Oriented Programming B
5	Intelligent Systems	Intelligent Systems (IS)	Artificial Intelligence B, Robotics and Intelligent Systems, Machine Learning, Computer Vision A,
6	Software Engineering	Software Engineering (SE), Information Management (IM), Software Development Fundamental (SDF), Human-Computer Interaction (HCI)	Database Design, Fundamentals of Software Design, Human Machine Interaction.
7	Computer Architecture	Organization and Computer Architecture (AR), Operating Systems (OS)	Computer Organization, Computer Architecture, Operating System B
8	Distributed System	Parallel and Distributed Computing (AT), Networks and Communication (NC), Assurance and Information Security (IAS)	Computer Networks and Data I, Computer Networking and Data II, Computer Systems Security, Mobile Computing, Future Network, Parallel Computing, Queues and Traffic Engineering, Forensics Computer
9	Electronics and Embedded Systems	Electronic (ELE), Circuits and Signal CSG), Digital Systems (DIG), embedded System (ESY), VLSI Design (VLS), Digital Signal Processing (DSP)	Electronics, Basic Electrical Circuit, Digital System Design, Embedded Systems, Microprocessors and Interfaces, Digial Signal Processing, Coding and Data Compression, Multimedia Systems, Mechanics Control Systems
10	Life skills	Social Issues and Professional Practices (SP)	Literasi TIK, Ekonomi Teknik B, Studium General, Manajemen Proyek, Kewirausahaan, Geladi, Kerja Praktik, Tugas Akhir

			ICT literacy, Engineering Economics B, Studium Generale, Project Management, Entrepreneurship, Rehearsal, Practical Work, Final Thesis
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* (*Knowledge Area/Body of Knowledge*)

Bachelor Program of Computer System is intended to produce graduates who have the learning outcomes (Learning Outcome / LO):

ATTITUDE as follows:

- a. Devoted to God Almighty and be able to demonstrate religious attitude;
- b. Comprehensive education necessary to understand the impact of technical solutions within the context of global, economic, environmental, and social. (ABET)
- c. Understanding of the responsibilities in a professional and ethical (ABET)
- d. Internalize the spirit of independence, effort and entrepreneurship

KNOWLEDGE as follows :

- e. The ability to apply math, science, and engineering.(ABET)
- f. ability to analyze, design, and construct (recode) system software for systems based on micro-computers and computer networks
- g. The ability to design Computer Networking and Computer Security Systems
- h. The ability to design and build a multimedia system

GENERAL SKILLS as follows:

- i. The ability to design and conduct experiments, and analyze and interpret data. (ABET)
- j. The ability to design a system, component, or process to meet desired needs within the limits of realistic constraints, such as economics, environment are, social, political, health and safety, manufacturing feasibility, and sustainability. (ABET)
- k. The ability to participate in multidisciplinary teams. (ABET)
- l. The ability to identify, formulate and solve engineering problems. (ABET)
- m. Ability to communicate effectively. (ABET)
- n. Recognition of the need and ability to engage in lifelong learning. (ABET)
- o. Knowledge of contemporary issues. (ABET)
- p. The ability to use the techniques, skills and modern equipment, which is necessary to practice in engineering. (ABET)

SPECIFIC SKILLS as follows:

- q. The ability to design computer systems (hardware / embedded systems), systems and networks simple microcomputer-based computers.
- r. The ability to design and build intelligent systems and robotics.
- s. The ability for the Mobile Computing (Mobile Computing System) on global networks.

Learning gains Computer Systems Study Program for qualified graduates of Computer Systems Studies Program and KKNi refer ABET level 6 with reference to the learning outcomes recommended by the Higher Education (Learning Outcomes Preparation Guide) and APTIKOM level 6 in table 4.2.

Table 4.2 Learning Outcome of Program S1 Computer System

No	Topic Area	Learning Outcomes
1.	Character building	a. Devoted to God Almighty and be able to demonstrate religious attitude;
		b. Comprehensive education necessary to understand the impact of technical solutions within the context of global, economic, environmental, and social
		c. Understanding of the responsibilities in a professional and ethical.
		d. Internalize the spirit of independence, effort and entrepreneurship
2.	Mathematics and Statistics, Science Basic (Basic Science)	e. The ability to apply math, science, and engineering.
3.	Electronics and Embedded Systems, Distributed Systems (Computer Systems), Engineering Software, Architecture Computer, Intelligent Systems, Algorithms and Programming	f. The ability to analyze, design and build (recode) software system for micro-computer based systems and computer networks
		g. The ability to design Computer Networking and Computer Security Systems
		h. The ability to design and build a multimedia system
		i. The ability to design and conduct experiments, and analyze and interpret data.
		j. The ability to design a system, component, or process to meet desired needs within the limits of realistic constraints, such as economics, environment are, social, political, health and safety, manufacturing feasibility, and sustainability.
		l. The ability to identify, formulate and solve engineering problems
4.	Intelligent systems	p. The ability to use the techniques, skills and modern equipment, which is necessary to practice in engineering
		r. The ability to design and build intelligent systems and robotics
5.	Computer Architecture, Electronics and Embedded Systems	q. The ability to design computer systems (hardware / embedded systems), systems and networks simple microcomputer-based computers.
6.	Distributed Systems	s. The ability for the Mobile Computing (Mobile Computing System) on global networks
7	<i>Success Skills</i>	k. The ability to participate in multidisciplinary teams
		m. The ability to communicate effectively.
		n. Recognition of the need and ability to engage in lifelong learning.
		o. Knowledge of contemporary issues.

Then the learning outcomes are mapped into the aspect of competence in accordance with table 4.3.

Table 4.3 Amount Per Aspects of Competence Learning Outcomes

No.	Aspects of Competence	Topic Area	Number of Learning Outcomes
1.	Attitude	Character building	4
2.	Knowledge	Mathematical Sciences	1
		Natural Science Basic (Basic Science)	
3.	General Knowledge and Skills	Algorithms and Programming	7
		Intelligent systems	
		Software engineering	
		Computer Architecture	
		Distributed systems	
		Electronics and Embedded systems	
		Success Skills	4
4	Special skills	Intelligent systems	1
		Computer Architecture	1
		electronics and Embedded systems	
		Distributed systems	1
Total			19

4.2 Pemetaan Capaian Pembelajaran (LO) dan Capaian Program (PO) S1 Sistem Komputer

Pemetaan ini menunjukkan hubungan antara Capaian Pembelajaran (LO) dengan Capaian Program (PO). Capaian Program ini meliputi Capaian Program umum dan Capaian Program spesifik.

Tabel 4.4 Pemetaan capaian pembelajaran dan capaian program S1 Sistem Komputer

No.	Capaian Pembelajaran	Capaian Program								
		1	2	3	4	5	6	7	8	9
a.	Bertaqwa kepada Tuhan Yang Maha Esa dan mampu menunjukkan sikap religius;				√	√				
b.	Pendidikan luas yang diperlukan untuk memahami dampak dari solusi teknis di dalam konteks global, ekonomi, lingkungan, dan social. (ABET)						√		√	
c.	Pemahaman terhadap tanggung jawab secara profesional dan beretika. (ABET)				√				√	
d.	Menginternalisasi semangat kemandirian, kejuangan, dan kewirausahaan				√		√		√	
e.	Kemampuan untuk mengaplikasikan matematika, sains, dan rekayasa.		√							√

No.	Capaian Pembelajaran	Capaian Program								
		1	2	3	4	5	6	7	8	9
f.	Kemampuan menganalisis, merancang, dan membangun (meng-coding) sistem perangkat lunak untuk sistem berbasis mikro komputer dan jaringan computer	√	√	√						√
g.	Kemampuan merancang Jaringan Komputer dan Sistem Keamanan Komputer	√	√	√						√
h.	Kemampuan merancang dan membangun sistem multimedia	√	√	√						√
i.	Kemampuan untuk merancang dan melakukan eksperimen, serta menganalisis dan menginterpretasikan data.	√	√	√						√
j.	Kemampuan untuk merancang sebuah sistem, komponen, atau proses untuk memenuhi kebutuhan yang diinginkan dalam batasan konstrain yang realistis, seperti ekonomi, lingkungan, social, politik, kesehatan dan keselamatan, kelayakan manufaktur, dan keberlanjutan.	√	√	√						√
k.	Kemampuan untuk berperan di dalam team multi disiplin.							√	√	
l.	Kemampuan untuk mengidentifikasi, memformulasikan, dan memecahkan masalah-masalah rekayasa.	√	√	√						√
m.	Kemampuan untuk berkomunikasi secara efektif.					√			√	
n.	Pengakuan akan kebutuhan dan kemampuan untuk terlibat dalam belajar seumur hidup.						√		√	
o.	Pengetahuan isu-isu kontemporer.						√		√	
p.	Kemampuan untuk menggunakan teknik, keterampilan, dan peralatan modern, yang diperlukan untuk praktek dalam rekayasa.	√	√	√						√
q.	Kemampuan merancang dan membangun sistem cerdas dan robotika	√	√	√						√
r.	Kemampuan merancang sistem komputer (Hardware/embedded system), sistem-sistem sederhana berbasis mikrokomputer dan jaringan komputer	√	√	√						√
s.	Kemampuan untuk Komputasi Bergerak (<i>Mobile Computing System</i>) pada jaringan global	√	√	√						√

4.2 Mapping the Learning Outcomes (LO) and Program Outcomes(PO) for Bachelor Computer Systems

This mapping shows the relationship between the Learning Outcomes (LO) and Program Outcome (PO). Achievement Achievement Program The program includes general and specific Achievement Program.

Table 4.4 Relationship between the Learning Outcomes (LO) and Program Outcome (PO)

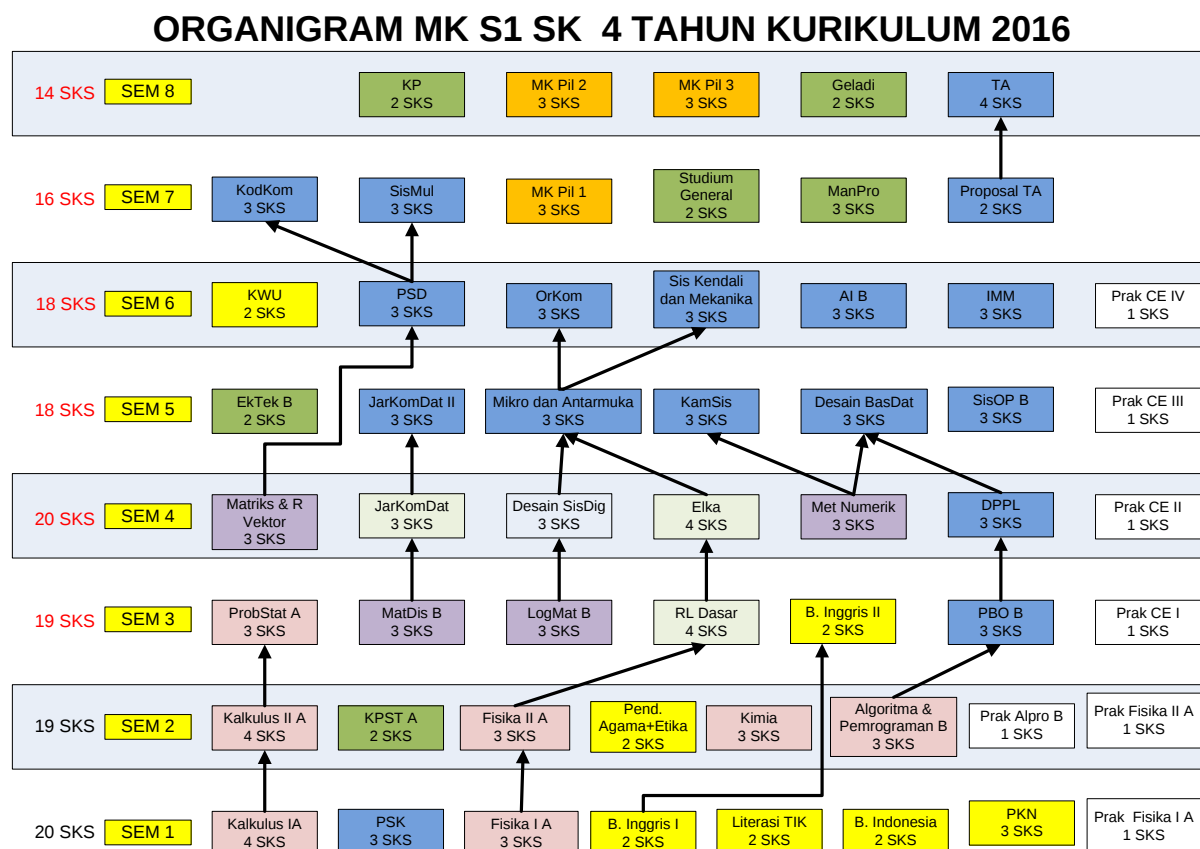
No.	Learning Outcomes	Program Outcomes								
		1	2	3	4	5	6	7	8	9
a.	Devoted to God Almighty and be able to demonstrate religious attitude;				√	√				
b.	Comprehensive education necessary to understand the impact of technical solutions within the context of global, economic, environmental, and social. (ABET)						√		√	
c.	Understanding of the responsibilities in a professional and ethical. (ABET)				√				√	
d.	Internalize the spirit of independence, effort and entrepreneurship				√		√		√	
e.	The ability to apply math, science, and engineering.		√							√
f.	The ability to analyze, design and build (recode) software system for micro-computer based systems and computer networks	√	√	√						√
g.	The ability to design Computer Networking and Computer Security Systems	√	√	√						√
h.	The ability to design and build a multimedia system	√	√	√						√
i.	The ability to design and conduct experiments, and analyze and interpret data.	√	√	√						√
j.	The ability to design a system, component, or process to meet desired needs within the limits of realistic constraints, such as economics, environment are, social, political, health and safety, manufacturing feasibility, and sustainability.	√	√	√						√
k.	The ability to participate in a multidisciplinary team.							√	√	
l.	The ability to identify, formulate and solve engineering problems.	√	√	√						√
m.	The ability to identify, formulate and solve engineering problems.					√			√	
n.	Recognition of the need and ability to engage in lifelong learning.						√		√	
o.	Knowledge of contemporary issues.						√		√	
p.	The ability to use the techniques, skills and modern equipment, which is necessary to practice in engineering.	√	√	√						√
q.	The ability to design and build intelligent systems and robotics	√	√	√						√
r.	The ability to design computer systems (hardware / embedded systems), systems and networks simple microcomputer-based computers	√	√	√						√
s.	The ability for the Mobile Computing (Mobile Computing System) on global networks	√	√	√						√

5 STRUKTUR KURIKULUM

5 CURRICULUM STRUCTURE

5.1 Organigram kurikulum 2016 untuk masa studi 4 Tahun

Untuk menyelesaikan Progam S1 Sistem Komputer, mahasiswa harus menyelesaikan 144 SKS. Berikut uraian organigram mata kuliah kurikulum 2016 untuk masa studi 4 tahun :



Gambar 5.1 Organigram Mata kuliah masa studi 4 tahun Kurikulum 2016

5.1 2016 Curriculum Organigram for 4 years study period

To complete the program S1 Computer Systems, a student must complete 144 credits. The following description of the course curriculum organigram 2016 for 4-year study period:

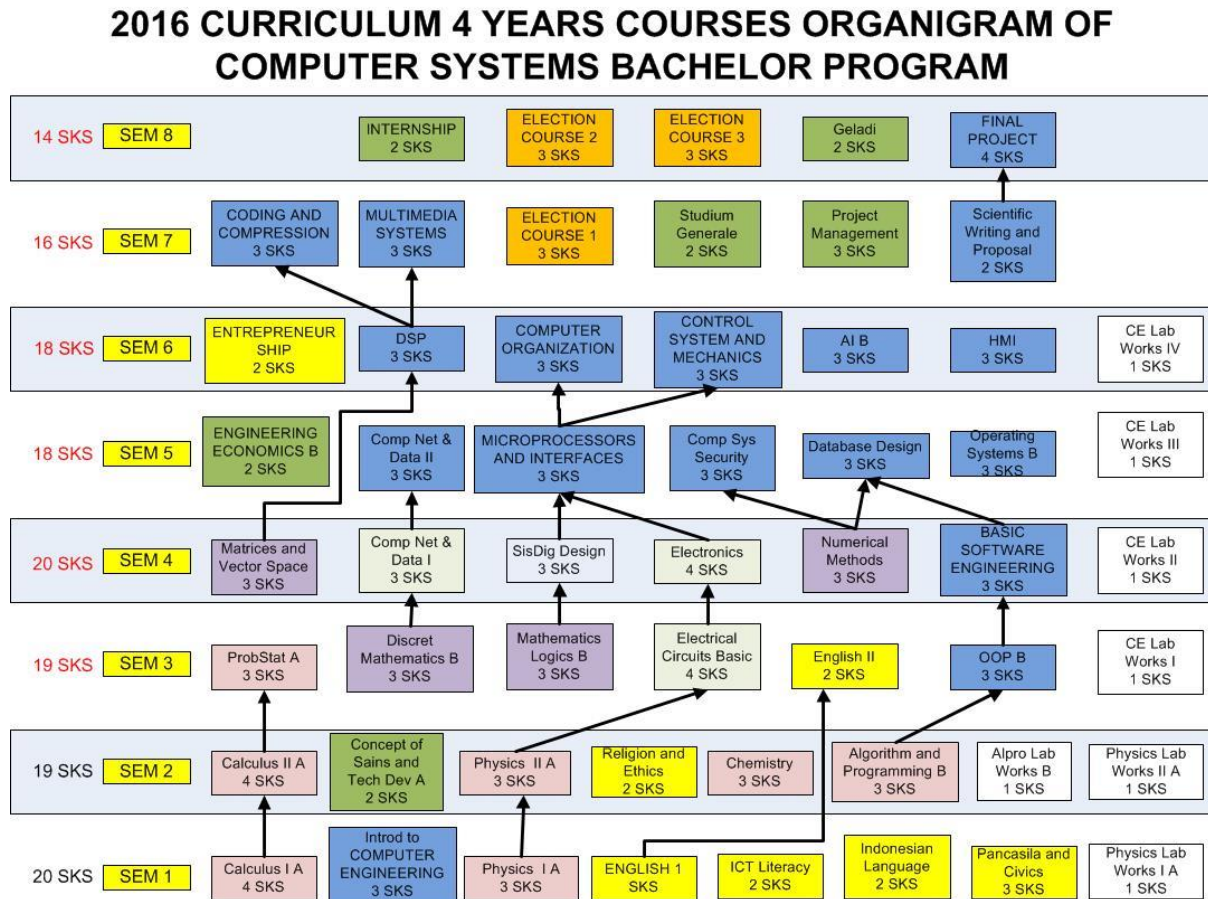
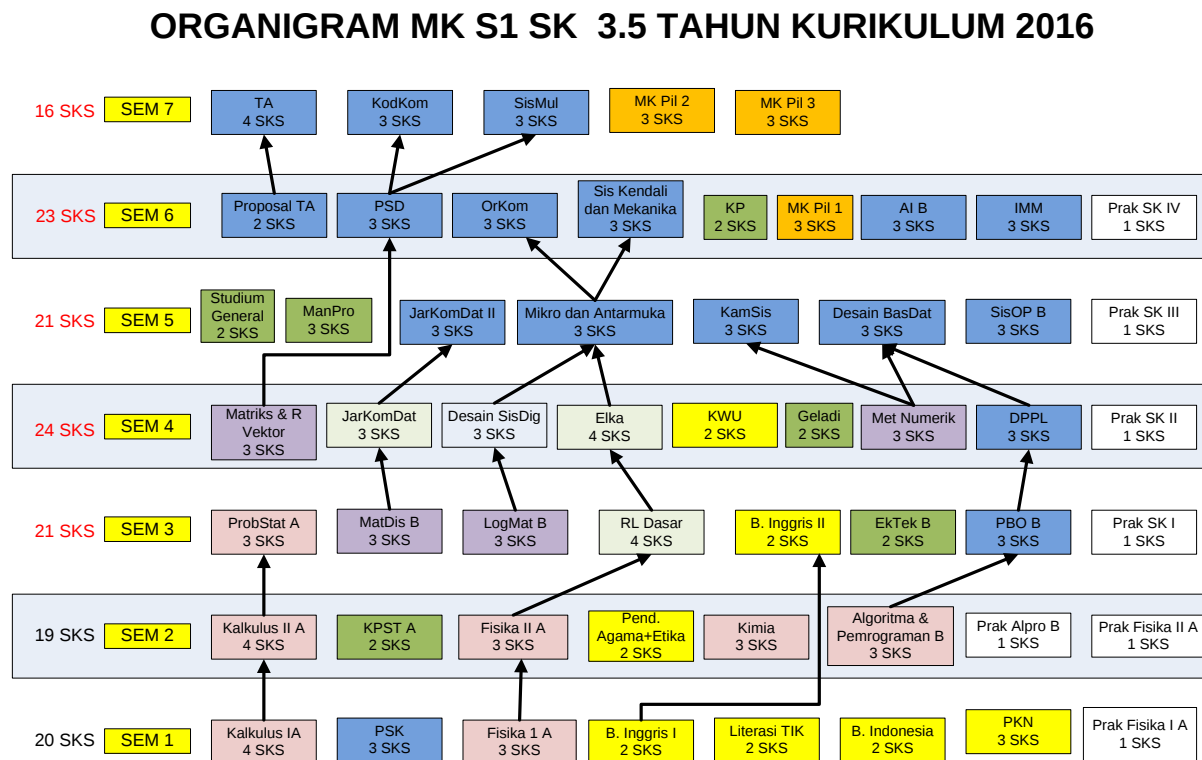


Figure 5.1 2016 Curriculum Course Organigram for 4 years study period

5.2 Organigram kurikulum 2016 untuk masa studi 4 Tahun

Untuk menyelesaikan Program S1 Sistem Komputer, mahasiswa harus menyelesaikan 144 SKS. Berikut uraian organigram mata kuliah kurikulum 2016 untuk masa studi 3.5 tahun:



Gambar 5.2 Organigram Mata kuliah masa studi 3.5 tahun Kurikulum 2016

5.2 2016 Curriculum Organigram for 3.5 years study period

To complete the program S1 Computer Systems, a student must complete 144 credits. The following description of the course curriculum organigram 2016 for 4-year study period:

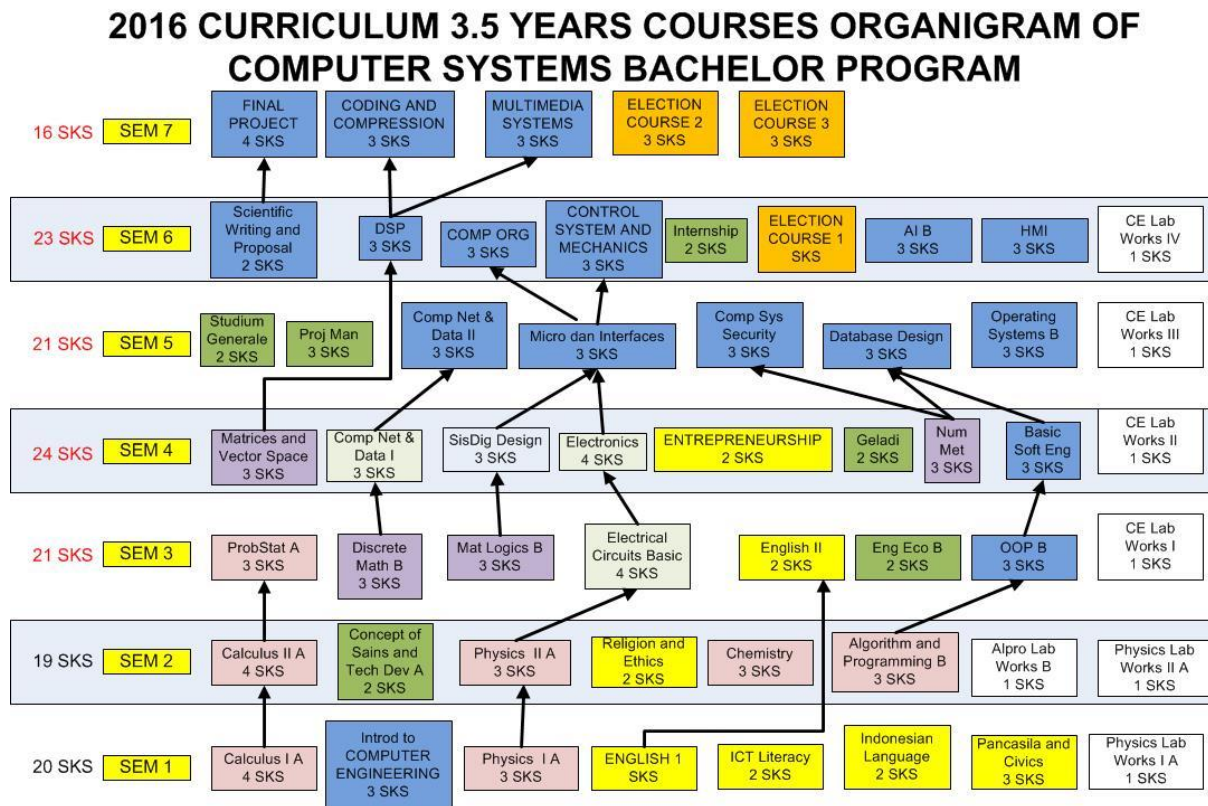


Figure 5.2 2016 Curriculum Course Organigram for 3.5 years study period

5.3 Struktur kurikulum 2016 untuk masa studi 4 Tahun

Untuk menyelesaikan Progam S1 Sistem Komputer, mahasiswa harus menyelesaikan 144 SKS. Berikut uraian struktur kurikulum 2016 dengan masa studi 4 tahun adalah :

Tabel 5.1 Struktur Kurikulum 2016 Program Studi S1 Sistem Komputer (SKEMA 4 TAHUN)

Semester	Ganjil				Semester	Genap			
	No	Kode	Nama Kuliah	SKS		No	Kode	Nama Kuliah	SKS
1	1	MUH1A4	Kalkulus 1 A	4	2	1	MUH1D4	Kalkulus 2 A	4
	2	FUH1A3	Fisika 1A	3		2	FUH1D3	Fisika 2A	3
	3	FUH1B1	Praktikum Fisika 1 A	1		3	FUH1E1	Praktikum Fisika 2 A	1
	4	LUH1A2	Bahasa Indonesia	2		4	KUH1A3	Kimia	3
	5	LUH1B2	Bahasa Inggris 1	2		5	FEH1H3	Algoritma dan Pemrograman B	3
	6	DUH1A2	Literasi TIK	2		6	FEH1I1	Praktikum Algoritma dan Pemrograman B	1
	7	HUH1G3	Pancasila dan Kewarganegaraan	3		7	HUH1x2	Pendidikan Agama dan Etika	2
	8	CEH1A3	Pengenalan Sistem Komputer	3		8	FEH1J2	Konsep Pengenalan Sains dan Teknologi A	2
	Jumlah sks			20		Jumlah sks			19
Semester	Ganjil				Semester	Genap			
	No	Kode	Nama Kuliah	SKS		No	Kode	Nama Kuliah	SKS
3	1	MUH1F3	Probabilitas dan Statistik A	3	4	1	FEH2G4	Elektronika	4
	2	LUH2C2	Bahasa Inggris II	2		2	MUH1G3	Matriks dan Ruang Vektor	3
	3	FEH2J3	Matematika Diskrit B	3		3	CEH2E3	Dasar Perancangan Perangkat Lunak	3
	4	CEH2A3	Pemrograman Berorientasi Objek B	3		4	CEH2F3	Metode Numerik	3
	5	CEH2B4	Rangkaian Listrik Dasar	4		5	CEH2G3	Jaringan Komputer dan Data I	3
	6	CEH2C3	Logika Matematika B	3		6	CEH2H3	Desain Sistem Digital	3
	7	CEH2D1	Praktikum Sistem Komputer I (RLD, PBO B)	1		7	CEH2I1	Praktikum Sistem Komputer II (Elka, Desain SisDig, Jarkomdat)	1
	Jumlah sks			19		Jumlah sks			20

Semester	Ganjil				Semester	Genap			
	No	Kode	Nama Kuliah	SKS		No	Kode	Nama Kuliah	SKS
5	1	CEH3A3	Sistem Operasi B	3	6	1	DUH2A2	Kewirausahaan	2
	2	CEH3B3	Mikroprosesor dan Antarmuka	3		2	CEH3G3	Pengolahan Sinyal Digital	3
	3	CEH3C3	Desain Basis Data	3		3	CEH3H3	Organisasi Komputer	3
	4	CEH3D3	Keamanan Sistem Komputer	3		4	CEH3I3	Kecerdasan Buatan B	3
	5	CEH3E3	Jaringan Komputer dan Data II	3		5	CEH3J3	Interaksi Mesin Manusia	3
	6	FEH2E2	Ekonomi Teknik B	2		6	CEH3K3	Sistem Kendali Mekanika	3
	7	CEH3F1	Praktikum Sistem Komputer III (Mikro, Kamsis)	1		7	CEH3L1	Praktikum Sistem Komputer IV (PSD, AI B)	1
	Jumlah sks			18		Jumlah sks			18
Semester	Ganjil				Semester	Genap			
	No	Kode	Nama Kuliah	SKS		No	Kode	Nama Kuliah	SKS
7	1	FEH4A2	Penulisan Karya Ilmiah dan Proposal	2	8	1	CEH4x3	Mata Kuliah Pilihan II Peminatan	3
	2	CEH4A3	Pengkodean dan Kompresi Data	3		2	CEH4x3	Mata Kuliah Pilihan III Bebas	3
	3	CEH4B3	Sistem Multimedia	3		3	DUH2B2	Geladi**	2
	4	FEH2D2	Studium General	2		4	FEH3B2	Kerja Praktek	2
	5	CEH4x3	Mata Kuliah Pilihan I Peminatan	3		5	FEH4B4	Tugas Akhir	4
	6	FEH3D3	Manajemen Proyek	3		Jumlah sks			14
	Jumlah sks			16		Total Keseluruhan sks			144

Keterangan :

* Mata kuliah eksepsi Geladi diambil pada semester 4

** Mata kuliah eksepsi Kerja Praktek diambil pada semester 6

5.3 Structure of the 2016 curriculum for a 4 Years period of study

To complete the program S1 Computer Systems, a student must complete 144 credits. The following description of the structure of the curriculum 2016 with a 4-year study period were:

Table 5.1 2016 Curriculum Structure of Computer Systems Bachelor Program (4 YEARS SCHEME)

Semester	Odd				Semester	Even			
	No	Code	Course Name	SKS		No	Code	Course Name	SKS
1	1	MUH1A4	Calculus 1 A	4	2	1	MUH1D4	Calculus 2 A	4
	2	FUH1A3	Physics 1 A	3		2	FUH1D3	Physics 2 A	3
	3	FUH1B1	Physics Lab works 1A	1		3	FUH1E1	Physics Lab works 2 A	1
	4	LUH1A2	Indonesian Language	2		4	KUH1A3	Chemistry	3
	5	LUH1B2	ENGLISH 1	2		5	FEH1H3	Algorithm and Programming B	3
	6	DUH1A2	ICT Literacy	2		6	FEH1I1	Algorithm and Programming Lab Works B	1
	7	HUH1G3	Pancasila and Civics	3		7	HUH1x2	Religion and Ethics	2
	8	CEH1A3	Introduction to COMPUTER ENGINEERING	3		8	FEH1J2	Concept of Sains and Technology Development A	2
SKS				20	SKS				19
Semester	Odd				Semester	Even			
	No	Code	Course Name	SKS		No	Code	Course Name	SKS
3	1	MUH1F3	Probability and Statistics A	3	4	1	FEH2G4	Electronics	4
	2	LUH2C2	English II	2		2	MUH1G3	Matrices and Vector Space	3
	3	FEH2J3	Discret Mathematics B	3		3	CEH2E3	BASIC SOFTWARE ENGINEERING	3
	4	CEH2A3	Object Oriented Programming B	3		4	CEH2F3	Numerical Methods	3
	5	CEH2B4	Electrical Circuits Basic	4		5	CEH2G3	Computer Network and Data I	3
	6	CEH2C3	Mathematics Logics B	3		6	CEH2H3	Digital Systems Design	3
	7	CEH2D1	COMPUTER ENGINEERING Lab Works I (RLD, PBO B)	1		7	CEH2I1	COMPUTER ENGINEERING Lab Works II (Elka, Desain SisDig, Jarkomdat)	1
SKS				19	SKS				20

Semester	Odd				Semester	Even			
	No	Code	Course Name	SKS		No	Code	Course Name	SKS
5	1	CEH3A3	Operating Systems B	3	6	1	DUH2A2	ENTREPRENEURSHIP	2
	2	CEH3B3	MICROPROCESSORS AND INTERFACES	3		2	CEH3G3	DIGITAL SIGNAL PROCESSING	3
	3	CEH3C3	Database Design	3		3	CEH3H3	COMPUTER ORGANIZATION	3
	4	CEH3D3	COMPUTER SYSTEM SECURITY	3		4	CEH3I3	ARTIFICIAL INTELLIGENT B	3
	5	CEH3E3	Computer Network and Data II	3		5	CEH3J3	HUMAN MACHINE INTERACTIONS	3
	6	FEH2E2	ENGINEERING ECONOMICS B	2		6	CEH3K3	CONTROL SYSTEM AND MECHANICS	3
	7	CEH3F1	COMPUTER ENGINEERING Lab Works III (Mikro, Kamsis)	1		7	CEH3L1	COMPUTER ENGINEERING Lab Works IV (PSD, AI B)	1
	SKS			18		SKS			18
Semester	Odd				Semester	Even			
	No	Code	Course Name	SKS		No	Code	Course Name	SKS
7	1	FEH4A2	Scientific Writing and Proposal	2	8	1	CEH4x3	Elective Course II (interest)	3
	2	CEH4A3	CODING AND COMPRESSION	3		2	CEH4x3	Elective Course III (Option)	3
	3	CEH4B3	MULTIMEDIA SYSTEMS	3		3	DUH2B2	BASIC ON THE JOB TRAINING*	2
	4	FEH2D2	Studium Generale	2		4	FEH3B2	INTERNSHIP**	2
	5	CEH4x3	Elective Course I (interest)	3		5	FEH4B4	FINAL PROJECT	4
	6	FEH3D3	PROJECT MANAGEMENT	3		SKS			14
	SKS			16		SKS Total Sum			144

Note :

* Exception course BASIC ON THE JOB TRAINING taken on semester 4

** Exception course INTERNSHIP taken on semester 6

5.4 Struktur kurikulum 2016 untuk masa studi 3.5 Tahun

Untuk menyelesaikan Progam S1 Sistem Komputer, mahasiswa harus menyelesaikan 144 SKS. Berikut uraian struktur kurikulum 2016 dengan masa studi 3.5 tahun adalah :

Tabel 5.2 Struktur Kurikulum 2016 Program Studi S1 Sistem Komputer (SKEMA 3.5 TAHUN)

Semester	Ganjil				Semester	Genap			
	No	Kode	Nama Kuliah	SKS		No	Kode	Nama Kuliah	SKS
1	1	MUH1A4	Kalkulus 1 A	4	2	1	MUH1D4	Kalkulus 2 A	4
	2	FUH1A3	Fisika 1A	3		2	FUH1D3	Fisika 2A	3
	3	FUH1B1	Praktikum Fisika 1 A	1		3	FUH1E1	Praktikum Fisika 2 A	1
	4	LUH1A2	Bahasa Indonesia	2		4	KUH1A3	Kimia	3
	5	LUH1B2	Bahasa Inggris 1	2		5	FEH1H3	Algoritma dan Pemrograman B	3
	6	DUH1A2	Literasi TIK	2		6	FEH1I1	Praktikum Algoritma dan Pemrograman B	1
	7	HUH1G3	Pancasila dan Kewarganegaraan	3		7	HUH1x2	Pendidikan Agama dan Etika	2
	8	CEH1A3	Pengenalan Sistem Komputer	3		8	FEH1J2	Konsep Pengenalan Sains dan Teknologi A	2
	Jumlah sks			20		Jumlah sks			19
Semester	Ganjil				Semester	Genap			
	No	Kode	Nama Kuliah	SKS		No	Kode	Nama Kuliah	SKS
3	1	MUH1F3	Probabilitas dan Statistik A	3	4	1	FEH2G4	Elektronika	4
	2	LUH2C2	Bahasa Inggris II	2		2	MUH1G3	Matriks dan Ruang Vektor	3
	3	FEH2J3	Matematika Diskrit B	3		3	CEH2E3	Dasar Perancangan Perangkat Lunak	3
	4	CEH2A3	Pemrograman Berorientasi Objek B	3		4	CEH2F3	Metode Numerik	3
	5	CEH2B4	Rangkaian Listrik Dasar	4		5	CEH2G3	Jaringan Komputer dan Data I	3
	6	CEH2C3	Logika Matematika B	3		6	CEH2H3	Desain Sistem Digital	3
	7	CEH2D1	Praktikum Sistem Komputer I (RLD, PBO B)	1		7	CEH2I1	Praktikum Sistem Komputer II (Elka, Desain SisDig, Jarkomdat)	1

	8	FEH2E2	Ekonomi Teknik B	2
	Jumlah sks			21
Semester	Ganjil			
	No	Kode	Nama Kuliah	SKS
5	1	CEH3A3	Sistem Operasi B	3
	2	CEH3B3	Mikroprosesor dan Antarmuka	3
	3	CEH3C3	Desain Basis Data	3
	4	CEH3D3	Keamanan Sistem Komputer	3
	5	CEH3E3	Jaringan Komputer dan Data II	3
	6	FEH2D2	Studium General	2
	7	CEH3F1	Praktikum Sistem Komputer III (Mikro, Kamsis)	1
	8	FEH3D3	Manajemen Proyek	3
	Jumlah sks			21
Semester	Ganjil			
	No	Kode	Nama Kuliah	SKS
7	1	CEH4A3	Pengkodean dan Kompresi Data	3
	2	CEH4B3	Sistem Multimedia	3
	3	CEH4x3	Mata Kuliah Pilihan II Peminatan	3
	4	CEH4x3	Mata Kuliah Pilihan III Bebas	3
	5	FEH4B4	Tugas Akhir	4
	Jumlah sks			16

	8	DUH2B2	Geladi**	2
	9	DUH2A2	Kewirausahaan	2
	Jumlah sks			24
Semester	Genap			
	No	Kode	Nama Kuliah	SKS
6	1	CEH3J3	Interaksi Mesin Manusia	3
	2	CEH3G3	Pengolahan Sinyal Digital	3
	3	CEH3H3	Organisasi Komputer	3
	4	CEH3I3	Kecerdasan Buatan B	3
	5	FEH4A2	Penulisan Karya Ilmiah dan Proposal	2
	6	CEH3K3	Sistem Kendali Mekanika	3
	7	CEH3L1	Praktikum Sistem Komputer IV (PSD, AI B)	1
	8	CEH4x3	Mata Kuliah Pilihan I Peminatan	3
	9	FEH3B2	Kerja Praktek	2
	Jumlah sks			23

Total Keseluruhan sks	144
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5.4 Structure of the 2016 curriculum for a 3.5 Years period of study

To complete the program S1 Computer Systems, a student must complete 144 credits. The following description of the structure of the curriculum 2016 with a 3.5-year study period were:

Table 5.2 2016 Curriculum Structure of Computer Systems Bachelor Program (3.5 YEARS SCHEME)

Semester	Odd				Semester	Even			
	No	Code	Course Name	SKS		No	Code	Course Name	SKS
1	1	MUH1A4	Calculus 1 A	4	2	1	MUH1D4	Calculus 2 A	4
	2	FUH1A3	Physics 1 A	3		2	FUH1D3	Physics 2 A	3
	3	FUH1B1	Physics Lab works 1 A	1		3	FUH1E1	Physics Lab works 2 A	1
	4	LUH1A2	Indonesian Language	2		4	KUH1A3	Chemistry	3
	5	LUH1B2	ENGLISH 1	2		5	FEH1H3	Algorithm and Programming B	3
	6	DUH1A2	ICT Literacy	2		6	FEH1I1	Algorithm and Programming Lab Works B	1
	7	HUH1G3	Pancasila and Civics	3		7	HUH1x2	Religion and Ethics	2
	8	CEH1A3	Introduction to COMPUTER ENGINEERING	3		8	FEH1J2	Concept of Sains and Technology Development A	2
SKS				20	SKS				19
Semester	Odd				Semester	Even			
	No	Code	Course Name	SKS		No	Code	Course Name	SKS
3	1	MUH1F3	Probability and Statistics A	3	4	1	FEH2G4	Electronics	4
	2	LUH2C2	English II	2		2	MUH1G3	Matrices and Vector Space	3
	3	FEH2J3	Discret Mathematics B	3		3	CEH2E3	BASIC SOFTWARE ENGINEERING	3
	4	CEH2A3	Object Oriented Programming B	3		4	CEH2F3	Numerical Methods	3
	5	CEH2B4	Electrical Circuits Basic	4		5	CEH2G3	Computer Network and Data I	3
	6	CEH2C3	Mathematics Logics B	3		6	CEH2H3	Digital Systems Design	3

	7	CEH2D1	COMPUTER ENGINEERING Lab Works I (RLD, PBO B)	1		7	CEH2I1	COMPUTER ENGINEERING Lab Works II (Elka, Desain SisDig, Jarkomdat)	1
	8	FEH2E2	ENGINEERING ECONOMICS B	2		8	DUH2B2	BASIC ON THE JOB TRAINING*	2
				9		DUH2A2	ENTREPRENEURSHIP	2	
	SKS			21		SKS			24
Semester	Odd				Semester	Even			
	No	Code	Course Name	SKS		No	Code	Course Name	SKS
5	1	CEH3A3	Operating Systems B	3	6	1	CEH3J3	HUMAN MACHINE INTERACTIONS	3
	2	CEH3B3	MICROPROCESSORS AND INTERFACES	3		2	CEH3G3	DIGITAL SIGNAL PROCESSING	3
	3	CEH3C3	Database Design	3		3	CEH3H3	COMPUTER ORGANIZATION	3
	4	CEH3D3	COMPUTER SYSTEM SECURITY	3		4	CEH3I3	ARTIFICIAL INTELLIGENT B	3
	5	CEH3E3	Computer Network and Data II	3		5	FEH4A2	Scientific Writing and Proposal	2
	6	FEH2D2	Studium Generale	2		6	CEH3K3	CONTROL SYSTEM AND MECHANICS	3
	7	CEH3F1	COMPUTER ENGINEERING Lab Works III (Mikro, Kamsis)	1		7	CEH3L1	COMPUTER ENGINEERING Lab Works IV (PSD, AI B)	1
	8	FEH3D3	PROJECT MANAGEMENT	3		8	CEH4x3	Elective Course I (interest)	3
						9	FEH3B2	INTERNSHIP	2
SKS			21	SKS			23		
Semester	Odd								
	No	Code	Course Name	SKS					
7	1	CEH4A3	CODING AND COMPRESSION	3	SKS Total Sum144				
	2	CEH4B3	MULTIMEDIA SYSTEMS	3					
	3	CEH4x3	Elective Course II (interest)	3					
	4	CEH4x3	Elective Course III (Option)	3					
	5	FEH4B4	FINAL PROJECT	4					
	SKS			16					

5.5 Mata kuliah Pilihan

Berikut uraian mata kuliah pilihan pada kurikulum 2016 :

Tabel 5.3 Mata kuliah Pilihan Pendidikan Agama dan Etika

No	Kode	Nama Kuliah	SKS
1	HUH1A2	Pendidikan Agama Islam dan Etika	2
2	HUH1B2	Pendidikan Agama Kristen dan Etika	2
3	HUH1C2	Pendidikan Agama Katholik dan Etika	2
4	HUH1D2	Pendidikan Agama Hindu dan Etika	2
5	HUH1E2	Pendidikan Agama Budha dan Etika	2
6	HUH1F2	Pendidikan Agama Khonmg Hu Cu dan Etika	2

Tabel 5.4 Mata kuliah Pilihan Peminatan

No	Kode	MK Pilihan	SKS	Peminatan
1	CEH4C3	Robotika dan Sistem Cerdas	3	Intelligent System
2	CEH4D3	Komputer Forensik	3	
3	CEH4E3	Computer Vision	3	
4	CEH4F3	Pembelajaran Mesin (Machine Learning)	3	
5	CEH4G3	Arsitektur Komputer	3	Computer Architecture
6	CEH4H3	Sistem Tertanam (Embedded System)	3	
7	CEH4I3	Graphic Processor	3	
8	CEH4J3	VLSI Design	3	
9	CEH4K3	Komputasi Bergerak	3	Mobile Computing
10	CEH4L3	Jaringan Masa Depan	3	
11	CEH4M3	Komputasi Paralel	3	
12	CEH4N3	Antrian dan Rekayasa Trafik	3	

5.5 Elective Course

Description of elective course in 2106 curriculum as follows:

Table 5.3 Religion and Ethics Elective Course

No	Kode	Course Name	SKS
1	HUH1A2	Islam Religion and Ethics	2
2	HUH1B2	Christian Religion and Ethics	2
3	HUH1C2	Catholics Religion and Ethics	2
4	HUH1D2	Hindu Religion and Ethics	2
5	HUH1E2	Budha Religion and Ethics	2
6	HUH1F2	Khong Hu Cu Religion and Ethics	2

Table 5.4 Elective Course (Interest)

No	Kode	MK Pilihan	SKS	Peminatan
1	CEH4C3	ROBOTICS AND INTELLIGENT SYSTEMS	3	Intelligent System
2	CEH4D3	Computer Forensics	3	
3	CEH4E3	Computer Vision A	3	
4	CEH4F3	Machine Learning	3	
5	CEH4G3	COMPUTER ARCHITECTURE	3	Computer Architecture
6	CEH4H3	Embedded Systems	3	
7	CEH4I3	Graphics Processor	3	
8	CEH4J3	VLSI Design	3	
9	CEH4K3	MOBILE COMPUTING	3	Mobile Computing
10	CEH4L3	NEXT GENERATION NETWORKS	3	
11	CEH4M3	PARALLEL COMPUTING	3	
12	CEH4N3	QUEUEING AND TRAFFIC ENGINEERING	3	

5.6 Komposisi Mata kuliah

Tabel 5.5 Komposisi Mata Kuliah

No.	Bidang Mata Kuliah	Jumlah Sks	Persentase
1	Mata kuliah Fakultas	13	9.03%
2	Mata Kuliah bidang Science	26	18.06%
3	Mata Kuliah Universitas	15	10.42%
4	Mata kuliah bidang Mathematics	12	8.33%
5	Mata Kuliah Bidang Engineering	78	54.17%
6	Mata Kuliah Program Studi		
		144	100.00%

5.6 Courses Composition

Table 5.5 Courses Composition

No.	Course Area	Sks	Percentage
1	Course of Faculty	13	9.03%
2	Science Area Course	26	18.06%
3	Course of University	15	10.42%
4	Mathematics Area Course	12	8.33%
5	Engineering Area Course	78	54.17%
6	CE Program Course		
		144	100.00%

6 EKVIVALENSI KURIKULUM SEBELUMNYA

6 PREVIOUS CURRICULUM EQUIVALENCE

6.1 Peta Ekuivalensi Kurikulum 2012 (Sebelumnya)

Aturan Ekuivalensi kurikulum 2012 ke kurikulum 2016 secara keseluruhan diatur pada tabel 6.1 dibawah ini :

Tabel 5.6 Ekuivalensi Mata-Kuliah Kurikulum 2012 ke Kurikulum 2016

Aturan No. 1: Ekuivalensi langsung Mata-Kuliah pada semester yang sama										
No.	KURIKULUM 2012				⇔	KURIKULUM 2016				No
	Se m	Kode MK	Nama MK	sk s		Sem	Kode MK	Nama MK	sks	
	TINGKAT 1									
1	1	MUG1A4	Kalkulus I	4	⇔	1	MUH1A4	Kalkulus I A	4	1
2	1	FUG1A3	Fisika I	3	⇔	1	FUH1A3	Fisika 1 A	3	2
3	1	FUG1B1	Praktikum Fisika I	1	⇔	1	FUH1B1	Praktikum Fisika 1 A	1	3
4	1	BUG1A2	Bahasa Indonesia	2	⇔	1	LUH1A2	Bahasa Indonesia	2	4
5	1	BUG1D2	Bahasa Inggris I	2	⇔	1	LUH1B2	Bahasa Inggris I	2	5
6	1	HUG1O3	Pengenalan Prodi Sistem Komputer	3	⇔	1	CEH1A3	Pengenalan Sistem Komputer	3	6
7	1	HUG1G2	Pancasila dan Kewarganegaraan	2	⇔	1	HUH1G3	Pancasila dan Kewarganegaraan	3	7
8	2	MUG1B4	Kalkulus II	4	⇔	2	MUH1D4	Kalkulus 2 A	4	8
9	2	FUG1C3	Fisika II	3	⇔	2	FUH1D3	Fisika 2 A	3	9
10	2	FUG1D1	Praktikum Fisika II	1	⇔	2	FUH1E1	Praktikum Fisika 2 A	1	10
11	2	HUG1J2	Kimia	3	⇔	2	KUH1A3	Kimia	3	11
12	2	KUG1A3	Algoritma dan Pemrograman	3	⇔	2	FEH1H3	Algoritma dan Pemrograman B	3	12
13	2	KUG1B1	Praktikum Algoritma dan Pemrograman	1	⇔	2	FEH1I1	Praktikum Algoritma dan Pemrograman B	1	13
14	2	HUG1A2	Pendidikan Agama dan Etika – Islam	2	⇔	2	HUH1A2	Pendidikan Agama Islam dan Etika	2	14
15	2	HUG1B2	Pendidikan Agama dan Etika – Kristen	2	⇔	2	HUH1B2	Pendidikan Agama Kristen dan Etika	2	15
16	2	HUG1C2	Pendidikan Agama dan Etika – Katolik	2	⇔	2	HUH1C2	Pendidikan Agama Katholik dan Etika	2	16
17	2	HUG1D2	Pendidikan Agama dan Etika – Hindu	2	⇔	2	HUH1D2	Pendidikan Agama Hindu dan Etika	2	17

Aturan No. 1: Ekuivalensi langsung Mata-Kuliah pada semester yang sama

18	2	HUG1E2	Pendidikan Agama dan Etika – Budha	2	⇔	2	HUH1E2	Pendidikan Agama Budha dan Etika	2	18
19	2	HUG1F2	Pendidikan Agama dan Etika - Khong Hu Cu	2	⇔	2	HUH1F2	Pendidikan Agama Khonmg Hu Cu dan Etika	2	19
20	1	HUG1I2	Konsep Pengembangan Sains dan Teknologi	2	⇔	2	FEH1J2	Konsep Pengenalan Sains dan Teknologi	2	20
TINGKAT 2										
21	3	MUG2D3	Probabilitas dan Statistika	3	⇔	3	MUH1F3	Probabilitas dan Statistik	3	21
22	3	CEG2A3	Pemrograman Berorientasi Objek	3	⇔	3	CEH2A3	Pemrograman Berorientasi Objek B	3	22
23	3	FEG2B4	Rangkaian Listrik	4	⇔	3	CEH2B4	Rangkaian Listrik Dasar	4	23
24	3	MUG2B3	Logika Matematik	3	⇔	3	CEH2C3	Logika Matematika B	3	24
25	3	CEG211	Praktikum Dasar Sistem Komputer (RL, OOP)	1	⇔	3	CEH2D1	Praktikum Sistem Komputer I (RLD, PBO B)	1	25
26	4	FEG2F4	Elektronika I	4	⇔	4	FEH2G4	Elektronika	4	26
27	4	CEG2C3	Dasar Perancangan Perangkat Lunak	3	⇔	4	CEH2E3	Dasar Perancangan Perangkat Lunak	3	27
28	4	FEG2G3	Jaringan Komputer dan Data	3	⇔	4	CEH2G3	Jaringan Komputer dan Data I	3	28
29	4	CEG2B3	Rangkaian Logika	3	⇔	4	CEH2H3	Desain Sistem Digital	3	29
30	4	CEG221	Praktikum Sistem Komputer I (Elka I, Jarkom, RangLog)	1	⇔	4	CEH2I1	Praktikum Sistem Komputer II (Elka, SisDig, Jarkomdat)	1	30
TINGKAT 3										
31	5	CEG3B3	Mikroprosesor dan Sistem Embedded	3	⇔	5	CEH3B3	Mikroprosesor dan Antarmuka	3	31
32	5	CEG3C3	Desain Basis Data	3	⇔	5	CEH3C3	Desain Basis Data	3	32
33	5	IEG2H2	Ekonomi Teknik	2	⇔	5	FEH2E2	Ekonomi Teknik B	2	33
34	5	CEG311	Praktikum Sistem Komputer II (uP Embedded, Basis Data)	1	⇔	5	CEH3F1	Praktikum Sistem Komputer III (Mikro, Kamsis	1	34
35	6	FEG3A3	Pengolahan Sinyal Digital	3	⇔	6	FEH3A3	Pengolahan Sinyal Digital	3	35
36	6	CEG3D3	Organisasi dan Arsitektur Komputer	3	⇔	6	CEH3H3	Organisasi Komputer	3	36
37	6	CEG3G3	Kecerdasan Buatan	3	⇔	6	CEH3I3	Kecerdasan Buatan B	3	37
38	6	CEG3H3	Sistem Kendali dan Mekanika	3	⇔	6	CEH3K3	Sistem Kendali dan Mekanika	3	38
39	5	CEG3A3	Instalasi dan Pengukuran Jaringan	3	⇔	5	CEH3E3	Jaringan Komputer dan Data II	3	39

Aturan No. 1: Ekuivalensi langsung Mata-Kuliah pada semester yang sama

40	6	CEG321	Praktikum Sistem Komputer III (PSD, OS)	1	↔	6	CEH3L1	Praktikum Sistem Komputer IV (PSD, AI B)	1	40
TINGKAT 4										
41	7	FEG4A2	Proposal TA	2	↔	7	FEH4A2	Penulisan karya ilmiah dan proposal	2	41
42	7	IEG463	Manajemen Proyek	3	↔	7	FEH3D3	Manajemen Proyek	3	42
43	8	HUG2A2	Geladi	2	↔	8	DUH2B2	Geladi	2	43
44	8	FEG4B2	Kerja Praktek	2	↔	8	FEH3B2	Kerja Praktek	2	44
45	8	FEG4C4	Tugas Akhir	4	↔	8	FEH4B4	Tugas Akhir	4	45

Aturan No. 2: Ekuivalensi langsung Mata-Kuliah pada SEMESTER BERBEDA

No.	KURIKULUM 2012				↔	KURIKULUM 2016				No.
	Sem	Kode MK	Nama MK	sks		Sem	Kode MK	Nama MK	sks	
	TINGKAT 2									
1	3	MUG1E3	Aljabar Linear	3	↔	4	MUH1G3	Matriks dan Ruang Vecktor	3	1
2	4	BUG1E2	Bahasa Inggris II	2	↔	3	LUH2C2	Bahasa Inggris II	2	2
3	4	MUG2A3	Matematika Diskret	3	↔	3	FEH2J3	Matematika Diskrit B	3	3
	TINGKAT 3									
4	6	CEG3E3	Sistem Operasi	3	↔	5	CEH3A3	Sistem Operasi B	3	4
	TINGKAT 4									
5	7	IEG422	Kewirausahaan	2	↔	6	DUD2A2	Kewirausahaan	2	5

Aturan No. 3: Ekuivalensi untuk Mata Kuliah Pilihan

No.	KURIKULUM 2012				↔	KURIKULUM 2016				No.
	Sem	Kode MK	Nama MK	sks		Sem	Kode MK	Nama MK	sks	
1	7/8	CEG4C3	Keamanan Sistem Komputer	3	↔	5	CEH3D3	Keamanan Sistem Komputer (MK Wajib)	3	1

Aturan No. 3: Ekuivalensi untuk Mata Kuliah Pilihan										
2	7/8	CEG4D3	Interaksi Mesin Manusia	3	↔	6	CEH3J3	Interaksi Mesin Manusia (MK Wajib)	3	2
3	7/8	CEG4E3	Komputasi Paralel	3	↔	7/8	CEH4M3	Komputasi Paralel	3	3
4	7/8	CEG4F3	Robotika	3	↔	7/8	CEH4C3	Robotika dan Sistem Cerdas	3	4
5	7/8	CEG4G3	Pengantar Jaringan Masa Depan	3	↔	7/8	CEH4L3	Jaringan Masa Depan	3	5
6	7/8	CEG4H3	Pengkodean dan Kompresi Data	3	↔	7	CEH4A3	Pengkodean dan Kompresi Data (MK Wajib)	3	6
7	7/8	CEG4J3	Arsitektur Komputer Lanjut	3	↔	7/8	CEH4G3	Arsitektur Komputer	3	7
8	7/8	CEG4K3	Antrian dan Trafik	3	↔	7/8	CEH4N3	Antrian dan Rekayasa Trafik	3	8
9	7/8	CEG4L3	Sistem Multimedia	3	↔	7	CEH4B3	Sistem Multimedia (MK Wajib)	3	9
10	7/8	CEG4M3	Komputasi Bergerak	3	↔	7/8	CEH4K3	Komputasi Bergerak	3	10

Aturan No. 4: Ekuivalensi untuk MK Kur-2012 yang HILANG										
- Untuk Mata Kuliah wajib Kur-2012 HILANG yang belum lulus/ambil, dapat mengambil mata kuliah lain Kur-2016 yang sudah ditetapkan										
- Untuk Mata Kuliah Pilihan Kur-2012 HILANG yang belum lulus/ambil, dapat mengambil mata kuliah lain Kur-2016 dalam jumlah secukupnya untuk untuk melengkapi jumlah SKS kelulusan sarjana S1 yang harus mencapai sedikitnya 144 sks, dengan cara mengambil mata kuliah secara bebas sesuai saran dosen wali dan berdasarkan kebutuhan mahasiswa ybs										
No	KURIKULUM 2012				Mengambil	KURIKULUM 2016				No
	Sem	Kode MK	Nama MK	sks		Sem	Kode MK	Nama MK	sk s	
	TINGKAT 1									
1	1	HUG1H2	Pengetahuan Lingkungan	2	→	1	DUH1A2	Literasi TIK	2	1
	TINGKAT 2									
2	3	FEG2E3	Jaringan Telekomunikasi dan Informasi	3	→	4	CEH2F3	Metode Numerik	2	2
	TINGKAT 3									
3	5	TTG3K3	Pengantar Sistem Komunikasi	3	→	5	CEH3D3	Keamanan Sistem Komputer	3	3
4	5	FEG2D3	Sinyal dan Sistem Linier	3		6	CEH3J3	Interaksi Mesin Manusia	3	4
5	6	CEG3F3	Aplikasi Mobile	3		6	DUH2A2	Kewirausahaan	2	5
	TINGKAT 4									
6	7/8	CEG4A3	Pemrograman Game	3	→	7/8	CEH4C3	Robotika dan Sistem Cerdas	3	6

Aturan No. 4: Ekuivalensi untuk MK Kur-2012 yang HILANG

- Untuk Mata Kuliah wajib Kur-2012 HILANG yang belum lulus/ambil, dapat mengambil mata kuliah lain Kur-2016 yang sudah ditetapkan

- Untuk Mata Kuliah Pilihan Kur-2012 HILANG yang belum lulus/ambil, dapat mengambil mata kuliah lain Kur-2016 dalam jumlah secukupnya untuk melengkapi jumlah SKS kelulusan sarjana S1 yang harus mencapai sedikitnya 144 sks, dengan cara mengambil mata kuliah secara bebas sesuai saran dosen wali dan berdasarkan kebutuhan mahasiswa ybs

7	7/8	CEG4B3	Rekayasa Sistem Jaringan	3		7/8	CEH4D3	Komputer Forensik	3	7
8	7/8	CEG4I3	Perancangan Sistem Informasi	3		7/8	CEH4E3	Computer Vision A	3	8
9	7/8	TTG4A3	Sistem Komunikasi Bergerak	3		7/8	CEH4F3	Pembelajaran Mesin (Machine Learning)	3	9
						7/8	CEH4G3	Arsitektur Komputer	3	10
						7/8	CEH4H3	Sistem Tertanam (Embedded System)	3	11
						7/8	CEH4I3	Graphic Processor	3	12
						7/8	CEH4J3	VLSI Design	3	13
						7/8	CEH4K3	Komputasi Bergerak	3	14
						7/8	CEH4L3	Jaringan Masa Depan	3	15
						7/8	CEH4M3	Komputasi Paralel	3	16
						7/8	CEH4N3	Antrian dan Rekayasa Trafik	3	17

Aturan No. 5: Ekuivalensi untuk MK Kur-2016 tambahan Tingkat 4

- Untuk MK Kur-2016 tambahan Tingkat 4 yang lagi Tugas Akhir (sudah lulus Tingkat III dan lulus sks minimal 140 sks selain TA) diekuivalensi dengan mk pilihan kurikulum 2012, sedangkan mahasiswa yang baru lulus Tingkat 3 dan akan mengambil mata kuliah tingkat 4 harus mengambil MK Tambahan tsb.

No.	KURIKULUM 2012				⇔	KURIKULUM 2016				No.
	Sem	Kode MK	Nama MK	sks		Sem	Kode MK	Nama MK	sks	
	TINGKAT 4									
1	6	CEG4x3	Mata kuliah Pilihan	2	⇔	7	FEH2D2	Studium General	2	1

6.1 Previous Curriculum Equivalence Map

The equivalence rules of curriculum 2012 to curriculum 2016 are listed in Table 6.1.

Table 5.6 Course Equivalence of Curriculum 2012 to Curriculum 2016

Rule 1: Direct-Equivalence of Courses in the Same Semester										
No.	CURRICULUM 2012				⇔	CURRICULUM 2016				No
	Sem	Course Code	Course Name	credits		Sem	Course Code	Course Name	credits	
	YEAR 1									
1	1	MUG1A4	Calculus I	4	⇔	1	MUH1A4	Calculus I A	4	1
2	1	FUG1A3	Physics I	3	⇔	1	FUH1A3	Physics 2 A	3	2
3	1	FUG1B1	Physics Lab Works I	1	⇔	1	FUH1B1	Physics Lab Works 2 A	1	3
4	1	BUG1A2	Indonesian Language	2	⇔	1	LUH1A2	Indonesian Language	2	4
5	1	BUG1D2	English I	2	⇔	1	LUH1B2	English I	2	5
6	1	HUG1O3	Introduction to Computer Engineering	3	⇔	1	CEH1A3	Introduction to Computer Engineering	3	6
7	1	HUG1G2	Pancasila and Citizenship	2	⇔	1	HUH1G3	Pancasila and Citizenship	3	7
8	2	MUG1B4	Calculus II	4	⇔	2	MUH1D4	Calculus 2 A	4	8
9	2	FUG1C3	Physics II	3	⇔	2	FUH1D3	Physics 2 A	3	9
10	2	FUG1D1	Physics Lab Works II	1	⇔	2	FUH1E1	Physics Lab Works 2 A	1	10
11	2	HUG1J2	Chemistry	3	⇔	2	KUH1A3	Chemistry	3	11
12	2	KUG1A3	Algorithm and Programming	3	⇔	2	FEH1H3	Algorithm and Programming B	3	12
13	2	KUG1B1	Algorithm and Programming Labwork	1	⇔	2	FEH1I1	Algorithm and Programming Labwork B	1	13
14	2	HUG1A2	Islam Education and Ethics	2	⇔	2	HUH1A2	Islam Education and Ethics	2	14
15	2	HUG1B2	Christian Religion and Ethics	2	⇔	2	HUH1B2	Christian Religion and Ethics	2	15
16	2	HUG1C2	Catholic Religion and Ethics	2	⇔	2	HUH1C2	Catholic Religion and Ethics	2	16
17	2	HUG1D2	Hindu Religion and Ethics	2	⇔	2	HUH1D2	Hindu Religion and Ethics	2	17
18	2	HUG1E2	Budha Religion and Ethics	2	⇔	2	HUH1E2	Budha Religion and Ethics	2	18
19	2	HUG1F2	Khong Hu Cu Religion and Ethics	2	⇔	2	HUH1F2	Khong Hu Cu Religion and Ethics	2	19

Rule 1: Direct-Equivalence of Courses in the Same Semester										
20	1	HUG1I2	Concept of Science and Technology Development	2	↔	2	FEH1J2	Concept of Science and Technology Development A	2	20
YEAR 2										
21	3	MUG2D3	Probability and Statistics	3	↔	3	MUH1F3	Probability and Statistics	3	21
22	3	CEG2A3	Object Oriented Programming	3	↔	3	CEH2A3	Object Oriented Programming B	3	22
23	3	FEG2B4	Electric Circuits	4	↔	3	CEH2B4	Basic Electric Circuits	4	23
24	3	MUG2B3	Mathematics Logic	3	↔	3	CEH2C3	Mathematics Logic B	3	24
25	3	CEG211	Basic Computer Engineering Lab Works (EC, OOP)	1	↔	3	CEH2D1	Computer Engineering Lab Works I (BEC, OOP B)	1	25
26	4	FEG2F4	Electronics	4	↔	4	FEH2G4	Electronics	4	26
27	4	CEG2C3	Basic Software Engineering	3	↔	4	CEH2E3	Basic Software Engineering	3	27
28	4	FEG2G3	Data and Computer Network	3	↔	4	CEH2G3	Computer Network I	3	28
29	4	CEG2B3	Logic Circuits	3	↔	4	CEH2H3	Digital Systems Design	3	29
30	4	CEG221	Computer Engineering Lab Works I (Electronics, ComNet, LogCircuits)	1	↔	4	CEH2I1	Computer Engineering Lab Works II (Electronics, DSD, ComNet II)	1	30
YEAR 3										
31	5	CEG3B3	Microprocessor and Embedded System	3	↔	5	CEH3B3	Microprocessor and Interface	3	31
32	5	CEG3C3	Database Design	3	↔	5	CEH3C3	Database Design	3	32
33	5	IEG2H2	Economic Engineering	2	↔	5	FEH2E2	Economic Engineering B	2	33
34	5	CEG311	Computer Engineering Lab Works II (uP Embedded, DatabaseDesign)	1	↔	5	CEH3F1	Computer Engineering Lab Works III (Micro, ComSysSecurity)	1	34
35	6	FEG3A3	Digital Signal Processing	3	↔	6	FEH3A3	Digital Signal Processing	3	35
36	6	CEG3D3	Computer Organization	3	↔	6	CEH3H3	Computer Organization	3	36
37	6	CEG3G3	Artificial Intelligence	3	↔	6	CEH3I3	Artificial Intelligence B	3	37
38	6	CEG3H3	Control System and Mechanic	3	↔	6	CEH3K3	Control System and Mechanic	3	38
39	5	CEG3A3	Installation and Network Measurements	3	↔	5	CEH3E3	Computer Network II	3	39
40	6	CEG321	Computer Engineering Lab Works III (DSP, OS)	1	↔	6	CEH3L1	Computer Engineering Lab Works IV (DSP, AI B)	1	40
YEAR 4										
41	7	FEG4A2	Final Project Proposal	2	↔	7	FEH4A2	Scientific Writing and Proposal	2	41

Rule 1: Direct-Equivalence of Courses in the Same Semester

42	7	IEG463	Project Management	3	⇔	7	FEH3D3	Project Management	3	42
43	8	HUG2A2	Geladi	2	⇔	8	DUH2B2	Basic On The Job Training	2	43
44	8	FEG4B2	Internship	2	⇔	8	FEH3B2	Internship	2	44
45	8	FEG4C4	Final Projects	4	⇔	8	FEH4B4	Final Projects	4	45

Rule 2: Direct-Equivalence of Courses in DIFFERENT SEMESTER

No.	CURRICULUM 2012				⇔	CURRICULUM 2016				No.
	Sem	Course Code	Course Name	credits		Sem	Course Code	Course Name	credits	
	YEAR 2									
1	3	MUG1E3	Linear Algebra	3	⇔	4	MUH1G3	Matrices and Vector Spaces	3	1
2	4	BUG1E2	English II	2	⇔	3	LUH2C2	English II	2	2
3	4	MUG2A3	Discrete Mathematics	3	⇔	3	FEH2J3	Discrete Mathematics B	3	3
	YEAR 3									
4	6	CEG3E3	Operating System	3	⇔	5	CEH3A3	Operating System B	3	4
	YEAR 4									
5	7	IEG422	Entrepreneurship	2	⇔	6	DUD2A2	Entrepreneurship	2	5

Rule 3: Equivalence for Elective Course

No.	CURRICULUM 2012				⇔	CURRICULUM 2016				No.
	Sem	Course Code	Course Name	credits		Sem	Course Code	Course Name	credits	
1	7/8	CEG4C3	Computer System Security	3	⇔	5	CEH3D3	Computer System Security (Mandatory Course)	3	1
2	7/8	CEG4D3	Human Machine Interaction	3	⇔	6	CEH3J3	Human Machine Interaction (Mandatory Course)	3	2
3	7/8	CEG4E3	Paralel Computing	3	⇔	7/8	CEH4M3	Paralel Computing	3	3

Rule 3: Equivalence for Elective Course										
4	7/8	CEG4F3	Robotics	3	↔	7/8	CEH4C3	Robotics and Intelligent Systems	3	4
5	7/8	CEG4G3	Introduction to Next-Generation Network	3	↔	7/8	CEH4L3	Next-Generation Network	3	5
6	7/8	CEG4H3	Coding and Data Compression	3	↔	7	CEH4A3	Coding and Data Compression (Mandatory Course)	3	6
7	7/8	CEG4J3	Advanced Computer Architecture	3	↔	7/8	CEH4G3	Computer Architecture	3	7
8	7/8	CEG4K3	Queueing Traffic Engineering	3	↔	7/8	CEH4N3	Queueing Traffic Engineering	3	8
9	7/8	CEG4L3	Multimedia System	3	↔	7	CEH4B3	Multimedia System (Mandatory Course)	3	9
10	7/8	CEG4M3	Mobile Computing	3	↔	7/8	CEH4K3	Mobile Computing	3	10

Rule 4: Equivalence of Removed Course in Curriculum 2012										
- Sudents who have not taken yet or passed the removed mandatory course in Curriculum 2012 may take another defined course in Curriculum 2016 - Sudents who have not taken yet or passed the removed elective course in Curriculum 2012 may take another course freely in Curriculum 2016 to fullfill the minimum required credits for graduation (144 credits) based on advisor’s suggestion and students need.										
No	CURRICULUM 2012				Take	CURRICULUM 2016				No
	Sem	Course Code	Course Name	cre dits		Sem	Course Code	Course Name	cre dits	
	YEAR 1									
1	1	HUG1H2	Environment Religion	2	→	1	DUH1A2	ICT Literacy	2	1
	YEAR 2									
2	3	FEG2E3	Information and Telecommunication Network	3	→	4	CEH2F3	Numerical Methods	2	2
	YEAR 3									
3	5	TTG3K3	Introduction to Communication System	3	→	5	CEH3D3	Computer System Security	3	3
4	5	FEG2D3	Linear Signal and System	3		6	CEH3J3	Human Machine Interaction	3	4
5	6	CEG3F3	Mobile Application	3		6	DUH2A2	Entrepreneurship	2	5
	YEAR 4									
6	7/8	CEG4A3	Game Programming	3	→	7/8	CEH4C3	Robotics and Intelligent Systems	3	6

Rule 4: Equivalence of Removed Course in Curriculum 2012

- Students who have not taken yet or passed the removed mandatory course in Curriculum 2012 may take another defined course in Curriculum 2016
- Students who have not taken yet or passed the removed elective course in Curriculum 2012 may take another course freely in Curriculum 2016 to fulfill the minimum required credits for graduation (144 credits) based on advisor's suggestion and students need.

7	7/8	CEG4B3	Network System Engineering	3		7/8	CEH4D3	Forensic Computer	3	7
8	7/8	CEG4I3	Information System Design	3		7/8	CEH4E3	Computer Vision A	3	8
9	7/8	TTG4A3	Mobile Communication System	3		7/8	CEH4F3	Machine Learning	3	9
						7/8	CEH4G3	Computer Architecture	3	10
						7/8	CEH4H3	Embedded System	3	11
						7/8	CEH4I3	Graphic Processor	3	12
						7/8	CEH4J3	VLSI Design	3	13
						7/8	CEH4K3	Mobile Computing	3	14
						7/8	CEH4L3	Next-Generation Network	3	15
						7/8	CEH4M3	Paralel Computing	3	16
						7/8	CEH4N3	Traffic Engineering	3	17

Rule 5: Equivalence of 4th Year Additional Course in Curriculum 2016

- If students who are doing final project have passed the 3rd year and have reached minimum 140 credits out of final project credits, then the 4th year additional courses in curriculum 2016 will be equivalenced as elective course in curriculum 2012.
- Else if students just have passed the 3rd year and will take the 4th year courses, then the 4th year additional courses in the curriculum 2016 must be taken.

CURRICULUM 2012 MUST BE CANCELLED										
No.	CURRICULUM 2012				↔	CURRICULUM 2016				No.
	Sem	Course Code	Course Name	credits		Sem	Course Code	Course Name	credits	
	YEAR 4									
1	6	CEG4x3	Elective Courses	2	↔	7	FEH2D2	Studium General	2	1

6.2 Skenario Ekuivalensi Angkatan 2015

Ekuivalensi Kurikulum 2012 ke ke Kurikulum 2016 angkatan 2015 mengikuti tabel 6.2 sbb:

Tabel 5.7 Ekuivalensi Mata-Kuliah Kurikulum 2012 ke Kurikulum 2016 Angkatan 2015

Aturan No. 1: Ekuivalensi langsung Mata-Kuliah pada semester yang sama										
No.	KURIKULUM 2012				⇔	KURIKULUM 2016				No
	Sem	Kode MK	Nama MK	sks		Sem	Kode MK	Nama MK	sks	
	TINGKAT 1									
1	1	MUG1A4	Kalkulus I	4	⇔	1	MUH1A4	Kalkulus I A	4	1
2	1	FUG1A3	Fisika I	3	⇔	1	FUH1A3	Fisika 1 A	3	2
3	1	FUG1B1	Praktikum Fisika I	1	⇔	1	FUH1B1	Praktikum Fisika 1 A	1	3
4	1	BUG1A2	Bahasa Indonesia	2	⇔	1	LUH1A2	Bahasa Indonesia	2	4
5	1	BUG1D2	Bahasa Inggris I	2	⇔	1	LUH1B2	Bahasa Inggris I	2	5
6	1	HUG1O3	Pengenalan Prodi Sistem Komputer	3	⇔	1	CEH1A3	Pengenalan Sistem Komputer	3	6
7	1	HUG1G2	Pancasila dan Kewarganegaraan	2	⇔	1	HUH1G3	Pancasila dan Kewarganegaraan	3	7
8	2	MUG1B4	Kalkulus II	4	⇔	2	MUH1D4	Kalkulus 2 A	4	8
9	2	FUG1C3	Fisika II	3	⇔	2	FUH1D3	Fisika 2 A	3	9
10	2	FUG1D1	Praktikum Fisika II	1	⇔	2	FUH1E1	Praktikum Fisika 2 A	1	10
11	2	HUG1J2	Kimia	3	⇔	2	KUH1A3	Kimia	3	11
12	2	KUG1A3	Algoritma dan Pemrograman	3	⇔	2	FEH1H3	Algoritma dan Pemrograman B	3	12
13	2	KUG1B1	Praktikum Algoritma dan Pemrograman	1	⇔	2	FEH1I1	Praktikum Algoritma dan Pemrograman B	1	13
14	2	HUG1A2	Pendidikan Agama dan Etika - Islam	2	⇔	2	HUH1A2	Pendidikan Agama Islam dan Etika	2	14
15	2	HUG1B2	Pendidikan Agama dan Etika - Kristen	2	⇔	2	HUH1B2	Pendidikan Agama Kristen dan Etika	2	15
16	2	HUG1C2	Pendidikan Agama dan Etika - Katolik	2	⇔	2	HUH1C2	Pendidikan Agama Katholik dan Etika	2	16
17	2	HUG1D2	Pendidikan Agama dan Etika - Hindu	2	⇔	2	HUH1D2	Pendidikan Agama Hindu dan Etika	2	17
18	2	HUG1E2	Pendidikan Agama dan Etika - Budha	2	⇔	2	HUH1E2	Pendidikan Agama Budha dan Etika	2	18
19	2	HUG1F2	Pendidikan Agama dan Etika - Khong Hu Cu	2	⇔	2	HUH1F2	Pendidikan Agama Khonmg Hu Cu dan Etika	2	19
20	1	HUG1I2	Konsep Pengembangan Sains dan Teknologi	2	⇔	2	FEH1J2	Konsep Pengenalan Sains dan Teknologi	2	20

Aturan No. 4: Ekuivalensi untuk MK Kur-2012 yang HILANG										
- Untuk Mata Kuliah wajib Kur-2012 HILANG yang belum lulus/ambil, dapat mengambil mata kuliah lain Kur-2016 yang sudah ditetapkan										
- Untuk Mata Kuliah Pilihan Kur-2012 HILANG yang belum lulus/ambil, dapat mengambil mata kuliah lain Kur-2016 dalam jumlah secukupnya untuk untuk melengkapi jumlah SKS kelulusan sarjana S1 yang harus mencapai sedikitnya 144 sks, dengan cara mengambil mata kuliah secara bebas sesuai saran dosen wali dan berdasarkan kebutuhan mahasiswa ybs										
No	KURIKULUM 2012				Mengambil	KURIKULUM 2016				No
	Sem	Kode MK	Nama MK	sks		Sem	Kode MK	Nama MK	sks	
	TINGKAT 1									
1	1	HUG1H2	Pengetahuan Lingkungan	2	→	1	DUH1A2	Literasi TIK	2	1

Penjelasan Tabel 6.2 sebagai berikut :

- Mahasiswa yang sudah lulus tingkat 1 sesuai dengan kurikulum 2012 maka dapat melanjutkan rencana studi ke tingkat berikutnya sesuai tabel 6.3
- Mahasiswa yang belum lulus tingkat 1 sesuai dengan kurikulum 2012 maka akan mengulang mata kuliah sesuai dengan ekuivalensi tabel 6.2
- Mahasiswa yang belum lulus mata kuliah Pengetahuan Lingkungan (HUG1H2) sesuai dengan kurikulum 2012 karena mata kuliah tersebut hilang dalam kurikulum 2016, maka mahasiswa ybs harus mengambil mata kuliah Literasi TIK (DUH1A2).

Berikut Rencana studi mahasiswa angkatan 2015 berikutnya :

Tabel 5.8 Rencana Studi Angkatan 2015

Semester	Ganjil				Semester	Genap			
	No	Kode	Nama Kuliah	SKS		No	Kode	Nama Kuliah	SKS
3	1	MUH1F3	Probabilitas dan Statistik A	3	4	1	FEH2G4	Elektronika	4
	2	LUH2C2	Bahasa Inggris II	2		2	MUH1G3	Matriks dan Ruang Vektor	3
	3	FEH2J3	Matematika Diskrit B	3		3	CEH2E3	Dasar Perancangan Perangkat Lunak	3
	4	CEH2A3	Pemrograman Berorientasi Objek B	3		4	CEH2F3	Metode Numerik	3
	5	CEH2B4	Rangkaian Listrik Dasar	4		5	CEH2G3	Jaringan Komputer dan Data I	3
	6	CEH2C3	Logika Matematika B	3		6	CEH2H3	Desain Sistem Digital	3
	7	CEH2D1	Praktikum Sistem Komputer I (RLD, PBO B)	1		7	CEH2I1	Praktikum Sistem Komputer II (Elka, Desain SisDig, Jarkomdat)	1
Jumlah sks				19	Jumlah sks				20

Semester	Ganjil				Semester	Genap			
	No	Kode	Nama Kuliah	SKS		No	Kode	Nama Kuliah	SKS
5	1	CEH3A3	Sistem Operasi B	3	6	1	DUH2A2	Kewirausahaan	2
	2	CEH3B3	Mikroprosesor dan Antarmuka	3		2	CEH3G3	Pengolahan Sinyal Digital	3
	3	CEH3C3	Desain Basis Data	3		3	CEH3H3	Organisasi Komputer	3
	4	CEH3D3	Keamanan Sistem Komputer	3		4	CEH3I3	Kecerdasan Buatan B	3
	5	CEH3E3	Jaringan Komputer dan Data II	3		5	CEH3J3	Interaksi Mesin Manusia	3
	6	FEH2E2	Ekonomi Teknik B	2		6	CEH3K3	Sistem Kendali Mekanika	3
	7	CEH3F1	Praktikum Sistem Komputer III (Mikro, Kamsis)	1		7	CEH3L1	Praktikum Sistem Komputer IV (PSD, AI B)	1
Jumlah sks				18	Jumlah sks				18

Semester	Ganjil				Semester	Genap			
	No	Kode	Nama Kuliah	SKS		No	Kode	Nama Kuliah	SKS
7	1	FEH4A2	Penulisan Karya Ilmiah dan Proposal	2	8	1	CEH4x3	Mata Kuliah Pilihan II Peminatan	3
	2	CEH4A3	Pengkodean dan Kompresi Data	3		2	CEH4x3	Mata Kuliah Pilihan III Bebas	3
	3	CEH4B3	Sistem Multimedia	3		3	DUH2B2	Geladi**	2
	4	FEH2D2	Studium General	2		4	FEH3B2	Kerja Praktek	2
	5	CEH4x3	Mata Kuliah Pilihan I Peminatan	3		5	FEH4B4	Tugas Akhir	4
	6	FEH3D3	Manajemen Proyek	3		Jumlah sks			14
	Jumlah sks			16		Total Keseluruhan sks			144

Keterangan :

* Mata kuliah eksepsi Geladi diambil pada semester 4

** Mata kuliah eksepsi Kerja Praktek diambil pada semester 6

6.2 Equivalence Scenario for Class of 2015

The equivalence rules of curriculum 2012 to curriculum 2016 for Class of 2015 are listed in Table 6.2.

Table 5.7 Course Equivalence of Curriculum 2012 to Curriculum 2016 for Class of 2015

Rule 1: Direct-Equivalence of Courses in the Same Semester										
No.	CURRICULUM 2012				⇔	CURRICULUM 2016				No
	Sem	Course Code	Course Name	credits		Sem	Course Code	Course Name	credits	
	YEAR 1									
1	1	MUG1A4	Calculus I	4	⇔	1	MUH1A4	Calculus I A	4	1
2	1	FUG1A3	Physics I	3	⇔	1	FUH1A3	Physics 1 A	3	2
3	1	FUG1B1	Physics Lab Works I	1	⇔	1	FUH1B1	Physics Lab Works 1 A	1	3
4	1	BUG1A2	Indonesian Language	2	⇔	1	LUH1A2	Indonesian Language	2	4

Rule 1: Direct-Equivalence of Courses in the Same Semester

5	1	BUG1D2	English I	2	↔	1	LUH1B2	English I	2	5
6	1	HUG1O3	Introduction to Computer Engineering	3	↔	1	CEH1A3	Introduction to Computer Engineering	3	6
7	1	HUG1G2	Pancasila and Citizenship	2	↔	1	HUH1G3	Pancasila and Citizenship	3	7
8	2	MUG1B4	Calculus II	4	↔	2	MUH1D4	Calculus 2 A	4	8
9	2	FUG1C3	Physics II	3	↔	2	FUH1D3	Physics 2 A	3	9
10	2	FUG1D1	Physics Lab Works II	1	↔	2	FUH1E1	Physics Lab Works 2 A	1	10
11	2	HUG1J2	Chemistry	3	↔	2	KUH1A3	Chemistry	3	11
12	2	KUG1A3	Algorithm and Programming	3	↔	2	FEH1H3	Algorithm and Programming B	3	12
13	2	KUG1B1	Algorithm and Programming Labwork	1	↔	2	FEH1I1	Algorithm and Programming Labwork B	1	13
14	2	HUG1A2	Islam Religion and Ethics	2	↔	2	HUH1A2	Islam Religion and Ethics	2	14
15	2	HUG1B2	Christian Religion and Ethics	2	↔	2	HUH1B2	Christian Religion and Ethics	2	15
16	2	HUG1C2	Catholic Religion and Ethics	2	↔	2	HUH1C2	Catholic Religion and Ethics	2	16
17	2	HUG1D2	Hindu Religion and Ethics	2	↔	2	HUH1D2	Hindu Religion and Ethics	2	17
18	2	HUG1E2	Budha Religion and Ethics	2	↔	2	HUH1E2	Budha Religion and Ethics	2	18
19	2	HUG1F2	Khong Hu Cu Religion and Ethics	2	↔	2	HUH1F2	Khong Hu Cu Religion and Ethics	2	19
20	1	HUG1I2	Concept of Science and Technology Development	2	↔	2	FEH1J2	Concept of Science and Technology Development A	2	20

Rule 4: Equivalence of Removed Course in Curriculum 2012

- Students who have not taken yet or passed the removed mandatory course in Curriculum 2012 may take another defined course in Curriculum 2016
- Students who have not taken yet or passed the removed elective course in Curriculum 2012 may take another course freely in Curriculum 2016 to fulfill the minimum required credits for graduation (144 credits) based on advisor's suggestion and students need.

No	CURRICULUM 2012				Take	CURRICULUM 2016				No
	Sem	Course Code	Course Name	cre dits		Sem	Course Code	Course Name	cre dits	
	YEAR 1									
1	1	HUG1H2	Environment Education	2	→	1	DUH1A2	ICT Literacy	2	1

The explanation of Table 6.2 are as follows:

- Students who have passed 1st year with curriculum 2012 may continue the next-year course plan based-on Table 6.3
- Students who have not passed 1st year with curriculum 2012 must retake courses based-on table equivalence 6.2.
- Students who have not passed Environment Education Course (HUG1H2) in curriculum 2012 must take ICT Literacy Course (DUH1A2) because Environment Education Course is removed in Curriculum 2016

The next-year course plan for Class of 2015 are as follows:

Table 5.8 Course Program for Class of 2015

Semester	Odd				Semester	Even			
	No	Kode	Nama Kuliah	SKS		No	Kode	Nama Kuliah	SKS
3	1	MUH1F3	Probability and Statistics A	3	4	1	FEH2G4	Electronics	4
	2	LUH2C2	English II	2		2	MUH1G3	Matrices and Vector Space	3
	3	FEH2J3	Discret Mathematics B	3		3	CEH2E3	BASIC SOFTWARE ENGINEERING	3
	4	CEH2A3	Object Oriented Programming B	3		4	CEH2F3	Numerical Methods	3
	5	CEH2B4	Electrical Circuits Basic	4		5	CEH2G3	Computer Network and Data I	3
	6	CEH2C3	Mathematics Logics B	3		6	CEH2H3	Digital Systems Design	3
	7	CEH2D1	COMPUTER ENGINEERING Lab Works I (RLD, PBO B)	1		7	CEH2I1	COMPUTER ENGINEERING Lab Works II (Elka, Desain SisDig, Jarkomdat)	1
Total Credits				19	Total Credits				20
Semester	Odd				Semester	Even			
	No	Kode	Nama Kuliah	SKS		No	Kode	Nama Kuliah	SKS
5	1	CEH3A3	Operating Systems B	3	6	1	DUH2A2	Entrepreneurship	2
	2	CEH3B3	Microprocessors and Interfaces	3		2	CEH3G3	Digital Signal Processing	3
	3	CEH3C3	Database Design	3		3	CEH3H3	Computer Organization	3
	4	CEH3D3	Computer System Security	3		4	CEH3I3	Artificial Intelligent B	3
	5	CEH3E3	Computer Network and Data II	3		5	CEH3J3	Human Machine Interactions	3
	6	FEH2E2	Engineering Economics B	2		6	CEH3K3	Control System And Mechanics	3
	7	CEH3F1	Computer Engineering Lab Works III (Mikro, Kamsis)	1		7	CEH3L1	Computer Engineering Lab Works IV (PSD, AI B)	1
Total Credits				18	Total Credits				18

Semester	Odd				Semester	Even			
	No	Kode	Nama Kuliah	SKS		No	Kode	Nama Kuliah	SKS
7	1	FEH4A2	Scientific Writing And Proposal	2	8	1	CEH4x3	Elective Course II (Interest)	3
	2	CEH4A3	Coding And Compression	3		2	CEH4x3	Elective Course Iii (Option)	3
	3	CEH4B3	Multimedia Systems	3		3	DUH2B2	Basic On The Job Training*	2
	4	FEH2D2	Studium Generale	2		4	FEH3B2	Internship**	2
	5	CEH4x3	Elective Course I (Interest)	3		5	FEH4B4	Final Project	4
	6	FEH3D3	Project Management	3	Total Credits				14
	Total Credits			16	All Total Credits				144

Keterangan :

* Exception Course Basic On The Job Training is taken in 4th semester

** Exception Course Internship is taken in 6th semester

6.3 Skenario Ekuivalensi Angkatan 2014

Ekuivalensi Kurikulum 2012 ke ke Kurikulum 2016 angkatan 2014 mengikuti tabel 6.4 sbb:

Tabel 5.9 Ekuivalensi Mata-Kuliah Kurikulum 2012 ke Kurikulum 2016 Angkatan 2014

Aturan No. 1: Ekuivalensi langsung Mata-Kuliah pada semester yang sama									
KURIKULUM 2012				⇔	KURIKULUM 2016				No
Sem	Kode MK	Nama MK	sks		Sem	Kode MK	Nama MK	sks	
TINGKAT 1									
1	MUG1A4	Kalkulus I	4	⇔	1	MUH1A4	Kalkulus I A	4	1
1	FUG1A3	Fisika I	3	⇔	1	FUH1A3	Fisika 1 A	3	2
1	FUG1B1	Praktikum Fisika I	1	⇔	1	FUH1B1	Praktikum Fisika 1 A	1	3
1	BUG1A2	Bahasa Indonesia	2	⇔	1	LUH1A2	Bahasa Indonesia	2	4

Aturan No. 1: Ekuivalensi langsung Mata-Kuliah pada semester yang sama

1	BUG1D2	Bahasa Inggris I	2	↔	1	LUH1B2	Bahasa Inggris I	2	5
1	HUG1O3	Pengenalan Prodi Sistem Komputer	3	↔	1	CEH1A3	Pengenalan Sistem Komputer	3	6
1	HUG1G2	Pancasila dan Kewarganegaraan	2	↔	1	HUH1G3	Pancasila dan Kewarganegaraan	3	7
2	MUG1B4	Kalkulus II	4	↔	2	MUH1D4	Kalkulus 2 A	4	8
2	FUG1C3	Fisika II	3	↔	2	FUH1D3	Fisika 2 A	3	9
2	FUG1D1	Praktikum Fisika II	1	↔	2	FUH1E1	Praktikum Fisika 2 A	1	10
2	HUG1J2	Kimia	3	↔	2	KUH1A3	Kimia	3	11
2	KUG1A3	Algoritma dan Pemrograman	3	↔	2	FEH1H3	Algoritma dan Pemrograman B	3	12
2	KUG1B1	Praktikum Algoritma dan Pemrograman	1	↔	2	FEH1I1	Praktikum Algoritma dan Pemrograman B	1	13
2	HUG1A2	Pendidikan Agama dan Etika – Islam	2	↔	2	HUH1A2	Pendidikan Agama Islam dan Etika	2	14
2	HUG1B2	Pendidikan Agama dan Etika – Kristen	2	↔	2	HUH1B2	Pendidikan Agama Kristen dan Etika	2	15
2	HUG1C2	Pendidikan Agama dan Etika – Katolik	2	↔	2	HUH1C2	Pendidikan Agama Katholik dan Etika	2	16
2	HUG1D2	Pendidikan Agama dan Etika – Hindu	2	↔	2	HUH1D2	Pendidikan Agama Hindu dan Etika	2	17
2	HUG1E2	Pendidikan Agama dan Etika – Budha	2	↔	2	HUH1E2	Pendidikan Agama Budha dan Etika	2	18
2	HUG1F2	Pendidikan Agama dan Etika - Khong Hu Cu	2	↔	2	HUH1F2	Pendidikan Agama Khonmg Hu Cu dan Etika	2	19
1	HUG1I2	Konsep Pengembangan Sains dan Teknologi	2	↔	2	FEH1J2	Konsep Pengenalan Sains dan Teknologi	2	20
TINGKAT 2									
3	MUG2D3	Probabilitas dan Statistika	3	↔	3	MUH1F3	Probabilitas dan Statistik	3	21
3	CEG2A3	Pemrograman Berorientasi Objek	3	↔	3	CEH2A3	Pemrograman Berorientasi Objek B	3	22
3	FEG2B4	Rangkaian Listrik	4	↔	3	CEH2B4	Rangkaian Listrik Dasar	4	23
3	MUG2B3	Logika Matematik	3	↔	3	CEH2C3	Logika Matematika B	3	24
3	CEG211	Praktikum Dasar Sistem Komputer (RL, OOP)	1	↔	3	CEH2D1	Praktikum Sistem Komputer I (RLD, PBO B)	1	25
4	FEG2F4	Elektronika I	4	↔	4	FEH2G4	Elektronika	4	26
4	CEG2C3	Dasar Perancangan Perangkat Lunak	3	↔	4	CEH2E3	Dasar Perancangan Perangkat Lunak	3	27
4	FEG2G3	Jaringan Komputer dan Data	3	↔	4	CEH2G3	Jaringan Komputer dan Data I	3	28
4	CEG2B3	Rangkaian Logika	3	↔	4	CEH2H3	Desain Sistem Digital	3	29

Aturan No. 1: Ekuivalensi langsung Mata-Kuliah pada semester yang sama								
4	CEG221	Praktikum Sistem Komputer I (Elka I, Jarkom, RangLog)	1	↔	4	CEH2I1	Praktikum Sistem Komputer II (Elka, SisDig, Jarkomdat)	30
Aturan No. 2: Ekuivalensi langsung Mata-Kuliah pada SEMESTER BERBEDA								
KURIKULUM 2012				↔	KURIKULUM 2016			
Sem	Kode MK	Nama MK	sks		Sem	Kode MK	Nama MK	No
TINGKAT 2								.
3	MUG1E3	Aljabar Linear	3	↔	4	MUH1G3	Matriks dan Ruang Vecktor	1
4	BUG1E2	Bahasa Inggris II	2	↔	3	LUH2C2	Bahasa Inggris II	2
4	MUG2A3	Matematika Diskret	3	↔	3	FEH2J3	Matematika Diskrit B	3

Aturan No. 4: Ekuivalensi untuk MK Kur-2012 yang HILANG										
- Untuk Mata Kuliah wajib Kur-2012 HILANG yang belum lulus/ambil, dapat mengambil mata kuliah lain Kur-2016 yang sudah ditetapkan										
- Untuk Mata Kuliah Pilihan Kur-2012 HILANG yang belum lulus/ambil, dapat mengambil mata kuliah lain Kur-2016 dalam jumlah secukupnya untuk untuk melengkapi jumlah SKS kelulusan sarjana S1 yang harus mencapai sedikitnya 144 sks, dengan cara mengambil mata kuliah secara bebas sesuai saran dosen wali dan berdasarkan kebutuhan mahasiswa ybs										
No	KURIKULUM 2012				Mengambil	KURIKULUM 2016				No
	Sem	Kode MK	Nama MK	sks		Sem	Kode MK	Nama MK	sks	
	TINGKAT 2									
2	3	FEG2E3	Jaringan Telekomunikasi dan Informasi	3	→	4	CEH2F3	Metode Numerik	2	2

Penjelasan Tabel 6.4 sebagai berikut :

- Mahasiwa yang sudah lulus tingkat 2 sesuai dengan kurikulum 2012 maka dapat melanjutkan rencana studi ke tingkat berikutnya sesuai tabel 6.5
- Mahasiswa yang belum lulus tingkat 2 sesuai dengan kurikulum 2012 maka akan mengulang mata kuliah sesuai dengan ekuivalensi tabel 6.4

Berikut Rencana studi mahasiswa angkatan 2014 berikutnya :

Program Studi S1 Sistem Komputer

Tabel 5.10 Rencana Studi Angkatan 2014

Semester	Ganjil				Semester	Genap			
	No	Kode	Nama Kuliah	SKS		No	Kode	Nama Kuliah	SKS
5	1	CEH3A3	Sistem Operasi B	3	6	1	DUH2A2	Kewirausahaan	2
	2	CEH3B3	Mikroprosesor dan Antarmuka	3		2	CEH3G3	Pengolahan Sinyal Digital	3
	3	CEH3C3	Desain Basis Data	3		3	CEH3H3	Organisasi Komputer	3
	4	CEH3D3	Keamanan Sistem Komputer	3		4	CEH3I3	Kecerdasan Buatan B	3
	5	CEH3E3	Jaringan Komputer dan Data II	3		5	CEH3J3	Interaksi Mesin Manusia	3
	6	FEH2E2	Ekonomi Teknik B	2		6	CEH3K3	Sistem Kendali Mekanika	3
	7	CEH3F1	Praktikum Sistem Komputer III (Mikro, Kamsis)	1		7	CEH3L1	Praktikum Sistem Komputer IV (PSD, AI B)	1
	Jumlah sks			18		Jumlah sks			18
Semester	Ganjil				Semester	Genap			
	No	Kode	Nama Kuliah	SKS		No	Kode	Nama Kuliah	SKS
7	1	FEH4A2	Penulisan Karya Ilmiah dan Proposal	2	8	1	CEH4x3	Mata Kuliah Pilihan II Peminatan	3
	2	CEH4A3	Pengkodean dan Kompresi Data	3		2	CEH4x3	Mata Kuliah Pilihan III Bebas	3
	3	CEH4B3	Sistem Multimedia	3		3	DUH2B2	Geladi**	2
	4	FEH2D2	Studium General	2		4	FEH3B2	Kerja Praktek	2
	5	CEH4x3	Mata Kuliah Pilihan I Peminatan	3		5	FEH4B4	Tugas Akhir	4
	6	FEH3D3	Manajemen Proyek	3		Jumlah sks			14
	Jumlah sks			16		Total Keseluruhan sks			144

Keterangan :

* Mata kuliah eksepsi Geladi diambil pada semester 4

** Mata kuliah eksepsi Kerja Praktek diambil pada semester 6

6.3 Equivalence Scenario for Class of 2014

The equivalence rules of curriculum 2012 to curriculum 2016 for Class of 2014 are listed in Table 6.4.

Table 5.9 Course Equivalence of Curriculum 2012 yo Curriculum 2016 for Class of 2014

Rule 1: Direct-Equivalence of Courses in the Same Semester										
No.	CURRICULUM 2012				⇔	CURRICULUM 2016				No
	Sem	Course Code	Course Name	credits		Sem	Course Code	Course Name	credits	
	YEAR 1									
1	1	MUG1A4	Calculus I	4	⇔	1	MUH1A4	Calculus I A	4	1
2	1	FUG1A3	Physics I	3	⇔	1	FUH1A3	Physics 1 A	3	2
3	1	FUG1B1	Physics Lab Works I	1	⇔	1	FUH1B1	Physics Lab Works 1 A	1	3
4	1	BUG1A2	Indonesian Language	2	⇔	1	LUH1A2	Indonesian Language	2	4
5	1	BUG1D2	English I	2	⇔	1	LUH1B2	English I	2	5
6	1	HUG1O3	Introduction to Computer Engineering	3	⇔	1	CEH1A3	Introduction to Computer Engineering	3	6
7	1	HUG1G2	Pancasila and Citizenship	2	⇔	1	HUH1G3	Pancasila and Citizenship	3	7
8	2	MUG1B4	Calculus II	4	⇔	2	MUH1D4	Calculus 2 A	4	8
9	2	FUG1C3	Physics II	3	⇔	2	FUH1D3	Physics 2 A	3	9
10	2	FUG1D1	Physics Lab Works II	1	⇔	2	FUH1E1	Physics Lab Works 2 A	1	10
11	2	HUG1J2	Chemistry	3	⇔	2	KUH1A3	Chemistry	3	11
12	2	KUG1A3	Algorithm and Programming	3	⇔	2	FEH1H3	Algorithm and Programming B	3	12
13	2	KUG1B1	Algorithm and Programming Labwork	1	⇔	2	FEH1I1	Algorithm and Programming Labwork B	1	13
14	2	HUG1A2	Islam Religion and Ethics	2	⇔	2	HUH1A2	Islam Religion and Ethics	2	14
15	2	HUG1B2	Christian Religion and Ethics	2	⇔	2	HUH1B2	Christian Religion and Ethics	2	15
16	2	HUG1C2	Catholic Religion and Ethics	2	⇔	2	HUH1C2	Catholic Religion and Ethics	2	16
17	2	HUG1D2	Hindu Religion and Ethics	2	⇔	2	HUH1D2	Hindu Religion and Ethics	2	17
18	2	HUG1E2	Budha Religion and Ethics	2	⇔	2	HUH1E2	Budha Religion and Ethics	2	18
19	2	HUG1F2	Khong Hu Cu Religion and Ethics	2	⇔	2	HUH1F2	Khong Hu Cu Religion and Ethics	2	19

Rule 1: Direct-Equivalence of Courses in the Same Semester

20	1	HUG1I2	Concept of Science and Technology Development	2	↔	2	FEH1J2	Concept of Science and Technology Development A	2	20
YEAR 2										
21	3	MUG2D3	Probability and Statistics	3	↔	3	MUH1F3	Probability and Statistics	3	21
22	3	CEG2A3	Object Oriented Programming	3	↔	3	CEH2A3	Object Oriented Programming B	3	22
23	3	FEG2B4	Electric Circuits	4	↔	3	CEH2B4	Basic Electric Circuits	4	23
24	3	MUG2B3	Mathematics Logic	3	↔	3	CEH2C3	Mathematics Logic B	3	24
25	3	CEG211	Basic Computer Engineering Lab Works (EC, OOP)	1	↔	3	CEH2D1	Computer Engineering Lab Works I (BEC, OOP B)	1	25
26	4	FEG2F4	Electronics	4	↔	4	FEH2G4	Electronics	4	26
27	4	CEG2C3	Basic Software Engineering	3	↔	4	CEH2E3	Basic Software Engineering	3	27
28	4	FEG2G3	Data and Computer Network	3	↔	4	CEH2G3	Computer Network I	3	28
29	4	CEG2B3	Logic Circuits	3	↔	4	CEH2H3	Digital Systems Design	3	29
30	4	CEG221	Computer Engineering Lab Works I (Electronics, ComNet, LogCircuits)	1	↔	4	CEH2I1	Computer Engineering Lab Works II (Electronics, DSD, ComNet II)	1	30

Rule 2: Direct-Equivalence of Courses in DIFFERENT SEMESTER

No .	CURRICULUM 2012				↔	CURRICULUM 2016				No .
	Sem	Course Code	Course Name	credits		Sem	Course Code	Course Name	credits	
	YEAR 2									
1	3	MUG1E3	Linear Algebra	3	↔	4	MUH1G3	Matrices and Vector Spaces	3	1
2	4	BUG1E2	English II	2	↔	3	LUH2C2	English II	2	2
3	4	MUG2A3	Discrete Mathematics	3	↔	3	FEH2J3	Discrete Mathematics B	3	3

Rule 4: Equivalence of Removed Course in Curriculum 2012

- Students who have not taken yet or passed the removed mandatory course in Curriculum 2012 may take another defined course in Curriculum 2016
- Students who have not taken yet or passed the removed elective course in Curriculum 2012 may take another course freely in Curriculum 2016 to fulfill the minimum required credits for graduation (144 credits) based on advisor's suggestion and students need.

Rule 1: Direct-Equivalence of Courses in the Same Semester										
No	CURRICULUM 2012				Take	CURRICULUM 2016				No
	Sem	Course Code	Course Name	cre dits		Sem	Course Code	Course Name	cre dits	
	YEAR 1									
	1	1	HUG1H2	Environment Education		2	→	1	DUH1A2	
	YEAR 2									
2	3	FEG2E3	Information and Telecommunication Network	3	→	4	CEH2F3	Numerical Methods	2	2

The explanation of Table 6.4 are as follows:

- Students who have passed 2nd year with curriculum 2012 may continue the next-year course plan based-on Table 6.5
- Students who have not passed 1st year with curriculum 2012 must retake courses based-on table equivalence 6.4.

The next-year course plan for Class of 2014 are as follows:

Table 5.10 Course Program for Class of 2014

Semester	Odd				Semester	Even			
	No	Kode	Nama Kuliah	SKS		No	Kode	Nama Kuliah	SKS
5	1	CEH3A3	Operating Systems B	3	6	1	DUH2A2	Entrepreneurship	2
	2	CEH3B3	Microprocessors and Interfaces	3		2	CEH3G3	Digital Signal Processing	3
	3	CEH3C3	Database Design	3		3	CEH3H3	Computer Organization	3
	4	CEH3D3	Computer System Security	3		4	CEH3I3	Artificial Intelligent B	3
	5	CEH3E3	Computer Network and Data II	3		5	CEH3J3	Human Machine Interactions	3
	6	FEH2E2	Engineering Economics B	2		6	CEH3K3	Control System And Mechanics	3
	7	CEH3F1	Computer Engineering Lab Works III (Mikro, Kamsis)	1		7	CEH3L1	Computer Engineering Lab Works IV (PSD, AI B)	1
Total Credits				18	Total Credits				18

Semester	Odd				Semester	Even			
	No	Kode	Nama Kuliah	SKS		No	Kode	Nama Kuliah	SKS
7	1	FEH4A2	Scientific Writing And Proposal	2	8	1	CEH4x3	Elective Course II (Interest)	3
	2	CEH4A3	Coding And Compression	3		2	CEH4x3	Elective Course Iii (Option)	3
	3	CEH4B3	Multimedia Systems	3		3	DUH2B2	Basic On The Job Training*	2
	4	FEH2D2	Studium Generale	2		4	FEH3B2	Internship**	2
	5	CEH4x3	Elective Course I (Interest)	3		5	FEH4B4	Final Project	4
	6	FEH3D3	Project Management	3	Total Credits				14
	Total Credits			16	All Total Credits				144

Keterangan :

* Exception Course Basic On The Job Training is taken in 4th semester

** Exception Course Internship is taken in 6th semester

6.4 Skenario Ekuivalensi Angkatan 2013

Ekuivalensi Kurikulum 2012 ke ke Kurikulum 2016 angkatan 2013 mengikuti tabel 6.8 sbb:

Tabel 5.11 Ekuivalensi Mata-Kuliah Kurikulum 2012 ke Kurikulum 2016

Aturan No. 1: Ekuivalensi langsung Mata-Kuliah pada semester yang sama										
No.	KURIKULUM 2012				⇔	KURIKULUM 2016				No
	Sem	Kode MK	Nama MK	sks		Sem	Kode MK	Nama MK	sks	
	TINGKAT 1									
1	1	MUG1A4	Kalkulus I	4	⇔	1	MUH1A4	Kalkulus I A	4	1
2	1	FUG1A3	Fisika I	3	⇔	1	FUH1A3	Fisika 1 A	3	2
3	1	FUG1B1	Praktikum Fisika I	1	⇔	1	FUH1B1	Praktikum Fisika 1 A	1	3
4	1	BUG1A2	Bahasa Indonesia	2	⇔	1	LUH1A2	Bahasa Indonesia	2	4
5	1	BUG1D2	Bahasa Inggris I	2	⇔	1	LUH1B2	Bahasa Inggris I	2	5

Aturan No. 1: Ekuivalensi langsung Mata-Kuliah pada semester yang sama

6	1	HUG1O3	Pengenalan Prodi Sistem Komputer	3	↔	1	CEH1A3	Pengenalan Sistem Komputer	3	6
7	1	HUG1G2	Pancasila dan Kewarganegaraan	2	↔	1	HUH1G3	Pancasila dan Kewarganegaraan	3	7
8	2	MUG1B4	Kalkulus II	4	↔	2	MUH1D4	Kalkulus 2 A	4	8
9	2	FUG1C3	Fisika II	3	↔	2	FUH1D3	Fisika 2 A	3	9
10	2	FUG1D1	Praktikum Fisika II	1	↔	2	FUH1E1	Praktikum Fisika 2 A	1	10
11	2	HUG1J2	Kimia	3	↔	2	KUH1A3	Kimia	3	11
12	2	KUG1A3	Algoritma dan Pemrograman	3	↔	2	FEH1H3	Algoritma dan Pemrograman B	3	12
13	2	KUG1B1	Praktikum Algoritma dan Pemrograman	1	↔	2	FEH1I1	Praktikum Algoritma dan Pemrograman B	1	13
14	2	HUG1A2	Pendidikan Agama dan Etika – Islam	2	↔	2	HUH1A2	Pendidikan Agama Islam dan Etika	2	14
15	2	HUG1B2	Pendidikan Agama dan Etika – Kristen	2	↔	2	HUH1B2	Pendidikan Agama Kristen dan Etika	2	15
16	2	HUG1C2	Pendidikan Agama dan Etika – Katolik	2	↔	2	HUH1C2	Pendidikan Agama Katholik dan Etika	2	16
17	2	HUG1D2	Pendidikan Agama dan Etika – Hindu	2	↔	2	HUH1D2	Pendidikan Agama Hindu dan Etika	2	17
18	2	HUG1E2	Pendidikan Agama dan Etika – Budha	2	↔	2	HUH1E2	Pendidikan Agama Budha dan Etika	2	18
19	2	HUG1F2	Pendidikan Agama dan Etika - Khong Hu Cu	2	↔	2	HUH1F2	Pendidikan Agama Khonmg Hu Cu dan Etika	2	19
20	1	HUG1I2	Konsep Pengembangan Sains dan Teknologi	2	↔	2	FEH1J2	Konsep Pengenalan Sains dan Teknologi	2	20
TINGKAT 2										
21	3	MUG2D3	Probabilitas dan Statistika	3	↔	3	MUH1F3	Probabilitas dan Statistik	3	21
22	3	CEG2A3	Pemrograman Berorientasi Objek	3	↔	3	CEH2A3	Pemrograman Berorientasi Objek B	3	22
23	3	FEG2B4	Rangkaian Listrik	4	↔	3	CEH2B4	Rangkaian Listrik Dasar	4	23
24	3	MUG2B3	Logika Matematik	3	↔	3	CEH2C3	Logika Matematika B	3	24
25	3	CEG211	Praktikum Dasar Sistem Komputer (RL, OOP)	1	↔	3	CEH2D1	Praktikum Sistem Komputer I (RLD, PBO B)	1	25
26	4	FEG2F4	Elektronika I	4	↔	4	FEH2G4	Elektronika	4	26
27	4	CEG2C3	Dasar Perancangan Perangkat Lunak	3	↔	4	CEH2E3	Dasar Perancangan Perangkat Lunak	3	27
28	4	FEG2G3	Jaringan Komputer dan Data	3	↔	4	CEH2G3	Jaringan Komputer dan Data I	3	28
29	4	CEG2B3	Rangkaian Logika	3	↔	4	CEH2H3	Desain Sistem Digital	3	29
30	4	CEG221	Praktikum Sistem Komputer I (Elka I, Jarkom, RangLog)	1	↔	4	CEH2I1	Praktikum Sistem Komputer II (Elka, SisDig, Jarkomdat)	1	30

Aturan No. 1: Ekuivalensi langsung Mata-Kuliah pada semester yang sama

TINGKAT 3										
31	5	CEG3B3	Mikroprosesor dan Sistem Embedded	3	↔	5	CEH3B3	Mikroprosesor dan Antarmuka	3	31
32	5	CEG3C3	Desain Basis Data	3	↔	5	CEH3C3	Desain Basis Data	3	32
33	5	IEG2H2	Ekonomi Teknik	2	↔	5	FEH2E2	Ekonomi Teknik B	2	33
34	5	CEG311	Praktikum Sistem Komputer II (uP Embedded, Basis Data)	1	↔	5	CEH3F1	Praktikum Sistem Komputer III (Mikro, Kamsis)	1	34
35	6	FEG3A3	Pengolahan Sinyal Digital	3	↔	6	FEH3A3	Pengolahan Sinyal Digital	3	35
36	6	CEG3D3	Organisasi dan Arsitektur Komputer	3	↔	6	CEH3H3	Organisasi Komputer	3	36
37	6	CEG3G3	Kecerdasan Buatan	3	↔	6	CEH3I3	Kecerdasan Buatan B	3	37
38	6	CEG3H3	Sistem Kendali dan Mekanika	3	↔	6	CEH3K3	Sistem Kendali dan Mekanika	3	38
39	5	CEG3A3	Instalasi dan Pengukuran Jaringan	3	↔	5	CEH3E3	Jaringan Komputer dan Data II	3	39
40	6	CEG321	Praktikum Sistem Komputer III (PSD, OS)	1	↔	6	CEH3L1	Praktikum Sistem Komputer IV (PSD, AI B)	1	40

Aturan No. 2: Ekuivalensi langsung Mata-Kuliah pada SEMESTER BERBEDA

KURIKULUM 2012				⇔	KURIKULUM 2016				No.
Sem	Kode MK	Nama MK	sks		Sem	Kode MK	Nama MK	sks	
TINGKAT 2									
3	MUG1E3	Aljabar Linear	3	⇔	4	MUH1G3	Matriks dan Ruang Vecktor	3	1
4	BUG1E2	Bahasa Inggris II	2	⇔	3	LUH2C2	Bahasa Inggris II	2	2
4	MUG2A3	Matematika Diskret	3	⇔	3	FEH2J3	Matematika Diskrit B	3	3
TINGKAT 3									
6	CEG3E3	Sistem Operasi	3	⇔	5	CEH3A3	Sistem Operasi B	3	4

Aturan No. 4: Ekivalensi untuk MK Kur-2012 yang HILANG										
- Untuk Mata Kuliah wajib Kur-2012 HILANG yang belum lulus/ambil, dapat mengambil mata kuliah lain Kur-2016 yang sudah ditetapkan										
- Untuk Mata Kuliah Pilihan Kur-2012 HILANG yang belum lulus/ambil, dapat mengambil mata kuliah lain Kur-2016 dalam jumlah secukupnya untuk untuk melengkapi jumlah SKS kelulusan sarjana S1 yang harus mencapai sedikitnya 144 sks, dengan cara mengambil mata kuliah secara bebas sesuai saran dosen wali dan berdasarkan kebutuhan mahasiswa ybs										
No	KURIKULUM 2012				Mengambil	KURIKULUM 2016				No
	Sem	Kode MK	Nama MK	Sks		Sem	Kode MK	Nama MK	sks	
	TINGKAT 2									
2	3	FEG2E3	Jaringan Telekomunikasi dan Informasi	3	→	4	CEH2F3	Metode Numerik	2	2
TINGKAT 3										
3	5	TTG3K3	Pengantar Sistem Komunikasi	3	→	5	CEH3D3	Keamanan Sistem Komputer	3	3
4	5	FEG2D3	Sinyal dan Sistem Linier	3		6	CEH3J3	Interaksi Mesin Manusia	3	4
5	6	CEG3F3	Aplikasi Mobile	3		6	DUH2A2	Kewirausahaan	2	5

Penjelasan Tabel 6.6 sebagai berikut :

- Mahasiswa yang sudah lulus tingkat 3 sesuai dengan kurikulum 2012 maka dapat melanjutkan rencana studi ke tingkat berikutnya sesuai tabel 6.7
- Mahasiswa yang belum lulus tingkat 2 dan Tingkat 3 sesuai dengan kurikulum 2012 maka akan mengulang mata kuliah sesuai dengan ekivalensi tabel 6.6

Berikut Rencana studi mahasiswa angkatan 2013 berikutnya :

Tabel 5.12 Rencana studi Angkatan 2013

Semester	Ganjil				Semester	Genap			
	No	Kode	Nama Kuliah	SKS		No	Kode	Nama Kuliah	SKS
7	1	FEH4A2	Penulisan Karya Ilmiah dan Proposal	2	8	1	CEH4x3	Mata Kuliah Pilihan II Peminatan	3
	2	CEH4A3	Pengkodean dan Kompresi Data	3		2	CEH4x3	Mata Kuliah Pilihan III Bebas	3
	3	CEH4B3	Sistem Multimedia	3		3	DUH2B2	Geladi**	2
	4	FEH2D2	Studium General	2		4	FEH3B2	Kerja Praktek	2
	5	CEH4x3	Mata Kuliah Pilihan I Peminatan	3		5	FEH4B4	Tugas Akhir	4
	6	FEH3D3	Manajemen Proyek	3	Jumlah sks				14
	Jumlah sks				16	Total Keseluruhan sks			

Keterangan :

* Mata kuliah eksepsi Geladi diambil pada semester 4

** Mata kuliah eksepsi Kerja Praktek diambil pada semester 6

6.4 Equivalence Scenario for Class of 2013

The equivalence rules of curriculum 2012 to curriculum 2016 for Class of 2013 are listed in Table 6.6.

Table 5.11 Course Equivalence of Curriculum 2012 to Curriculum 2016 for Class of 2013

Rule 1: Direct-Equivalence of Courses in the Same Semester										
No.	CURRICULUM 2012				⇔	CURRICULUM 2016				No.
	Sem	Course Code	Course Name	credits		Sem	Course Code	Course Name	credits	
	YEAR 1									
1	1	MUG1A4	Calculus I	4	⇔	1	MUH1A4	Calculus I A	4	1
2	1	FUG1A3	Physics I	3	⇔	1	FUH1A3	Physics 1 A	3	2
3	1	FUG1B1	Physics Lab Works I	1	⇔	1	FUH1B1	Physics Lab Works 1 A	1	3

Rule 1: Direct-Equivalence of Courses in the Same Semester										
4	1	BUG1A2	Indonesian Language	2	⇔	1	LUH1A2	Indonesian Language	2	4
5	1	BUG1D2	English I	2	⇔	1	LUH1B2	English I	2	5
6	1	HUG1O3	Introduction to Computer Engineering	3	⇔	1	CEH1A3	Introduction to Computer Engineering	3	6
7	1	HUG1G2	Pancasila and Citizenship	2	⇔	1	HUH1G3	Pancasila and Citizenship	3	7
8	2	MUG1B4	Calculus II	4	⇔	2	MUH1D4	Calculus 2 A	4	8
9	2	FUG1C3	Physics II	3	⇔	2	FUH1D3	Physics 2 A	3	9
10	2	FUG1D1	Physics Lab Works II	1	⇔	2	FUH1E1	Physics Lab Works 2 A	1	10
11	2	HUG1J2	Chemistry	3	⇔	2	KUH1A3	Chemistry	3	11
12	2	KUG1A3	Algorithm and Programming	3	⇔	2	FEH1H3	Algorithm and Programming B	3	12
13	2	KUG1B1	Algorithm and Programming Labwork	1	⇔	2	FEH1I1	Algorithm and Programming Labwork B	1	13
14	2	HUG1A2	Islam Religion and Ethics	2	⇔	2	HUH1A2	Islam Religion and Ethics	2	14
15	2	HUG1B2	Christian Religion and Ethics	2	⇔	2	HUH1B2	Christian Religion and Ethics	2	15
16	2	HUG1C2	Catholic Religion and Ethics	2	⇔	2	HUH1C2	Catholic Religion and Ethics	2	16
17	2	HUG1D2	Hindu Religion and Ethics	2	⇔	2	HUH1D2	Hindu Religion and Ethics	2	17
18	2	HUG1E2	Budha Religion and Ethics	2	⇔	2	HUH1E2	Budha Religion and Ethics	2	18
19	2	HUG1F2	Khong Hu Cu Religion and Ethics	2	⇔	2	HUH1F2	Khong Hu Cu Religion and Ethics	2	19
20	1	HUG1I2	Concept of Science and Technology Development	2	⇔	2	FEH1J2	Concept of Science and Technology Development A	2	20
YEAR 2										
21	3	MUG2D3	Probability and Statistics	3	⇔	3	MUH1F3	Probability and Statistics	3	21
22	3	CEG2A3	Object Oriented Programming	3	⇔	3	CEH2A3	Object Oriented Programming B	3	22
23	3	FEG2B4	Electric Circuits	4	⇔	3	CEH2B4	Basic Electric Circuits	4	23
24	3	MUG2B3	Mathematics Logic	3	⇔	3	CEH2C3	Mathematics Logic B	3	24
25	3	CEG211	Basic Computer Engineering Lab Works (EC, OOP)	1	⇔	3	CEH2D1	Computer Engineering Lab Works I (BEC, OOP B)	1	25
26	4	FEG2F4	Electronics	4	⇔	4	FEH2G4	Electronics	4	26
27	4	CEG2C3	Basic Software Engineering	3	⇔	4	CEH2E3	Basic Software Engineering	3	27
28	4	FEG2G3	Data and Computer Network	3	⇔	4	CEH2G3	Computer Network I	3	28

Rule 1: Direct-Equivalence of Courses in the Same Semester										
29	4	CEG2B3	Logic Circuits	3	↔	4	CEH2H3	Digital Systems Design	3	29
30	4	CEG221	Computer Engineering Lab Works I (Electronics, ComNet, LogCircuits)	1	↔	4	CEH2I1	Computer Engineering Lab Works II (Electronics, DSD, ComNet II)	1	30
	YEAR 3									
31	5	CEG3B3	Microprocessor and Embedded System	3	↔	5	CEH3B3	Microprocessor and Interface	3	31
32	5	CEG3C3	Database Design	3	↔	5	CEH3C3	Database Design	3	32
33	5	IEG2H2	Economic Engineering	2	↔	5	FEH2E2	Economic Engineering B	2	33
34	5	CEG311	Computer Engineering Lab Works II (uP Embedded, DatabaseDesign)	1	↔	5	CEH3F1	Computer Engineering Lab Works III (Micro, ComSysSecurity)	1	34
35	6	FEG3A3	Digital Signal Processing	3	↔	6	FEH3A3	Digital Signal Processing	3	35
36	6	CEG3D3	Computer Organization	3	↔	6	CEH3H3	Computer Organization	3	36
37	6	CEG3G3	Artificial Intelligence	3	↔	6	CEH3I3	Artificial Intelligence B	3	37
38	6	CEG3H3	Control System and Mechanic	3	↔	6	CEH3K3	Control System and Mechanic	3	38
39	5	CEG3A3	Installation and Network Measurements	3	↔	5	CEH3E3	Computer Network II	3	39
40	6	CEG321	Computer Engineering Lab Works III (DSP, OS)	1	↔	6	CEH3L1	Computer Engineering Lab Works IV (DSP, AI B)	1	40
Rule 2: Direct-Equivalence of Courses in DIFFERENT SEMESTER										
No.	CURRICULUM 2012				↔	CURRICULUM 2016				No .
	Sem	Course Code	Course Name	credits		Se m	Course Code	Course Name	credits	
	YEAR 2									
1	3	MUG1E3	Linear Algebra	3	↔	4	MUH1G3	Matrices and Vector Spaces	3	1
2	4	BUG1E2	English II	2	↔	3	LUH2C2	English II	2	2
3	4	MUG2A3	Discrete Mathematics	3	↔	3	FEH2J3	Discrete Mathematics B	3	3
	YEAR 3									
4	6	CEG3E3	Operating System	3	↔	5	CEH3A3	Operating System B	3	4

Rule 4: Equivalence of Removed Course in Curriculum 2012										
- Sudents who have not taken yet or passed the removed mandatory course in Curriculum 2012 may take another defined course in Curriculum 2016 - Sudents who have not taken yet or passed the removed elective course in Curriculum 2012 may take another course freely in Curriculum 2016 to fullfill the minimum required credits for graduation (144 credits) based on advisor’s suggestion and students need.										
No	CURRICULUM 2012				Take	CURRICULUM 2016				No
	Sem	Course Code	Course Name	cre dits		Sem	Course Code	Course Name	cre dits	
	YEAR 1									
1	1	HUG1H2	Environment Education	2	→	1	DUH1A2	ICT Literacy	2	1
	YEAR 2									
2	3	FEG2E3	Information and Telecommunication Network	3	→	4	CEH2F3	Numerical Methods	2	2
	YEAR 3									
3	5	TTG3K3	Introduction to Communication System	3	→	5	CEH3D3	Computer System Security	3	3
4	5	FEG2D3	Linear Signal and System	3		6	CEH3J3	Human Machine Interaction	3	4
5	6	CEG3F3	Mobile Application	3		6	DUH2A2	Entrepreneurship	2	5

The explanation of Table 6.6 are as follows:

- Students who have passed 3rd year with curriculum 2012 may continue the next-year course plan based-on Table 6.7
- Students who have not passed 2nd or 3rd year with curriculum 2012 must retake courses based-on table equivalence 6.6.

The next-year course plan for Class Of 2013 are as follows:

Table 5.12 Course Program for Class of 2013

Semester	Odd				Semester	Even			
	No	Kode	Nama Kuliah	SKS		No	Kode	Nama Kuliah	SKS
7	1	FEH4A2	Scientific Writing And Proposal	2	8	1	CEH4x3	Elective Course II (Interest)	3
	2	CEH4A3	Coding And Compression	3		2	CEH4x3	Elective Course Iii (Option)	3
	3	CEH4B3	Multimedia Systems	3		3	DUH2B2	Basic On The Job Training*	2
	4	FEH2D2	Studium Generale	2		4	FEH3B2	Internship**	2
	5	CEH4x3	Elective Course I (Interest)	3		5	FEH4B4	Final Project	4
	6	FEH3D3	Project Management	3	Total Credits				14
	Total Credits			16	All Total Credits				144

Keterangan :

* Exception Course Basic On The Job Training is taken in 4th semester

** Exception Course Internship is taken in 6th semester

6.5 Skenario Ekuivalensi Angkatan 2012, 2011, dan 2010

Ekuivalensi Kurikulum 2012 ke ke Kurikulum 2016 angkatan 2012, 2011, dan 2010 mengikuti tabel 6.11 sbb:

kTabel 5.13 EKIVALENSI MATA-KULIAH KURIKULUM 2012 KE KURIKULUM 2016 ANGKATAN 2012, 2011, dan 2010

Aturan No. 1: Ekuivalensi langsung Mata-Kuliah pada semester yang sama										
No.	KURIKULUM 2012				⇔	KURIKULUM 2016				No
	Sem	Kode MK	Nama MK	sks		Sem	Kode MK	Nama MK	sks	
	TINGKAT 1									
1	1	MUG1A4	Kalkulus I	4	⇔	1	MUH1A4	Kalkulus I A	4	1
2	1	FUG1A3	Fisika I	3	⇔	1	FUH1A3	Fisika 1 A	3	2
3	1	FUG1B1	Praktikum Fisika I	1	⇔	1	FUH1B1	Praktikum Fisika 1 A	1	3
4	1	BUG1A2	Bahasa Indonesia	2	⇔	1	LUH1A2	Bahasa Indonesia	2	4

Aturan No. 1: Ekuivalensi langsung Mata-Kuliah pada semester yang sama

5	1	BUG1D2	Bahasa Inggris I	2	↔	1	LUH1B2	Bahasa Inggris I	2	5
6	1	HUG1O3	Pengenalan Prodi Sistem Komputer	3	↔	1	CEH1A3	Pengenalan Sistem Komputer	3	6
7	1	HUG1G2	Pancasila dan Kewarganegaraan	2	↔	1	HUH1G3	Pancasila dan Kewarganegaraan	3	7
8	2	MUG1B4	Kalkulus II	4	↔	2	MUH1D4	Kalkulus 2 A	4	8
9	2	FUG1C3	Fisika II	3	↔	2	FUH1D3	Fisika 2 A	3	9
10	2	FUG1D1	Praktikum Fisika II	1	↔	2	FUH1E1	Praktikum Fisika 2 A	1	10
11	2	HUG1J2	Kimia	3	↔	2	KUH1A3	Kimia	3	11
12	2	KUG1A3	Algoritma dan Pemrograman	3	↔	2	FEH1H3	Algoritma dan Pemrograman B	3	12
13	2	KUG1B1	Praktikum Algoritma dan Pemrograman	1	↔	2	FEH1I1	Praktikum Algoritma dan Pemrograman B	1	13
14	2	HUG1A2	Pendidikan Agama dan Etika – Islam	2	↔	2	HUH1A2	Pendidikan Agama Islam dan Etika	2	14
15	2	HUG1B2	Pendidikan Agama dan Etika – Kristen	2	↔	2	HUH1B2	Pendidikan Agama Kristen dan Etika	2	15
16	2	HUG1C2	Pendidikan Agama dan Etika – Katolik	2	↔	2	HUH1C2	Pendidikan Agama Katholik dan Etika	2	16
17	2	HUG1D2	Pendidikan Agama dan Etika – Hindu	2	↔	2	HUH1D2	Pendidikan Agama Hindu dan Etika	2	17
18	2	HUG1E2	Pendidikan Agama dan Etika – Budha	2	↔	2	HUH1E2	Pendidikan Agama Budha dan Etika	2	18
19	2	HUG1F2	Pendidikan Agama dan Etika - Khong Hu Cu	2	↔	2	HUH1F2	Pendidikan Agama Khonmg Hu Cu dan Etika	2	19
20	1	HUG1I2	Konsep Pengembangan Sains dan Teknologi	2	↔	2	FEH1J2	Konsep Pengenalan Sains dan Teknologi	2	20
TINGKAT 2										
21	3	MUG2D3	Probabilitas dan Statistika	3	↔	3	MUH1F3	Probabilitas dan Statistik	3	21
22	3	CEG2A3	Pemrograman Berorientasi Objek	3	↔	3	CEH2A3	Pemrograman Berorientasi Objek B	3	22
23	3	FEG2B4	Rangkaian Listrik	4	↔	3	CEH2B4	Rangkaian Listrik Dasar	4	23
24	3	MUG2B3	Logika Matematik	3	↔	3	CEH2C3	Logika Matematika B	3	24
25	3	CEG211	Praktikum Dasar Sistem Komputer (RL, OOP)	1	↔	3	CEH2D1	Praktikum Sistem Komputer I (RLD, PBO B)	1	25
26	4	FEG2F4	Elektronika I	4	↔	4	FEH2G4	Elektronika	4	26
27	4	CEG2C3	Dasar Perancangan Perangkat Lunak	3	↔	4	CEH2E3	Dasar Perancangan Perangkat Lunak	3	27
28	4	FEG2G3	Jaringan Komputer dan Data	3	↔	4	CEH2G3	Jaringan Komputer dan Data I	3	28
29	4	CEG2B3	Rangkaian Logika	3	↔	4	CEH2H3	Desain Sistem Digital	3	29

Aturan No. 1: Ekuivalensi langsung Mata-Kuliah pada semester yang sama										
30	4	CEG221	Praktikum Sistem Komputer I (Elka I, Jarkom, RangLog)	1	↔	4	CEH2I1	Praktikum Sistem Komputer II (Elka, SisDig, Jarkomdat)	1	30
	TINGKAT 3									
31	5	CEG3B3	Mikroprosesor dan Sistem Embedded	3	↔	5	CEH3B3	Mikroprosesor dan Antarmuka	3	31
32	5	CEG3C3	Desain Basis Data	3	↔	5	CEH3C3	Desain Basis Data	3	32
33	5	IEG2H2	Ekonomi Teknik	2	↔	5	FEH2E2	Ekonomi Teknik B	2	33
34	5	CEG311	Praktikum Sistem Komputer II (uP Embedded, Basis Data)	1	↔	5	CEH3F1	Praktikum Sistem Komputer III (Mikro, Kamsis)	1	34
35	6	FEG3A3	Pengolahan Sinyal Digital	3	↔	6	FEH3A3	Pengolahan Sinyal Digital	3	35
36	6	CEG3D3	Organisasi dan Arsitektur Komputer	3	↔	6	CEH3H3	Organisasi Komputer	3	36
37	6	CEG3G3	Kecerdasan Buatan	3	↔	6	CEH3I3	Kecerdasan Buatan B	3	37
38	6	CEG3H3	Sistem Kendali dan Mekanika	3	↔	6	CEH3K3	Sistem Kendali dan Mekanika	3	38
39	5	CEG3A3	Instalasi dan Pengukuran Jaringan	3	↔	5	CEH3E3	Jaringan Komputer dan Data II	3	39
40	6	CEG321	Praktikum Sistem Komputer III (PSD, OS)	1	↔	6	CEH3L1	Praktikum Sistem Komputer IV (PSD, AI B)	1	40
	TINGKAT 4									
41	7	FEG4A2	Proposal TA	2	↔	7	FEH4A2	Penulisan karya ilmiah dan proposal	2	41
42	7	IEG463	Manajemen Proyek	3	↔	7	FEH3D3	Manajemen Proyek	3	42
43	8	HUG2A2	Geladi	2	↔	8	DUH2B2	Geladi	2	43
44	8	FEG4B2	Kerja Praktek	2	↔	8	FEH3B2	Kerja Praktek	2	44
45	8	FEG4C4	Tugas Akhir	4	↔	8	FEH4B4	Tugas Akhir	4	45
Aturan No. 2: Ekuivalensi langsung Mata-Kuliah pada SEMESTER BERBEDA										
No.	KURIKULUM 2012				↔	KURIKULUM 2016				No .
	Sem	Kode MK	Nama MK	sks		Sem	Kode MK	Nama MK	sks	
	TINGKAT 2									
1	3	MUG1E3	Aljabar Linear	3	↔	4	MUH1G3	Matriks dan Ruang Vecktor	3	1
2	4	BUG1E2	Bahasa Inggris II	2	↔	3	LUH2C2	Bahasa Inggris II	2	2

Aturan No. 1: Ekuivalensi langsung Mata-Kuliah pada semester yang sama										
3	4	MUG2A3	Matematika Diskret	3	↔	3	FEH2J3	Matematika Diskrit B	3	3
TINGKAT 3										
4	6	CEG3E3	Sistem Operasi	3	↔	5	CEH3A3	Sistem Operasi B	3	4
TINGKAT 4										
5	7	IEG422	Kewirausahaan	2	↔	6	DUD2A2	Kewirausahaan	2	5
Aturan No. 3: Ekuivalensi untuk Mata Kuliah Pilihan										
No.	KURIKULUM 2012				↔	KURIKULUM 2016				No.
	Sem	Kode MK	Nama MK	sks		Sem	Kode MK	Nama MK	sks	
1	7/8	CEG4C3	Keamanan Sistem Komputer	3	↔	5	CEH3D3	Keamanan Sistem Komputer (MK Wajib)	3	1
2	7/8	CEG4D3	Interaksi Mesin Manusia	3	↔	6	CEH3J3	Interaksi Mesin Manusia (MK Wajib)	3	2
3	7/8	CEG4E3	Komputasi Paralel	3	↔	7/8	CEH4M3	Komputasi Paralel	3	3
4	7/8	CEG4F3	Robotika	3	↔	7/8	CEH4C3	Robotika dan Sistem Cerdas	3	4
5	7/8	CEG4G3	Pengantar Jaringan Masa Depan	3	↔	7/8	CEH4L3	Jaringan Masa Depan	3	5
6	7/8	CEG4H3	Pengkodean dan Kompresi Data	3	↔	7	CEH4A3	Pengkodean dan Kompresi Data (MK Wajib)	3	6
7	7/8	CEG4J3	Arsitektur Komputer Lanjut	3	↔	7/8	CEH4G3	Arsitektur Komputer	3	7
8	7/8	CEG4K3	Antrian dan Trafik	3	↔	7/8	CEH4N3	Antrian dan Rekayasa Trafik	3	8
9	7/8	CEG4L3	Sistem Multimedia	3	↔	7	CEH4B3	Sistem Multimedia (MK Wajib)	3	9
10	7/8	CEG4M3	Komputasi Bergerak	3	↔	7/8	CEH4K3	Komputasi Bergerak	3	10
Aturan No. 4: Ekuivalensi untuk MK Kur-2012 yang HILANG										
- Untuk Mata Kuliah wajib Kur-2012 HILANG yang belum lulus/ambil, dapat mengambil mata kuliah lain Kur-2016 yang sudah ditetapkan										
- Untuk Mata Kuliah Pilihan Kur-2012 HILANG yang belum lulus/ambil, dapat mengambil mata kuliah lain Kur-2016 dalam jumlah secukupnya untuk melengkapi jumlah SKS kelulusan sarjana S1 yang harus mencapai sedikitnya 144 sks, dengan cara mengambil mata kuliah secara bebas sesuai saran dosen wali dan berdasarkan kebutuhan mahasiswa ybs										
No	KURIKULUM 2012				Mengambil	KURIKULUM 2016				No
	Sem	Kode MK	Nama MK	sks		Sem	Kode MK	Nama MK	sks	
TINGKAT 2										

Aturan No. 1: Ekuivalensi langsung Mata-Kuliah pada semester yang sama										
2	3	FEG2E3	Jaringan Telekomunikasi dan Informasi	3	→	4	CEH2F3	Metode Numerik	2	2
	TINGKAT 3									
3	5	TTG3K3	Pengantar Sistem Komunikasi	3	→	5	CEH3D3	Keamanan Sistem Komputer	3	3
4	5	FEG2D3	Sinyal dan Sistem Linier	3		6	CEH3J3	Interaksi Mesin Manusia	3	4
5	6	CEG3F3	Aplikasi Mobile	3		6	DUH2A2	Kewirausahaan	2	5
	TINGKAT 4									
6	7/8	CEG4A3	Pemrograman Game	3	→	7/8	CEH4C3	Robotika dan Sistem Cerdas	3	6
7	7/8	CEG4B3	Rekayasa Sistem Jaringan	3		7/8	CEH4D3	Komputer Forensik	3	7
8	7/8	CEG4I3	Perancangan Sistem Informasi	3		7/8	CEH4E3	Computer Vision A	3	8
9	7/8	TTG4A3	Sistem Komunikasi Bergerak	3		7/8	CEH4F3	Pembelajaran Mesin (Machine Learning)	3	9
						7/8	CEH4G3	Arsitektur Komputer	3	10
						7/8	CEH4H3	Sistem Tertanam (Embedded System)	3	11
						7/8	CEH4I3	Graphic Processor	3	12
						7/8	CEH4J3	VLSI Design	3	13
						7/8	CEH4K3	Komputasi Bergerak	3	14
						7/8	CEH4L3	Jaringan Masa Depan	3	15
						7/8	CEH4M3	Komputasi Paralel	3	16
						7/8	CEH4N3	Antrian dan Rekayasa Trafik	3	17
Aturan No. 5: Ekuivalensi untuk MK Kur-2016 tambahan Tingkat 4 - Untuk MK Kur-2016 tambahan Tingkat 4 yang lagi Tugas Akhir (sudah lulus Tingkat III dan lulus sks minimal 140 sks selain TA) diekuivalensi dengan mk pilihan kurikulum 2012, sedangkan mahasiswa yang baru lulus Tingkat 3 dan akan mengambil mata kuliah tingkat 4 harus mengambil MK Tambahan tsb.										
No.	KURIKULUM 2012				⇔	KURIKULUM 2016				No .
	Sem	Kode MK	Nama MK	sks		Sem	Kode MK	Nama MK	sks	
	TINGKAT 4									
1	6	CEG4x3	Mata kuliah Pilihan	2	⇔	7	FEH2D2	Stodium General	2	1

Penjelasan Tabel 6.8 sebagai berikut :

- Mahasiswa yang sudah lulus tingkat 3 dan sudah lulus minimal 140 sks (sedang mengerjakan Tugas akhir) hanya mengambil mk tugas akhir saja.
- Mahasiswa yang sudah lulus tingkat 3 sesuai dengan kurikulum 2012 maka dapat mengambil sks yang belum lulus pada tingkat 4 sesuai tabel 6.9 untuk mencapai sks 144 sks
- Mahasiswa yang belum lulus tingkat 2 dan Tingkat 3 sesuai dengan kurikulum 2012 maka akan mengulang mata kuliah sesuai dengan ekivalensi tabel 6.8

Berikut Rencana studi mahasiswa angkatan 2012 berikutnya :

Tabel 5.14 Rencana studi Angkatan 2012, 2011, dan 2010

Semester	Ganjil				Semester	Genap			
	No	Kode	Nama Kuliah	SKS		No	Kode	Nama Kuliah	SKS
7	1	FEH4A2	Penulisan Karya Ilmiah dan Proposal	2	8	1	CEH4x3	Mata Kuliah Pilihan II Peminatan	3
	2	CEH4A3	Pengkodean dan Kompresi Data	3		2	CEH4x3	Mata Kuliah Pilihan III Bebas	3
	3	CEH4B3	Sistem Multimedia	3		3	DUH2B2	Geladi**	2
	4	FEH2D2	Studium General	2		4	FEH3B2	Kerja Praktek	2
	5	CEH4x3	Mata Kuliah Pilihan I Peminatan	3		5	FEH4B4	Tugas Akhir	4
	6	FEH3D3	Manajemen Proyek	3		Jumlah sks			14
	Jumlah sks			16		Total Keseluruhan sks			144

Keterangan :

* Mata kuliah eksepsi Geladi diambil pada semester 4

** Mata kuliah eksepsi Kerja Praktek diambil pada semester 6

Rencana studi untuk angkatan 2011, 2010 disesuaikan dengan sisa mata kuliah yang belum lulus atau belum diambil berdasarkan struktur kurikulum 2016 dan prinsip ekivalensi kurikulum 2012 ke kurikulum 2016.

6.5 Equivalence Scenario for Class of 2012 or Earlier (conditional)

The equivalence rules of curriculum 2012 to curriculum 2016 for Class of 2012, 2011, 2010 are listed in Table 6.8.

Table 5.13 Course Equivalence of Curriculum 2012 to Curriculum 2016 for Class of 2012, 2011, 2010

Rule 1: Direct-Equivalence of Courses in the Same Semester										
No.	CURRICULUM 2012				↔	CURRICULUM 2016				No
	Sem	Course Code	Course Name	credits		Sem	Course Code	Course Name	credits	
	YEAR 1									
1	1	MUG1A4	Calculus I	4	↔	1	MUH1A4	Calculus I A	4	1
2	1	FUG1A3	Physics I	3	↔	1	FUH1A3	Physics 1 A	3	2
3	1	FUG1B1	Physics Lab Works I	1	↔	1	FUH1B1	Physics Lab Works 1 A	1	3
4	1	BUG1A2	Indonesian Language	2	↔	1	LUH1A2	Indonesian Language	2	4
5	1	BUG1D2	English I	2	↔	1	LUH1B2	English I	2	5
6	1	HUG1O3	Introduction to Computer Engineering	3	↔	1	CEH1A3	Introduction to Computer Engineering	3	6
7	1	HUG1G2	Pancasila and Citizenship	2	↔	1	HUH1G3	Pancasila and Citizenship	3	7
8	2	MUG1B4	Calculus II	4	↔	2	MUH1D4	Calculus II A	4	8
9	2	FUG1C3	Physics II	3	↔	2	FUH1D3	Physics 2 A	3	9
10	2	FUG1D1	Physics Lab Works II	1	↔	2	FUH1E1	Physics Lab Works 2 A	1	10
11	2	HUG1J2	Chemistry	3	↔	2	KUH1A3	Chemistry	3	11
12	2	KUG1A3	Algorithm and Programming	3	↔	2	FEH1H3	Algorithm and Programming B	3	12
13	2	KUG1B1	Algorithm and Programming Labwork	1	↔	2	FEH1I1	Algorithm and Programming Labwork B	1	13
14	2	HUG1A2	Islam Religion and Ethics	2	↔	2	HUH1A2	Islam Religion and Ethics	2	14
15	2	HUG1B2	Christian Religion and Ethics	2	↔	2	HUH1B2	Christian Religion and Ethics	2	15
16	2	HUG1C2	Catholic Religion and Ethics	2	↔	2	HUH1C2	Catholic Religion and Ethics	2	16
17	2	HUG1D2	Hindu Religion and Ethics	2	↔	2	HUH1D2	Hindu Religion and Ethics	2	17
18	2	HUG1E2	Budha Religion and Ethics	2	↔	2	HUH1E2	Budha Religion and Ethics	2	18

Rule 1: Direct-Equivalence of Courses in the Same Semester										
19	2	HUG1F2	Khong Hu Cu Religion and Ethics	2	↔	2	HUH1F2	Khong Hu Cu Religion and Ethics	2	19
20	1	HUG1I2	Concept of Science and Technology Development	2	↔	2	FEH1J2	Concept of Science and Technology Development A	2	20
YEAR 2										
21	3	MUG2D3	Probability and Statistics	3	↔	3	MUH1F3	Probability and Statistics	3	21
22	3	CEG2A3	Object Oriented Programming	3	↔	3	CEH2A3	Object Oriented Programming B	3	22
23	3	FEG2B4	Electric Circuits	4	↔	3	CEH2B4	Basic Electric Circuits	4	23
24	3	MUG2B3	Mathematics Logic	3	↔	3	CEH2C3	Mathematics Logic B	3	24
25	3	CEG211	Basic Computer Engineering Lab Works (EC, OOP)	1	↔	3	CEH2D1	Computer Engineering Lab Works I (BEC, OOP B)	1	25
26	4	FEG2F4	Electronics	4	↔	4	FEH2G4	Electronics	4	26
27	4	CEG2C3	Basic Software Engineering	3	↔	4	CEH2E3	Basic Software Engineering	3	27
28	4	FEG2G3	Data and Computer Network	3	↔	4	CEH2G3	Computer Network I	3	28
29	4	CEG2B3	Logic Circuits	3	↔	4	CEH2H3	Digital Systems Design	3	29
30	4	CEG221	Computer Engineering Lab Works I (Electronics, ComNet, LogCircuits)	1	↔	4	CEH2I1	Computer Engineering Lab Works II (Electronics, DSD, ComNet II)	1	30
YEAR 3										
31	5	CEG3B3	Microprocessor and Embedded System	3	↔	5	CEH3B3	Microprocessor and Interface	3	31
32	5	CEG3C3	Database Design	3	↔	5	CEH3C3	Database Design	3	32
33	5	IEG2H2	Economic Engineering	2	↔	5	FEH2E2	Economic Engineering B	2	33
34	5	CEG311	Computer Engineering Lab Works II (uP Embedded, DatabaseDesign)	1	↔	5	CEH3F1	Computer Engineering Lab Works III (Micro, ComSysSecurity)	1	34
35	6	FEG3A3	Digital Signal Processing	3	↔	6	FEH3A3	Digital Signal Processing	3	35
36	6	CEG3D3	Computer Organization	3	↔	6	CEH3H3	Computer Organization	3	36
37	6	CEG3G3	Artificial Intelligence	3	↔	6	CEH3I3	Artificial Intelligence B	3	37
38	6	CEG3H3	Control System and Mechanic	3	↔	6	CEH3K3	Control System and Mechanic	3	38
39	5	CEG3A3	Installation and Network Measurements	3	↔	5	CEH3E3	Computer Network II	3	39
40	6	CEG321	Computer Engineering Lab Works III (DSP, OS)	1	↔	6	CEH3L1	Computer Engineering Lab Works IV (DSP, AI B)	1	40
YEAR 4										

Rule 1: Direct-Equivalence of Courses in the Same Semester										
41	7	FEG4A2	Final Project Proposal	2	⇔	7	FEH4A2	Scientific Writing and Proposal	2	41
42	7	IEG463	Project Management	3	⇔	7	FEH3D3	Project Management	3	42
43	8	HUG2A2	Geladi	2	⇔	8	DUH2B2	Basic On The Job Training	2	43
44	8	FEG4B2	Internship	2	⇔	8	FEH3B2	Internship	2	44
45	8	FEG4C4	Final Projects	4	⇔	8	FEH4B4	Final Projects	4	45
Rule 2: Direct-Equivalence of Courses in DIFFERENT SEMESTER										
No.	CURRICULUM 2012				⇔	CURRICULUM 2016				No .
	Sem	Course Code	Course Name	credits		Se m	Course Code	Course Name	credits	
	YEAR 2									
1	3	MUG1E3	Linear Algebra	3	⇔	4	MUH1G3	Matrices and Vector Spaces	3	1
2	4	BUG1E2	English II	2	⇔	3	LUH2C2	English II	2	2
3	4	MUG2A3	Discrete Mathematics	3	⇔	3	FEH2J3	Discrete Mathematics B	3	3
	YEAR 3									
4	6	CEG3E3	Operating System	3	⇔	5	CEH3A3	Operating System B	3	4
	YEAR 4									
5	7	IEG422	Entrepreneurship	2	⇔	6	DUD2A2	Entrepreneurship	2	5
Rule 3: Equivalence for Elective Course										
N o.	CURRICULUM 2012				⇔	CURRICULUM 2016				N o.
	Se m	Course Code	Course Name	credi ts		Se m	Course Code	Course Name	credi ts	
1	7/8	CEG4C3	Computer System Security	3	⇔	5	CEH3D3	Computer System Security (Mandatory Course)	3	1
2	7/8	CEG4D3	Human Machine Interaction	3	⇔	6	CEH3J3	Human Machine Interaction (Mandatory Course)	3	2
3	7/8	CEG4E3	Paralel Computing	3	⇔	7/8	CEH4M3	Paralel Computing	3	3
4	7/8	CEG4F3	Robotics	3	⇔	7/8	CEH4C3	Robotics and Intelligent Systems	3	4
5	7/8	CEG4G3	Introduction to Next-Generation Network	3	⇔	7/8	CEH4L3	Next-Generation Network	3	5

Rule 1: Direct-Equivalence of Courses in the Same Semester

6	7/8	CEG4H3	Coding and Data Compression	3	↔	7	CEH4A3	Coding and Data Compression (Mandatory Course)	3	6
7	7/8	CEG4J3	Advanced Computer Architecture	3	↔	7/8	CEH4G3	Computer Architecture	3	7
8	7/8	CEG4K3	Queueing Traffic Engineering	3	↔	7/8	CEH4N3	Queueing Traffic Engineering	3	8
9	7/8	CEG4L3	Multimedia System	3	↔	7	CEH4B3	Multimedia System (Mandatory Course)	3	9
10	7/8	CEG4M3	Mobile Computing	3	↔	7/8	CEH4K3	Mobile Computing	3	10

Rule 4: Equivalence of Removed Course in Curriculum 2012

- Students who have not taken yet or passed the removed mandatory course in Curriculum 2012 may take another defined course in Curriculum 2016
- Students who have not taken yet or passed the removed elective course in Curriculum 2012 may take another course freely in Curriculum 2016 to fulfill the minimum required credits for graduation (144 credits) based on advisor's suggestion and students need.

No	CURRICULUM 2012				Take	CURRICULUM 2016				No
	Sem	Course Code	Course Name	cre dits		Sem	Course Code	Course Name	cre dits	
	YEAR 1									
1	1	HUG1H2	Environment Education	2	→	1	DUH1A2	ICT Literacy	2	1
	YEAR 2									
2	3	FEG2E3	Information and Telecommunication Network	3	→	4	CEH2F3	Numerical Methods	2	2
	YEAR 3									
3	5	TTG3K3	Introduction to Communication System	3	→	5	CEH3D3	Computer System Security	3	3
4	5	FEG2D3	Linear Signal and System	3		6	CEH3J3	Human Machine Interaction	3	4
5	6	CEG3F3	Mobile Application	3		6	DUH2A2	Entrepreneurship	2	5
	YEAR 4									
6	7/8	CEG4A3	Game Programming	3	→	7/8	CEH4C3	Robotics and Intelligent Systems	3	6
7	7/8	CEG4B3	Network System Engineering	3		7/8	CEH4D3	Forensic Computer	3	7
8	7/8	CEG4I3	Information System Design	3		7/8	CEH4E3	Computer Vision A	3	8
9	7/8	TTG4A3	Mobile Communication System	3		7/8	CEH4F3	Machine Learning	3	9

Rule 1: Direct-Equivalence of Courses in the Same Semester

7/8	CEH4G3	Computer Architecture	3	10
7/8	CEH4H3	Embedded System	3	11
7/8	CEH4I3	Graphic Processor	3	12
7/8	CEH4J3	VLSI Design	3	13
7/8	CEH4K3	Mobile Computing	3	14
7/8	CEH4L3	Next-Generation Network	3	15
7/8	CEH4M3	Paralel Computing	3	16
7/8	CEH4N3	Traffic Engineering	3	17

Rule 5: Equivalence of 4th Year Additional Course in Curriculum 2016

- If students who are doing final project have passed the 3rd year and have reached minimum 140 credits out of final project credits, then the 4th year additional courses in curriculum 2016 will be equivalenced as elective course in curriculum 2012.
- Else if students just have passed the 3rd year and will take the 4th year courses, then the 4th year additional courses in the curriculum 2016 must be taken.

No.	CURRICULUM 2012				↔	CURRICULUM 2016				No.
	Sem	Course Code	Course Name	credits		Sem	Course Code	Course Name	credits	
	YEAR 4									
1	6	CEG4x3	Elective Courses	2	↔	7	FEH2D2	Stodium General	2	1

The explanation of Table 6.8 are as follows:

- Students who have passed 3rd year with curriculum 2012 and have reached the minimum of 140 credits (are doing final project) only need to take final project course
- Students who have not passed 3rd year with curriculum 2012 but have not reached the minimum of 140 credits may take the remain credits in the 4th year based on table 6.9 to fullfill the total 144 credits
- Students who have not passed 2nd or 3rd year with curriculum 2012 must retake courses based on table 6.8

The next-year course plan for Class Of 2012 or earlier are as follows:

Table 5.14 Course Program for Class of 2012, 2011, 2010

Semester	Odd				Semester	Even			
	No	Kode	Nama Kuliah	SKS		No	Kode	Nama Kuliah	SKS
7	1	FEH4A2	Scientific Writing And Proposal	2	8	1	CEH4x3	Elective Course II (Interest)	3
	2	CEH4A3	Coding And Compression	3		2	CEH4x3	Elective Course Iii (Option)	3
	3	CEH4B3	Multimedia Systems	3		3	DUH2B2	Basic On The Job Training*	2
	4	FEH2D2	Studium Generale	2		4	FEH3B2	Internship**	2
	5	CEH4x3	Elective Course I (Interest)	3		5	FEH4B4	Final Project	4
	6	FEH3D3	Project Management	3		Total Credits			14
	Total Credits			16		All Total Credits			144

Keterangan :

* Exception Course Basic On The Job Training is taken in 4th semester

** Exception Course Internship is taken in 6th semester

Course study plan for class of 2011 and 2010 are adjusted to the remaining un-taken or un-passed courses according to curriculum 2016 structure and equivalence rule of curriculum 2012 to curriculum 2016.

7 DESKRIPSI SINGKAT MATA KULIAH

7 BRIEF DESCRIPTION OF COURSE

MUH1A4-Kalkulus IA / MUH1A4-Calculus I A

Mata kuliah Kalkulus 1 ditujukan untuk memberikan pengetahuan terkait dasar-dasar kalkulus yang diperlukan dalam tingkat sarjana. Materi yang diberikan di antaranya adalah sistem bilangan real, fungsi, limit dan kekontinuan, turunan dan aplikasinya, integral dan aplikasinya, fungsi transenden, dan integral tak wajar. Dengan perkuliahan ini mahasiswa diharapkan dapat memahami konsep turunan dan integral fungsi satu variabel dan aplikasinya.

Course Calculus 1 is aimed to provide related knowledge the fundamentals of calculus are required in the undergraduate level. Materials are provided among others system of real numbers, function, limits and continuity, derivatives and its applications, integrals and its applications, function of transcendent, and improper integrals. With this course students are expected to understand the concept of derivative and integral function of one variable and its applications.

Daftar Pustaka – Bibliography

- 1) Purcell.E.J, Varberg.D, Kalkulus dan Geometri Analitis, terjemahan, Penerbit Airlangga, edisi 5, jilid 1, 2014
- 2) Stewart.J, Kalkulus, terjemahan, penerbit Airlangga, edisi 4, jilid 1, 2003
- 3) Danang Mursita, Matematika Dasar Untuk Perguruan Tinggi, Rekayasa Sains, 2006

HUH1A2 - Pendidikan Agama Islam dan Etika/ HUH1A2 - Islam Education and Ethics

Mata kuliah pendidikan agama dan etika islam merupakan mata kuliah universitas yang memiliki kompetensi dasar pemahaman bagi mahasiswa yang diharapkan mampu berfikir rasional, bersikap dewasa dan dinamis, berpandangan luas, berkomitmen kuat dan melaksanakan ajaran Islam secara utuh, serta mampu melaksanakan proses belajar sepanjang hayat untuk menjadi ilmuwan dan profesional yang berkepribadian Islami yang menjunjung tinggi nilai-nilai kemanusiaan dalam kehidupan.

The religion of Islam education and ethics is the university subject that have a basic competencies of understanding for students who are expected to rational thinking, mature and dynamic, broad-minded, strong commitment and implement the teachings of Islam as a whole, and be able to implement a lifelong learning process to be a scientists and professional personality that upholds Islamic values of humanity in life

Daftar Pustaka – Bibliography

1. Departemen Agama RI. 2005. *Al-Quran dan Terjemahannya*.
2. Direktorat Perguruan Tinggi Agama Islam Departemen Agama RI. 2004. *Materi Instruksional: Pendidikan Agama Islam di Perguruan Tinggi Umum*. Jakarta
3. Miftah Faridl. 2004. *Pokok-pokok Ajaran Islam*. Bandung: Pustaka

HUH1B2-Pendidikan Agama Kristen dan Etika/ HUH1B2-Christian Education and Ethics

Mata kuliah pendidikan agama dan etika kristen merupakan mata kuliah universitas yang menitikberatkan pada ilmu Ketuhanan dan etika kristen yang meliputi konsep-konsep keilmuan mengenai 1) tritunggal, 2) manusia, 3) keselamatan, 4) iman, 5) dosa, 6) pertobatan, 7) kasih, serta 8) etika kristen yang meliputi pergaulan pra-nikah, pornografi, dan okultisme.

The religion of Christian education and ethics is the university subject that have focus on the science of Christian Divinity and ethics which cover the concepts of knowledge regarding 1) the trinity, 2) human beings, 3) safety, 4) faith, 5) sin, 6) conversion, 7) love, and 8) Christian ethics that includes pre-marital promiscuity, pornography, and occultism.

Daftar Pustaka – Bibliography

1. Alkitab, LAI.
2. Brotosudarmo, Drie S, 2008. *Pendidikan Agama Kristen Untuk Perguruan Tinggi*. Yogyakarta: ANDI.
3. Becker, Dieter, 1993. *Pedoman Dogmatika*. Jakarta: BPK Gunung Mulia.
4. Niftrik, G.C van & Boland, B.J., 1987: *Dogmatika Masa kini*. Jakarta: BPK Gunung Mulia.
5. Verkuyl, J, 1993: *Etika Kristen Bagian Umum*. Jakarta: BPK Gunung Mulia.
6. Darmaputra, Eka, 1987: *Etika Sederhana Untuk Semua*. Jakarta: BPK Gunung Mulia.
7. Marx, Dorothy I. *Itu 'Kan Boleh?*. Bandung: Kalam Hidup.
8. Yudho, Bambang, 2006: *How To Overcome Occultism?*. Yogyakarta: ANDI.
9. Hawkins, Craig S, 2004: *Seluk Beluk Sihir*. Yogyakarta: ANDI..

HUH1C2-Pendidikan Agama Katolik dan Etika/ HUH1C2-Catholic Education and Ethics

Mata kuliah pendidikan agama dan etika katolik merupakan mata kuliah universitas yang diharapkan mampu membentuk mahasiswa yang beriman kepada Allah menurut pola hidup Yesus Kristus dengan senantiasa mempertanggungjawabkan imannya dalam hidup menggereja dan memasyarakat. Mata kuliah ini secara garis besar meliputi pemahaman-pemahaman mengenai manusia, agama, Yesus, dan gereja.

The religion of catholic education and ethics is the university subject that is expected to form the students who believe in Allah according to the lifestyle of Jesus Christ by continuing account for his faith in life of the Church and socialize. This subject is primarily based on the understanding of human, religion, Jesus, and the church.

Daftar Pustaka – Bibliography

Buku Utama

1. Alkitab Deuterokanonika, Lembaga Biblika Indonesia, Ende, Flores, NTT, 2001
2. Paus Yohanes Paulus II. 2007: *Katekismus Gereja Katolik (KGK)*. Ende: Penerbit Nusa Indah
3. Paus Benediktus XVI. 2009: *Kompendium Katekismus Gereja Katolik*. Yogyakarta: Kanisius
4. Tim Komkep KWI. 2012: *YouCat (Youth Cathecism Katakesse Orang Muda)*.Yogyakarta: Kanisius
5. DokPen KWI. *Dokumen Ajaran Sosial Gereja*.Yogyakarta:Kanisius

Buku Pendukung

6. Konferensi Waligereja Indonesia (KWI), 1997: *Iman Katolik: Buku Informasi dan Referensi*. Yogyakarta: Kanisius
7. Mgr. Ign. Suharyo. 2009: *Catholic Way*.Yogyakarta:Kanisius
8. Ign. Ismartono, SJ. 1993: *Pendidikan Agama Katolik*. Jakarta:Obor
9. Niko Syukur Dister, OFM. 1987: *Kristologi Sebuah Sketsa*.Yogyakarta: Kanisius
10. Martasudjita, E., Pr. 2003: *Sakramen-sakramen Gereja,Tinjauan Teologis, Liturgis dan Pastoral*. Yogyakarta: Kanisius
11. *Kristologi Sebuah Sketsa (Niko Syukur Dister, OFM)*, Yogyakarta, 1987

HUH1D2-Pendidikan Agama Hindu dan Etika/ HUH1D2-Hindu Education and Ethics

Mata kuliah pendidikan agama dan etika hindu merupakan mata kuliah universitas yang mendorong mahasiswa untuk mampu menunjukkan sikap religius, kemanusiaan dan sosial,

serta takwa kepada Tuhan Yang Maha Esa melalui pembelajaran berbagai kajian yang meliputi 1) ilmu pengetahuan, filsafat, dan agama, 2) etos kerja dalam hindu, 3) Weda sabda suci Tuhan sumber ajaran hindu, 4) Teologi Hindu, 5) catur purusa artha dan catur asrama, 6) Sosiologi hindu, 7) sumber dan dasar-dasar etika hindu, 8) yajna dan bhakti, serta 9) kepemimpinan hindu.

The religion of Hindu education and ethics is the university subject that encourage students to be able to demonstrate an attitude of religious, humanitarian, social, and piety to God Almighty through various learning studies include 1) science, philosophy, and religion, 2) work ethic in hindu, 3) Weda the holy God words of the teachings of Hindu, 4) the theology of Hindu, 5) catur purusa artha and catur asrama, 6) The Sociology of hindu, 7) sources and foundations of Hindu's ethics, 8) yajna and bhakti, and 9) leadership of Hindu.

Daftar Pustaka – Bibliography

Buku Utama:

1. I Gusti Made Ngurah, Drs, dkk, 2012. *Pendidikan Agama Hindu Untuk Perguruan Tinggi*. Surabaya: Paramitha.
2. Gelgel Prof. DR. I Putu, SH, M.Hum, Suma I Made, SH, M.Pd, Surapati I Nengah Drs, SH, MH, dkk, 2009. *Hukum Hindu*, Jakarta, Direktorat Jendral Bimbingan Masyarakat Hindu Departemen Agama RI.
3. Pudja G, SH, MA, 2012, *Bhagavad Gītā*, Surabaya, Paramita.
4. Pudja G, MA, Sudharta Tjokorda Rai, MA, 2012. *Manawa Dharma Sastra (Manu Dharmacashtra) atau Manu Smrti Compedium Hukum Hindu*, Surabaya: Paramita.
5. Titib, DR. I Made, 2010. *Teologi dan Simbul-simbul Dalam Agama Hindu*, Surabaya: Paramita.
6. Tititb I Made, DR, 2011: *Weda Sabda Suci Pedoman Praktis Kehidupan*. Surabaya: Paramita.

Buku Penunjang :

7. Triguna, Yuda IBG, MS, Prof. DR, 2011. *Himpunan Dharma Wacana & Dharma Tula*. Jakarta: Direktorat Jendral Bimas Hindu.
8. UNHI, 2011. *Yoga Marga Rahayu*, Denpasar: UNHI.
9. Sudharta, Tjok Rai. MA, dan Punia Atmaja Ida Bagus Oka, Drs, 2010. *UPADESA Tentang Ajaran-ajaran Agama Hindu*, Surabaya: Paramita.
10. Sudharta Tjok Rai, 2010. *Kumpulan Sloka Sloka Suci Weda*, Denpasar: Widya Dharma.
11. Direktorat Jendral Bimbingan Masyarakat Hindu Kementerian Agama RI. 2012. *Materi Pokok Wariga*, Modul 1-6, Jakarta.
12. Pudja G, MA, Sudharta Tjokorda Rai, MA, 2010. *Manawa Dharma Sastra (Manu Dharmacashtra) atau Manu Smrti Compedium Hukum Hindu*, Surabaya: Paramita.

HUH1E2-Pendidikan Agama Budha dan Etika/ HUH1E2-Buddha Education and Ethics

Mata kuliah pendidikan agama dan etika budha merupakan mata kuliah universitas yang memotivasi mahasiswa dengan pemahaman dalam berketuhanan Yang Maha Esa dengan memahami berbagai keilmuan budha yang meliputi 1) teologi Ketuhanan Yang Maha Esa, 2) ilmu mengenai manusia, 3) Agama, ilmu pengetahuan, teknologi, dan seni, 4) Kerukunan antar umat beragama, serta 5) Agama dalam kehidupan politik dan hukum

The religion of Buddha education and ethics is the university subject that motivate the students with an understanding of the God Almighty to understand the science of Buddha which include 1) theology on God, 2) the science of man, 3) Religion, science, technology, and the arts, 4) religious harmony, and 5) the religion in life of political and law.

Daftar Pustaka – BibliographyBuku Utama

1. Mulyadi Wahyono, SH. 2002. *Pokok-Pokok Dasar Agama Buddha*. Jakarta
2. Tim Penyusun. 2003. *Materi Kuliah Sejarah Perkembangan Agama Buddha*. Jakarta: CV. Dewi Kayana Abadi
3. Abhidhammatthasangaha, Penyusun Pandit Jinaratana Kaharudin. Cetakan Pertama Tahun 2005.

Buku Pendukung

4. Kemenag Bimas Buddha Jabar. 2011. *Dhammapada Sabda-Sabda Buddha Gotama*,
5. *Dhammapada Atthakatha*, Pustaka Narada Jakarta 2007
6. Itivuttaka, Kitab Suci Agama Buddha, di terbitkan oleh Lembaga Anagarini Indonesia Tahun 2007
7. Riwayat Buddha Gotama, Penerbit Lembaga Pengkajian Dan Pengembangan Keagamaan Buddha Indonesia, Tahun 2010
8. Kapita selekta Agama Buddha, Tim Penyusun Penerbit CV.Dewi Kayana Abadi. Jakarta 2003
9. *Agama Buddha dan Ilmu Pengetahuan*, DR.Buddhadasa P. Kirthisinghe, Tahun 2004

HUH1F2-Pendidikan Agama Khong Hu Cu dan Etika/HUH1F2-Kong Hu Cu Religion and Ethics

Materi ini mencakup urgensi agama dalam kehidupan sehari-hari dengan sikap yang benar, pemahaman terhadap sumber hukum Kong Hu Cu, mengetahui sejarah Kong Hu Cu, mampu menjelaskan Jalan Suci yang dibawakan Ajaran Besar (Thai Hak), mampu menjelaskan tentang meneliti hakekat tiap perkara, mengetahui peran Kong Hu Cu dalam pengembangan sains dan teknologi.

The course covers the urgency of a religion in right daily life, sources of Kong Hu Cu's rules, history of Kong Hu Cu, Sacred Way by Thai Hak, essence of every case, roles of Kong Hu Cu in science and technology development.

Daftar Pustaka – Bibliography :

1. Kitab Sishu (2012). Kitab Suci Agama Konghucu. Surakarta: Majelis Tinggi Agama Konghucu Indonesia (MATAKIN).
2. (2011). Keputusan Bersama Menteri Agama, Jaksa Agung, dan Menteri Dalam Negeri Republik Indonesia. Jakarta: Menteri Dalam Negeri.
3. (1975). Tata Agama Dan Tata Laksana Upacara Agama Khonghucu. Surakarta: MATAKIN.
4. Negoro, T.K Beng Setio (2005). *Rahasia Kehidupan* Jilid I. Bandung: Karya Bengras.

FUH1A3 -FISIKA I A / FUH1A3 - Physics I A

Setelah mengikuti mata kuliah ini mahasiswa dapat memahami konsep mekanika yang meliputi kinematika, dinamika dan usaha-energi serta konsep gelombang dan sifat-sifatnya sebagai dasar pengetahuan untuk mata kuliah tingkat lanjut maupun sebagai dasar sebagai seorang engineer.

After following this course, students can understand the concepts of mechanics includes kinematics, dynamics and energy as well as the concept of business-wave and its properties as the basic knowledge for advanced courses as well as basic as an engineer.

Daftar Pustaka – Bibliography :

1. Halliday, D., Resnick, R., Walker, J. (2010). *Fisika Dasar* (terjemahan), Edisi 7 Jilid 1, Erlangga
2. Sutrisno, 1981, Seri Fisika Dasar, Penerbit ITB, Bandung.

FUG1B1-Praktikum Fisika 1 A / FUG1B1- Physics Lab works 2 A

Mata Kuliah ini merupakan kegiatan praktikum di Laboratorium untuk mendukung dan melengkapi pengetahuan teori yang diberikan pada Mata Kuliah Fisika I. Praktikum pada Mata Kuliah ini berisi kegiatan praktikum tentang mekanika, gelombang, dan pemakaian osiloskop.

Course is a practical activities in the Laboratory to support and complement the theoretical knowledge given in Practical Course in Physics I. Course contains practical activities of mechanics, waves, and the use of an oscilloscope.

Daftar Pustaka – Bibliography :

- [1] Resnick, R., Halliday, D., 1978, Physics, Jhon Wiley dan Sons, New York.
- [2] Sutrisno, 1981, Seri Fisika Dasar : Mekanika, Penerbit ITB, Bandung.

LUH1B2 - Bahasa Inggris / LUH1B2 - English

Mata kuliah Bahasa Inggris I (General English) merupakan mata kuliah universitas yang memiliki capaian pembelajaran bagi mahasiswa agar mampu memahami ide dan makna secara kritis dari teks dan tuturan berbahasa inggris, serta mampu menyampaikan, mengkonstruksikan dan mengkomunikasikan ide yang bermakna dalam Bahasa Inggris yang baik dan berterima.

English I (General English) is a university subject that have learning outcomes for students to be able to understand the ideas and meanings critically of text and speech to speak English, and able to deliver, construct and communicate the meaningful ideas in English which is good and thank.

Daftar Pustaka – Bibliography

1. Hofstede, G., Hostede, G.J., and Minkov, M. (2010). *Cultures and Organizations: Software of the Mind, Intercultural Cooperation and Its Importance for Survival*. New York: McGraw-Hill.
2. Jones, Leo. (2007). *Let's Talk 1-3*. New York: Cambridge University Press.
3. LeBeau, C. & Harrington, D. (2006). *Discussion: Process and Principles*. Oregon: Language Solution, Inc.
4. LeBeau, C. & Harrington, D. (2003). *Getting Ready for Speech: A Beginner Guide to Public Speaking*. Oregon: Language Solution, Inc.
5. McCharthy, M, & O'Dell F. (2013). *Academic Vocabulary in Use*. 8th Edition. Cambridge: Cambridge University Press.
6. Singleton, J. (2008). *Writers at Work*. Cambridge: Cambridge University Press.
7. Various onlinepictures and articles.
8. Downloaded video

LUH1A2 - Bahasa Indonesia / LUH1A2 – Indonesian Language

Mahasiswa mendapatkan kesempatan berlatih menulis secara terbimbing dan mendapatkan materi ragam bahasa tulis ilmiah meliputi 1) penulisan huruf, kata, unsur serapan, dan pemakaian tanda baca, 2) pembentukan kata dan kalimat serta paragraf, 3) tata istilah dan definisi, 4) pemilihan topik, tema, judul, dan penyusunan kerangka karya ilmiah, 5) penyusunan bab pendahuluan, kajian pustaka, analisis, dan simpulan, pelengkap awal dan

pelengkap akhir, 6) konvensi karya tulis ilmiah: pengetikan, pengutipan, dan daftar pustaka, serta 7) keplagiatan.

Students get an opportunity to practice writing under guidance and receive variety materials of language scientific paper include 1) writing of letters, words, elements of absorptions and use of punctuation mark, 2) formation of words and sentences as well paragraphs, 3) terminology and definitions, 4) selection of topics, themes, titles, and drafting the framework of scientific works, 5) preparation of introduction chapter, study of literature, analysis, and conclusions, initial complementary and supplementary end, 6) the convention of scientific paper: typing, citations and bibliography, and 7) plagiarism.

Daftar Pustaka - Bibliography

1. Djuroto, Toto, Suprijadi, B. (2002). *Menulis Artikel dan Karya Ilmiah*. Bandung: Rosdakarya.
2. Alwi, Hasan (2003). *Tata Bahasa Baku Bahasa Indonesia, Edisi 3*. Jakarta: Balai Pustaka.
3. Puspandari, D. (2011). *Handout Bahasa Indonesia*. Universitas Telkom.
4. Efendi (1979). *Pedoman Penulisan Laporan*. Jakarta: Pusat Pembinaan dan Pengembangan Bahasa.
5. Widjono (2007). *Bahasa Indonesia, Mata Kuliah Pengembangan Kepribadian di Perguruan Tinggi*. Jakarta: Grasindo.

DUH1A2 - Literasi TIK / DUH1A2 – ICT Literacy

Literasi TIK membahas dan mempraktekkan kompetensi literasi TIK. Dimulai dengan membahas dasar dan komponen TIK, kemudian akan berfokus pada kompetensi literasi TIK yang meliputi analisa kebutuhan informasi untuk menyelesaikan suatu masalah. Kemudian melakukan penemuan informasi yang dibutuhkan secara efektif dan efisien dan melakukan evaluasi terhadap informasi yang dihasilkan dan proses penemuannya. Informasi kemudian akan disimpan dan dikelola. Dilanjutkan dengan proses membangun konsep baru atau membuat pemahaman baru dari informasi yang ada. Selain itu juga akan dipelajari penggunaan informasi dengan pemahaman dan mengakui budaya, etika, ekonomi, masalah hukum, dan sosial seputar penggunaan informasi.

ICT literacy discusses and practices ICT literacy competencies. It starts by discussing basic and components of ICT, then will focus on ICT literacy competencies which include the analysis of information needs to solve a problem. Then the next step searches the needed information effectively and efficiently and to evaluate the information produced and the process of discovery. The information will then be stored and managed. Continued with the process of building a new concept or create a new understanding of the information. It also will study the use of information by understanding and recognizing cultural, ethical, economic, legal, and social surrounding the use of information.

Daftar Pustaka – Bibliography

1. Information Literacy Competency Standards for Higher Education, American Library Association, 2000
2. Framework for Information Literacy for Higher Education, The Association of College & Research Libraries, 2015
3. Modul Praktikum Aplikasi Perkantoran dan Pencarian Informasi, Tim Penulis Modul Praktikum S1 Teknik Informatika, Fakultas Informatika, Universitas Telkom, 2015

4. California ICT Digital Literacy Assessments and Curriculum Framework, 2008
5. Australian and New Zealand Information Literacy Framework: principles, standards and practice, second edition, Australian and New Zealand Institute for Information Literacy, 2004
6. John L.Gordon , Creating Knowledge Maps by Exploiting Dependent Relationships , , in: Knowledge Based Systems, Vol13 (April 2000), pages 71 – 79
7. Elsevier Science ,Novak, J. D. & A. J. Cañas, The Theory Underlying Concept Maps and How to Construct and Use Them, Technical Report IHMC CmapTools 2006-01 Rev 01-2008, Florida, Institute for Human and Machine Cognition, 2008
8. Walraven, A., Brand-Gruwel, S., & Boshuizen, H.P.A. (2009). How students evaluate sources and information when searching the World Wide Web for information. Computers and Education 25 (1), 234-246

CEH1A3 - Pengenalan Sistem Komputer / CEH1A3 - Introduction to COMPUTER ENGINEERING

Mata kuliah ini membahas berbagai hal terkait dengan program studi Teknik Komputer. Pengenalan diri dan lingkungan prodi mengawali kuliah ini. Disusul dengan materi terkait dengan Sistem Komputer, yaitu Perangkat Keras, perangkat Lunak, Jaringan dan Keamanan Sistem Komputer. Mahasiswa juga dibekali dengan alat bantu belajar, yaitu mind mapping, peraturan akademis, kehidupan kampus dan kerja sama dalam kelompok. Setengah semester akhir, mahasiswa akan belajar tentang pembuatan program sederhana dengan bahasa C.

This course contains the aspects of Computer Engineering Program. Students will be taught to know their self and the academic environment. Then, they will learn about Hardware, Software, the Network and the Computer System Security as the basic aspect of Computer System. Besides, they will learn tools for study such as mind mapping, academic rules, campus living and work in workgroup. In the second half on the semester, students will learn how to build computer programs in C language.

Daftar Pustaka – Bibliography

- [1] Mladen Berekovic, Nikitas Dimopoulos, Stephen Wong, Embedded Computer Systems: Architectures, Modeling, and Simulation: 8th International Workshop, SAMOS 2008, Samos, Greece, July 21-24, 2008, Proceedings (Lecture Notes in Computer Science), 2008.
- [2] M. Morris Mano, Computer System Architecture, Third Edition, 2000
- [3] Iliano Cervesato, Advances in Computer Science - ASIAN Computer and Network Security: Proceedings 12th Asian Computing Science Conference, Doha, Qatar, December 9-11, 2007, ... (Lecture Notes in Computer Science)
- [4] Buku Pedoman Pendidikan Telkom University, 2015
- [5] Computer Basic Tutorial, www.comtechdoc.org
- [6] Tutorialspoint, Learn C Programming, 2014.

MUH1D4 - Kalkulus 2 A / MUH1D4 - Calculus 2 A

Mahasiswa memahami dan menguasai konsep turunan dan integral fungsi peubah banyak. Selanjutnya mahasiswa diharapkan memiliki ketrampilan menerapkan konsep-konsep dasar tersebut sebagai alat bantu pada mata kuliah selanjutnya. Adapun materi perkuliahannya

adalah barisan dan deret, persamaan diferensial biasa, fungsi vektor, fungsi dua peubah, integral lipat dua dan tiga, integral garis dan integral permukaan.

Students understand and control the concepts of derivative and integral function of lots variables. Furthermore, students are expected to have skills to apply basic concepts such as tools in the course later. The material of lecturing is the row and progression, ordinary differential equations, vector function, function of two variables, integral double and triple, line integrals and surface integrals.

Daftar Pustaka – Bibliography:

- [1] Purcell.E.J, Varberg.D, Kalkulus dan Geometri Analitis, terjemahan, Penerbit Airlangga, edisi 5, jilid 1, 2014
- [2] Stewart.J, Kalkulus, terjemahan, penerbit Airlangga, edisi 4, jilid 1, 2003
- [3] Danang Mursita, Matematika Dasar Untuk Perguruan Tinggi, Rekayasa Sains, 2006

FUH1D3 - Fisika 2 A / Physics 2 A

Tujuan matakuliah ini adalah memberikan pengenalan dan pemahaman kepada mahasiswa tentang konsep dasar medan listrik dan medan magnet, sehingga memudahkan mahasiswa untuk memahami prinsip listrik dan magnet dalam engineering.

The purpose of this course is to provide recognition and understanding to students about basic concepts of electric field and magnetic field, making it easier for students to understand the principles of electricity and magnetism in engineering.

Daftar Pustaka – Bibliography:

- [1] Halliday, D., Resnick, R., Walker, J. (2010). *Fisika Dasar* (terjemahan), Edisi 7 Jilid 2, Erlangga
- [2] Giancoli, Douglas C., 1998, Fisika, Jilid 2, Edisi kelima, terjemahan Yuhilza Hanum, Penerbit Erlangga, Jakarta.
- [3] Sutrisno, Tan Ik Gie, 1979, Fisika Dasar: Listrik Magnet dan Termofisika, Penerbit ITB, Bandung.

FUH1E1 - Praktikum Fisika 2 A / Physics Lab works 2 A

Setelah mengikuti mata kuliah ini mahasiswa dapat memahami konsep pengukuran besaran fisis, pengambilan data, analisis dan pengolahan data dari system percobaan fisika sederhana yang berlandaskan pada fenomena fisis listrik dan magnet.

After following this course, students can understand the concept of measuring the amount of physical, data acquisition, data analysis and processing from the system of simple physics lab works based on the physical phenomena of electricity and magnetism.

Daftar Pustaka – Bibliography

- [1] Modul Praktikum Fisika II A

KUH1A3 – Kimia / KUH1A3 – Chemistry

Mata kuliah ini memberikan pemahaman mengenai 1) gambaran ilmu kimia untuk bidang teknik telekomunikasi, 2) pengertian dasar mengenai hukum-hukum dasar kimia, serta membangun pengertian, 3) hubungan energy dengan reaksi kimia, 4) konsep-konsep dasar

bahasan mengenai atom dan sifat keberkalaannya, 5) konsep-konsep dasar bahasan mengenai molekul serta pembentukannya, 6) konsep dasar mengenai gas dan system Kristal, 7) pengertian mengenai interaksi senyawa-senyawa terlarut baik bersifat elektrolit dan nonelektrolit.

This course provides an understanding of 1) the image of chemistry for technical fields of telecommunications, 2) a basic understanding of the fundamental laws of chemistry, and to build understanding, 3) the relationship of energy by chemical reactions, 4) the basic concepts discussion of the atom and the nature keberkalaannya, 5) the basic concepts as well as a discussion of the molecular formation, 6) basic concepts of gas and system Kristal, 7) an understanding of the interaction of both compounds are dissolved electrolytes and Non-electrolytes.

Daftar Pustaka – Bibliography

1. Karen C Timberlake, William Timberlake, "Basic Chemsitry", 4th edition, Pearson, 2014
2. Chang R, Chemistry, 10th Edition, McGrawHill, Boston, 2010
3. James E. Brady, Neil D. Jespersen and A. Hyslop, Chemistry 7th ed, John Willey&Sons, New York, 2014
4. Ahmad, H. , Penuntun Belajar Kimia Dasar, Citra Aditya Bakti, Bandung, 2001
5. Ebing, D.D., General Chemistry, Nine edition, Houghton Mifflin Company, Boston, 2009

FEH1H3 - Algoritma dan Pemrograman B / FEH1H3 - Algorithm and Programming B

Mata kuliah ini membahas pentingnya algoritma dalam kehidupan nyata, khususnya dalam pembuatan program. Materi akan dimulai dengan tipe dasar, dilanjutkan dengan konsep variabel. Selanjutnya, dikenalkan tipe bentukan dan enumerasi. Pembuatan algoritma dalam notasi algoritma juga diajarkan, dan disusulkan dengan analisa kasus dan pengulangan. Konsep array dan penggunaan array juga penting untuk dikuasai, dan diakhiri dengan konsep file dan pemanfaatannya.

This course contains the implementation of algorithm in real life, especially in programming world. Starting with basic tipe, sstudents will learn the concept of variable. Then, they continue to learn new types like enumeration and record, and array types. Basic algorithm medtods such as case analysis and looping will be learned, and students will build simple algorithm. In the end, file concept and file operation will be discussed.

Daftar Pustaka-Bibliography :

1. Inge, Diktat Prosedural Algoritma dan pemrograman, Jurusan Teknik Informastika - ITB, 2007
2. Tutorialspoint, Learn C Progamming, 2014.
3. Luciano Maria Barone, Enzo Marinari, "Scientific Programming : C Languange, Algorithms and Model in Science", World Scientific, 2013
4. Alexander Shen, "Algorithms and Programming : Problem and Solution", Springer, 2010
5. Dan Gookin, " C For Dummies", 2nd edition, Jhon Wiley, 2004

FEH1I1 - Praktikum Algoritma dan Pemrograman B / FEH1I1 - Algorithm and Programming Lab Works B

Memberikan pengetahuan secara mendalam mengenai dasar-dasar pemrograman, mempelajari pembuatan program yang menggunakan array, struktur pengulangan, data dan record, serta searching dan sorting.

Providing in-depth knowledge about the basics of programming, learned how to make programs that use arrays, loop structure, data and records, as well as searching and sorting.

Daftar Pustaka-Bibliography :

- [1] Inge, Diktat Prosedural Algoritma dan pemrograman, Jurusan Teknik Informastika - ITB, 2007
- [2] Tutorialspoint, Learn C Programming, 2014

LUH2C2 - Bahasa Inggris II/ LUH2C2 - English II

Mempelajari 'an expository composition' dengan 'basic content' yang formal, jelas namun natural sehingga mudah dipahami oleh pembaca dan sebagai dasar untuk essay ilmiah sederhana mulai dari latihan sentence patterns secara gramatikal, paragraph organization, relating ideas, unity, coherence sampai dengan reference, substitution, conjunction atau lexical manipulation, interpreting data, comparison, revising and editing.

This English course introduces students to an Expository composition. Students are guided to write formal and clear expository texts so that these texts are easily understood by the readers. As the basis for writing simple scientific essays, students are guided to write sentence patterns with appropriate grammar, relate ideas, organize paragraphs and to write unity paragraph using appropriate coherence to the reference, substitution, conjunction or lexical manipulation. The students are also encouraged to write data interpretation, write comparison texts, editing and revising.

Daftar Pustaka – Bibliography

1. Jones, L. (2013). *Let's Talk 1*. 28th Edition. Cambridge: Cambridge University Press
2. Redman, S. (2012). *English Vocabulary in Use: Pre-Intermediate and Intermediate*. Cambridge: Cambridge University Press
3. LeBeau C. & Harrington, D. (2006). *Discussion: Process and Principles*. Oregon: Language Solution, Inc.
4. Hofstede, G., Hostede, G.J., and Minkov, M. (2010). *Cultures and Organizations: Software of the Mind, Intercultural Cooperation and Its Importance for Survival*. New York: McGraw-Hill.

FEH1J2- Konsep Pengembangan Sains dan Teknologi A / FEH1J2 -Concept of Science and Technology Development A

Pengantar singkat tentang filsafat sains. Berfikir kritis, berfikir ilmiah dan metoda ilmiah. Perkembangan sains dalam tinjauan contoh dan sejarah. Konsep teknologi dan perkembangannya. Masalah etika dan teknologi.

A brief introduction about the philosophy of science. Critical thinking, scientific thinking and the scientific method. The progress of science in the review sample and history. The concept of technology and development. Ethical issues and technology.

Daftar Pustaka – Bibliography

1. Tracy Bowell and Gerry Kemp, "Critical Thinking : Concise Guide", 4th edition, 2014, RoutledgeTaylor and Francis Group
2. James Trefil, Robert Hazen, "The Sciences : An Integrated Approach, 6th edition, Jhon Wiley, 2010
3. Barry Gower, "Scientific Method : An historical and Philosophical Introduction", RoutledgeTaylor and Francis Group, 1997

MUH2F3 - Probabilitas dan Statistika A / MUH2F3 - Probability and Statistics

MK ini membekali mahasiswa kompetensi untuk memahami konsep probabilitas dan besaran statistik: konsep probabilitas yaitu sampel, probabilitas, percobaan, teori himpunan, probabilitas bersyarat dan teorema bayes, kejadian saling bebas, random variables, pdf dan cdf, ekspektasi, dan varians, distribusi spesial: uniform, gaussian, binomial, poisson, erlang. pengantar random proses dan pemodelan random proses (state diagram) pengantar ke statistik dan estimasi distribusi

This course equips students with competencies to understand the concepts of probability and the values in statistics covering the concept of probability namely samples, probability, experiments, set theory, conditional probability and Bayes theorem, independent events, random variables, the pdf and cdf, expectation, and variance. In addition, it discusses special distributions namely uniform, Gaussian, Binomial, Poisson, Erlang, introduction to random processes and random modeling processes (state diagram) to introduce the students to statistics and distribution estimation.

Daftar Pustaka – Bibliography

1. Douglas C Montgomery, George C Runger, "Applied Statistics and Probability for Engineers", 6th Internal Student Version, John Wiley, 2014
2. JL Hodges Jr, E.L Lehmann, " Basic Concepts of Probability and Statistics", Classic in Applied Mathematics, 2004
3. T.T Song, "Fundamentals of Probability and Statistics For Engineers, 2nd Jhon Wiley, 2004

CEH2C3 - Logika Matematika B / CEH2C3 - Mathematics Logics B

Logika matematika merupakan mata kuliah keilmuan dan keahlian yang perlu dikuasai dengan baik oleh mahasiswa meliputi arti penting logika, teori himpunan, fungsi himpunan pada logika, kalkulus proposisi, menentukan nilai kebenaran berdasarkan interpretasi yang diberikan, kalkulus predikat-kalimat kuantor, inferensi (metode penarikan kesimpulan), validitas pembuktian argumen, Sistem Bilangan dan konversi bilangan, konsep Aljabar Boolean dan aksiomanya, dualitas dan hukum-hukum Aljabar Boolean, fungsi Boolean dan bentuk fungsi-fungsi standar dan kanonik, konversi SOP dan POS, dan bentuk baku fungsi Boolean, Aplikasi Aljabar Boolean, metode peta karnaugh

The logic of mathematics is a subject of knowledge and skills that need to be controlled well by students include the importance of logic, set theory, function set on logic, calculus proposition, determine the truth value based on the interpretation given, the predicate calculus sentences kuantor, inference (methods conclusion), the validity of proof argument, number Systems and the conversion of numbers, the concept of Boolean algebra and axioms, duality and the laws of Boolean algebra, Boolean functions and forms of standard functions

and canonical, conversion SOP and POS, and its raw form Boolean functions, applications of Algebra boolean, the method of Karnaugh maps

Daftar Pustaka – Bibliography

- [1] Kenneth Rosen, 2011, Discrete Mathematics and Its Applications, 7th Edition, McGraw-Hill Education
- [2] Tindler, Richard F. (1991). *Digital Engineering Design A Modern Approach*. Prentice-Hall International, Inc.
- [3] Korfhage, Robert R., 1966, Logic and Algorithms with Applications to the Computer and Information Sciences, John Wiley and Sons, New York.
- [4] Zohar Manna and Richard W., 1985, The Logical Basis for Computer Programming, Volume 1 Deductive Reasoning, Addison Wesley.
- [5] Rinaldi Munir, 2010, Matematika Diskrit, Penerbit Informatika

FEH2J3 - Matematika Diskrit B / FEH2J3-Discrete Mathematics B

Mata kuliah ini memberikan pengetahuan tentang konsep teori himpunan, relasi dan fungsi, dan kombinatorial. Mata kuliah ini juga memberikan keahlian mahasiswa tentang kemampuan menyelesaikan aplikasi graf dan pohon, serta menghitung kompleksitas algoritma

This course provides knowledge about the concepts of set theory, relations and functions, and combinatorial. This course also gives students skills about the ability to complete the application graphs and trees, as well as calculating algorithm complexity

Daftar Pustaka – Bibliography

1. Kenneth Rosen, 2011, Discrete Mathematics and Its Applications, 7th Edition, McGraw-Hill Education
2. Richard Johnsonbaugh, 2015, Discrete Mathematics, 8th Edition, Pearson
3. Susanna S. Epp, 2010, Discrete Mathematics with Applications, 4th Edition, Brooks Cole
4. Seymour Lipschutz, 1992, 2000 Solved Problems in Discrete Mathematics, McGraw-Hill Education
5. Rinaldi Munir, 2010, Matematika Diskrit, Penerbit Informatika

CEH2B4- Rangkaian Listrik / CEH2B4 - Electric Circuits

Memberikan pengertian tentang konsep Rangkaian Listrik, mempelajari Hukum Ohm, Hukum Kirchoff, dan aplikasinya baik dalam rangkaian DC maupun ac dengan menggunakan metode analisis dan teorema termasuk didalamnya membahas komponen pasif R, L, C dan komponen aktif sumber tegangan dan arus berikut dibahas nilai besaran-besaran rangkaian listrik, membahas daya pada komponen RLC, frekuensi kompleks dan fungsi transfer berikut aplikasi pada respon frekuensi dan kutub empat, dan kopling magnetik.

Providing an understanding of the concept of Electric Circuits, learn Ohm's Law, Kirchoff's Law, and its application in both the DC and AC circuits using analytical methods and discuss theorems including passive components R, L, C and active components of the source voltage and current values are discussed below besaran- the amount of electrical circuits, discusses the power on RLC components, and the complex frequency transfer function following the application of frequency response and four poles, and magnetic coupling.

Daftar Pustaka – Bibliography

1. Charles K Alexander, Matthew N.O. Sadiku, "Fundamentals of Electric Circuits", 5th edition, Mc Graw Hill, 2013.
2. Johnson, David. E, Electric Circuit Analysis, Prentice Hall, London, 2002.
3. Dorf, Richard, James A. Svoboda, Introduction to Electric Circuit, John Wiley, Sons, 2006
4. Ramdhani, Mohamad, Rangkaian Listrik, Erlangga, Jakarta, 2008
5. Hyat, William, Rangkaian Listrik, Erlangga, Jakarta, 1991
6. Budiono, Mismail, Rangkaian Listrik, ITB, Bandung, 1997
7. Edminister, J.A., Teori dan Soal-soal Rangkaian Listrik, Erlangga, Jakarta, 1990

CEH2A3-Pemrograman Berorientasi Objek B/CEH2A3-Object Oriented Programming B

Membahas tentang Kondisi dan Perulangan, Variable dan Konstanta, Dasar I/O, Encapsulation, Konstruktor, inheritance, Polymorphism, Penanganan Kesalahan, String dan Bilangan, Multithreading, GUI (Graphical User Interface), Pengembangan Sistem Software, Model dan Pemodelan, Model Orientasi Data, Objek dan Class, OODLC (The Object-Oriented Development Life Cycle), Kebutuhan Model, UML (Unified Modeling Language), Diagram UML, Use Case Diagram, Relasi, Generalisasi, Activity Diagram, Symbol - symbol, Swimlanes, Sequence Diagram, Collaboration Diagram, Class Diagram, Statechart Diagram, dan Component dan Deployment Diagram

Discussing about the condition and recurrence, Variable and Constant, Basic I / O, encapsulation, constructors, inheritance, polymorphism, Error Handling, Strings and Numbers, Multithreading, GUI (Graphical User Interface), Development Systems Software, Model and Modeling, Model Orientation Data Object and Class, OODLC (The Object-Oriented Development Life Cycle), Needs Model, UML (Unified Modeling Language), Diagram UML, Use Case Diagram, Relation, Generalization, Activity Diagram, Symbol - symbol, Swimlanes, Sequence Diagram, collaboration diagram, Class diagram, Statechart diagrams, and Component and deployment diagrams

Daftar Pustaka – Bibliography:

- [1] An Introduction to Object Oriented Programming with JAVA (third edition), C. Thomas Wu, McGrawHill International, 2008
- [2] Simon Bennet, Steve McRobb, Ray Farmer, Object Oriented Systems Analysis and Design Using UML 2nd, McGraw Hill, 2002.
- [3] Java™ How to Program, Sixth Edition By H. M. Deitel - Deitel & Associates, Inc., P. J. Deitel - Deitel & Associates, Inc. Publisher : Prentice Hall, 2004
- [4] Learning Java™, 2nd Edition By Jonathan Knudsen, Pat Niemeyer, 2002
- [5] Beginning Java Object: From concept to Code, Second Edition. Jacquie Barker. 2005
- [6] Graham, I. Object Oriented Methods. New York : Addison Wesley Inc., 1991.
- [7] Grady Booch, James Rumbaugh and Ivar Jacobson, The UML User's Guide, 1st Edition, Addison and Wesley, 1998.

HUH1G3 - Pancasila dan Kewarganegaraan / HUH1G3 - Pancasila and Civics

Mata kuliah pancasila dan kewarganegaraan merupakan mata kuliah universitas yang menjelaskan hal-hal yang berkaitan dengan konsep aktualisasi dari nilai-nilai Pancasila serta kewarganegaraan Indonesia yang secara garis besar meliputi pemahaman mengenai 1) pengembangan kepribadian, 2) ideologi berbangsa dan bernegara, 3) hak asasi manusia, 4) hak

dan kewajiban warga negara, 5) aktualisasi demokrasi berkeadaban, 6) analisis penegakkan hukum dan the rules of law, serta 7) berbangsa dan bernegara

Pancasila and citizenship is the university subject that explain things that are related to the actualization concept values of Pancasila and Indonesia citizenship which is primarily based on understanding of 1) the development of personality, 2) the ideology of the state and nation, 3) human rights, 4) the rights and obligations of citizens, 5) actualization of civilized democracy, 6) analysis of law enforcement and the rule of law, and 7) the state and nation

Daftar Pustaka-Bibliography :

1. Arwiyah, Yahya.M dkk.2011. *Pendidikan Karakter* di Perguruan Tinggi. Bandung: YPT Press
2. Arwiyah, Yahya.M dkk.2014. *Civic Education* di indonesia. Bandung: Alfabeta
3. Arwiyah, Yahya.M.2013. *Regulasi Kewarganegaraan Indonesia*. Bandung: Alfabeta
4. Budimansyah, D. dan Winataputra,S,U.(2007). *Civic education konteks ,landasan, bahan ajar, dan kultur kelas*. Bandung : Program Studi Pendidikan Kewarganegaraan Sekolah Pascasarjana Universitas Pendidikan Indonesia.
5. Somantri, M.N. (2001). *Menggagas Pembaharuan Pendidikan IPS*, Bandung. Penerbit PT Remaja Rosdakarya.
6. Undang-undang Dasar 1945 pasca amandemen
7. Instrumen-instrumen HAM Nasional dan Internasional (PBB)
8. Kaelan. (1990). *Pancasila*. Yogyakarta : Panorama
9. Muchtar, K.(1983). *Hukum Laut Internasional*, Bandung : PT Bina Cipta
10. Notonagoro .(1980). *Beberapa hal Mengenai Falsafah Pancasila*. Jakarta : Pancuran Tujuh
11. Tim Dikti & Lemhannas (2003), *Pendidikan Kewarganegaraan*, Jakarta: PT. Gramedia
12. Undang-Undang No.20 Tahun 2003 Tentang Sistem Pendidikan Nasional
13. Undang-Undang No. 2 Tahun 2002 Tentang POLRI
14. Undang-Undang No.3 Tahun 2002 Tentang Pertahanan Negara.
15. Undang-Undang No. 22 Tahun 1999 jo. UU No.32 Tahun 2004 Tentang Pemerintahan Daerah
16. Branson. S. Margaret dkk. (1998). *"Belajar "Civic Education" dari Amerika"*, Yogyakarta : diterbitkan atas kerjasama : Lembaga Kajian Islam dan Sosial (LKIS) dan The Asia Foundation (TAF).
17. Cogan, J. J dan Derricott, R.,(1998). *Citizenship for the 21st century : An International perspective on Education*. London : Kogan Page

CEH2D1 - Praktikum CE 1 (RL, PBO B) / CEH2D1-COMPUTER ENGINEERING Lab Works I (RLD, PBO B)

Terdiri dari dua Mata Praktikum yang masing-masing memberikan enam modul Praktikum, yaitu: Rangkaian Listrik, memberikan modul-modul dengan bantuan simulasi PSpice atau pengukuran langsung: pengenalan alat-alat praktikum berupa osiloskop, generator fungsi, multimeter, RLC meter dan komponen R, L, C; pengukuran terhadap besaran tegangan dan arus dengan metode substitusi, superposisi, resiprositas; Rangkaian Thevenin-Norton baik sumber DC maupun AC; Pengukuran: rangkaian resonansi; filter sederhana; kopling magnetik; gejala transient. Pemrograman Berbasis Objek, memberikan modul-modul yang berisikan pemahaman mendalam mengenai konsep OOP dan bahasa pemrograman yang sudah menggunakan OOP sebagai penunjang

Practicum consists of two courses, each of which provides Practicum six modules, namely: Electrical circuit, giving the modules with the aid of PSpice simulation or direct measurement: the introduction of practical tools such as oscilloscopes, function generators, multimeters, RLC meters and components R, L, C; measurement of the amount of voltage and current with the method of substitution, superposition, reciprocity; Thevenin-Norton circuit either DC or AC source; Measurements: resonant circuit; simple filter; magnetic coupling; transient symptoms. Object-Based Programming, provides modules that contain deep understanding of OOP concepts and programming languages that are already using OOP as supporting

Daftar Pustaka-Bibliography :

- [1] Modul Praktikum Rangkaian Listrik
- [2] Modul Praktikum Pemrograman Berorientasi Objek B

CEH2E3-Dasar Perancangan Perangkat Lunak/ CEH2E3 - BASIC SOFTWARE ENGINEERING

Pengertian dan sejarah rekayasa perangkat lunak, paradigma dan metodologi yang terdapat dalam rekayasa perangkat lunak, analisis dan desain terstruktur beserta alat bantu pemodelannya (Data Flow Diagram, Entity Relationship Diagram, State Transition Diagram, Structure Chart, Kamus Data, Spesifikasi Proses, dan sebagainya.), Pengantar Perancangan perangkat lunak dengan teknik berorientasi obyek, Unified Modelling Language/ UML (Use Case Diagram, Class Diagram, Diagram Sequence, Collaboration Diagram, Activity Diagram, dan sebagainya), Teknik pengujian perangkat lunak, pemeliharaan serta dokumentasi

Definition and history of software engineering, paradigms and methodologies contained in software engineering, analysis and structured design along with tools modeling (Data Flow Diagram, Entity Relationship Diagram, State Transition Diagram, Structure Chart, Data Dictionary, Specification process, and so forth.), Introduction to Design software with object-oriented techniques, Unified Modelling Language / UML (Use Case Diagram, Class Diagram, Sequence Diagram, Collaboration Diagram, Activity Diagram, etc.), Mechanical software testing, maintenance and documentation

Daftar Pustaka-Bibliography :

1. Pressman, Roger,. Software Engineering: A Practitioner's Approach, 7th edition, McGraw-Hill, 2009.
2. Yourdon, E. Modern Structure Analysis, Prentice Hall Inc. 1989.
3. Sommerville, Ian., Software Engineering: (Update) (8th Edition) (International Computer Science), Pearson, 2006.
4. Bennet, Simon, etc, Object Oriented System Analysis and Design using UML, McGraw Hill., 3/e, 2005,
5. Miles, Russ, etc, Learning UML 2.0, O'Reilly Media, 1 edition, 2006

MUH1G3 - Matriks dan Ruang Vektor / MUH1G3 - Matrices and Vector Spaces

Mata kuliah ini memberikan pengetahuan tentang matriks, determinan matriks, ruang vektor, ruang hasil kali dalam, orthogonal, orthonormal, kernel dan jangkauan suatu transformasi linier, nilai, dan vektor eigen, serta diagonalisasi. Mata kuliah ini juga memberikan keahlian mahasiswa tentang kemampuan menyelesaikan Operasi Baris Elementer (OBE) untuk

memperoleh matriks eselon baris tereduksi, invers matriks, determinan matriks, dan solusi SPL. Serta kemampuan memeriksa apakah suatu himpunan vektor bersifat membangun dan bebas linier, menentukan basis dan dimensi ruang baris, ruang kolom, dan ruang solusi, mentransformasikan suatu basis menjadi basis orthonormal, dan menentukan proyeksi orthogonal dari vektor pada suatu bidang menggunakan metode Gramm-Schmidt, menentukan basis kernel dan jangkauan suatu TL, menentukan matriks yang mendiagonalkan A, beserta matriks diagonalnya. Serta mampu menyelesaikan sistem persamaan differensial menggunakan konsep ruang eigen

This course provides knowledge about matrices, determinants of matrices, vector spaces, inner product spaces, orthogonal, orthonormally, kernel and range of a linear transformation, value, and eigenvectors and diagonalization. This course also gives students skills about solving skills Elementary Row Operations (OBE) to obtain the reduced row echelon matrix, inverse matrix, the determinant of the matrix, and the solution SPL. As well as the ability to check whether a set of vectors is constructive and free linear, determine the basis and dimension of the row space, column space, and space solutions, transforming a basis be orthonormal basis, and determine the orthogonal projection of the vector on a plane using the Gramm-Schmidt, determine the kernel and range of a base TL, determine mendiagonalkan matrix a, along the diagonal matrix. And be able to solve a system of differential equations using the concept eigenspace

Daftar Pustaka – Bibliography

1. Richard Bronson, Gabriel B Costa, John T. Saccoman, "Linear Algebra : Algorithms, Applications and Techniques", 3rd edition, AP Elsevier, 2014
2. Anton H., 2004, Aljabar Linier Elementer, edisi
3. Steven J Leon, 2001, Aljabar Linier dan Aplikasinya,

CEH2F3-Metode Numerik / CEH2F3-Numerical Methods

Matakuliah ini memberikan pengertian dan pemahaman tentang pentingnya solusi numerik dalam setiap persoalan perhitungan matematika, khususnya dalam bidang rekayasa. Matakuliah ini diawali dengan pengetahuan dan pemahaman tentang deret Taylor dan kosep galat. Kemudian matakuliah ini akan mereview beberapa materi kalkulus seperti persamaan non linier, persamaan linier, regresi dan interpolasi, integral, turunan dan persamaan differensial biasa. Selanjutnya diberikan beberapa metoda perhitungan numerik dan bagaimana menyelesaikan semua persoalan kalkulus diatas dengan menggunakan metode-metode tersebut.

Course provides insight and understanding on the importance of numerical solutions of mathematical calculations in every problem, especially in field of engineering. This course begins with knowledge and understanding the Taylor series and error concept. Later this course will review some of the material calculus such as nonlinear equations, linear equations, regression and interpolation, integral, derivative and ordinary differential equations. Furthermore, given some numerical calculation methods and how to solve all of calculus problems using these methods.

Daftar Pustaka-Bibliography :

1. J Steven C.Chapra, Raymond P.Canale, Numerical Methods for Engineers, 2nd Edition, McGraw-Hill Inc, 1988.

2. Rinaldi Munir, Metoda Numerik, Informatika, 1996

FEH2G4- Elektronika / FEH2G4-Electronics

Kompetensi yang diberikan pada mata kuliah ini diharapkan sebagai pondasi pada desain elektronika telekomunikasi. Materi yang diberikan adalah sifat elektronika bahan semikonduktor dan pn junction. Pertama mengenai dioda; karakteristik, parameter, model dan penggunaannya. Selanjutnya mengenai karakteristik, parameter dan model transistor bipolar dan unipolar. Untuk implementasi rangkaian berbasis transistor dijabarkan mengenai rangkaian prategangan serta kestabilannya lebih dahulu lalu dilanjutkan dengan pengenalan konfigurasi penguat dasar dan model sinyal kecilnya. Di mata kuliah ini juga dikenalkan implementasi transistor dalam membangun rangkaian gerbang digital. Selanjutnya diperkenalkan respon frekuensi penguat, umpan balik negatif dan kestabilan, op-amp dan aplikasinya, konsep osilator dan konsep penguat daya

This course provides students with the competence in designing electronic telecommunication. It discusses the electronic characteristics of semiconductor materials and PN junction. The first discussion is about diode which explains the characteristics, parameters, models and uses. Then, the discussion moves to the characteristics, parameters, and models of bipolar and unipolar transistors. To implement the transistor-based circuits, the circuit of bias voltage and its stability are discussed before the introduction of basic amplifier configuration and its small signal model. This course also introduces the implementation of transistor to develop a digital gate circuit. Finally, amplifier frequency response, negative feedback and its stability, and Op-Amp and its application, and the concepts of oscillator and power amplifier are discussed.

Daftar Pustaka – Bibliography

1. Richard C Jaeger, Travis N Blalock, "Microelectronic Circuit Design", 5th edition, Mc Graw Hill, 2016
2. Behzad Razavi, "Fundamentals of Microelectronics", 2nd edition, Jhon Wiley, 2014
3. Dickon Ross, Cathleen Shamieh, Gordon Mc Comb, "Electronics for Dummies", Jhon Wiley, 2010

CEH2G3 -Jaringan Komputer dan Data I / CEH2G3 - Computer Network and Data I

Jaringan komunikasi data membahas proses komunikasi data antar komputer melalui jaringan komunikasi data. Proses komunikasi melibatkan arsitektur protokol OSI & TCP/IP yang didalamnya dijelaskan aturan, mekanisme dan kemampuan protokol setiap layer. Jaringan komunikasi disusun atas berbagai media transmisi dan perangkat jaringan yang memiliki karakteristik tersendiri.

Data communication networks discuss the process of data communication between computers over a data communications network. The process involves communication protocol architecture OSI and TCP / IP are described therein rules, mechanisms and capabilities of each layer protocols. The communications network is prepared on various transmission media and network device that has its own characteristics.

Daftar Pustaka – Bibliography

- [1] Alberto Leon-Garcia dan Indra Widjaja, Communications Networks, Fundamental Concepts and Key Architecture, McGraw-Hill, 2003.

- [2] Cisco Network Academy, CCNA Exploration 4.0 1 : Network Fundamentals, Cisco System Inc, 2007
- [3] William Stallings, Data and Computer Communications, Eighth Edition, Prentice Hall, 2006.

CEH2I1 - Praktikum SK II / CEH2I1 - COMPUTER ENGINEERING Lab Works II

Terdiri dari tiga Mata Praktikum yang masing-masing memberikan empat modul Praktikum, yaitu elektronika, jaringan Komputer dan data, dan Desain Sistem Digital

Practice consists of three courses, each of which provides four modules Practicum, namely electronics, computer and data networks, and Digital System Design

Daftar Pustaka – Bibliography

- [1] Modul Praktikum Elektronika Prodi Sistem Komputer 2016
- [2] Modul Praktikum Jaringan Komputer dan Data Prodi Sistem Komputer 2016
- [3] Modul Praktikum Desain Sistem Digital Prodi Sistem Komputer 2016

CEH2H3 - Desain Sistem Digital / CEH2H3 - Digital Systems Design

Kuliah ini berisikan materi tentang teori dasar-dasar perancangan sistem digital baik di level gerbang logika maupun di level transistor menggunakan teknologi CMOS. Fokus perancangan diarahkan untuk merancang blok-blok rangkaian yang umum terdapat di dalam sebuah prosesor baik yang umum maupun yang spesifik, seperti rangkaian aritmatika yang membentuk ALU, rangkaian multiplexer, decoder, dan encoder, rangkain sel memori dan register serta counter, dan rangkaian sekuensial baik yang bersifat sinkron maupun asinkron.

This lecture contains material about theoretical basics of digital system design both in level and at the level of the logic gate transistors using CMOS technology. The focus of the design is directed to design blocks of the circuit are commonly found in a processor both general and specific, such as a series of arithmetic that form ALU, the multiplexer circuit, the decoder and encoder, the series of memory cells and registers and counters, and a sequential circuit well which is synchronous or asynchronous

Daftar Pustaka – Bibliography

1. Stephen Brown and Zvonko Vranesic. Fundamentals of Digital Logic with Verilog Design. McGraw-Hill. 2014
2. Stephen Brown and Zvonko Vranesic. Fundamentals of Digital Logic with VHDL Design. McGraw-Hill. 2009
3. Volnei A.Pedroni. Circuit Design with VHDL. MIT Press. 2004

CEH3A3 - Sistem Operasi B / CEH3A3 – Operating Systems

Mata kuliah sistem operasi ini dikelompokkan berdasarkan kelompok materi menjadi 3 kelompok, yaitu proses dan thread, memori, dan file/Input dan Output/proteksi dan keamanan yang akan membantu mahasiswa untuk dapat menganalisis, troubleshooting, membuat dan mengembangkan sistem secara keseluruhan.

The course of this operating system are grouped by material group into three groups, namely the processes and threads, memory, and file / Input and Output / protection and security that

will help the students to be able to analyze, troubleshoot, create and develop the overall system.

Daftar Pustaka – Bibliography

- [1] Stalling, W. (2012). *Operating Systems Internals and Design Principles 7th Edition*. Prentice Hall.
- [2] Andrew S. Tanenbaum, "Operating System Design and Implementation, 2nd Edition, Prentice hall, 1997.
- [3] Gary J Nutt, "Operating System, a Modern Perspective, Addison-Wesley, 2nd Edition, 2000.
- [4] Tanenbaum, A., Modern Operating Systems, Prentice Hall, New York, 1992.
- [5] Silberschatz Galvin, Operating System Concepts – Fourth Edition, Addison Wesley, 1995.

CEH3B3 - Mikroprosesor dan Antarmuka / CEH3B3 - MICROPROCESSORS AND INTERFACES

Mahasiswa akan mempelajari tentang prinsip dan mekanisme kerja sistem mikroprosesor, bagaimana mikroprosesor melakukan operasi, penerjemahan kode program, dan eksekusi baris program. Akan dipelajari juga mengenai sinyal kendali dan antarmuka mikroprosesor dengan memori dan sistem I/O dalam pertukaran data. Diberikan juga perbandingan antara prosesor yang digunakan dalam komputer/PC yang berbasis x86 dengan sistem tertanam yang berbasis ARM. Selain itu, diberikan juga materi tentang antarmuka perangkat antara mikroprosesor dengan peripheral pendukung dalam sistem komputer serta bentuk sinyalnya, seperti memori, basic I/O, komunikasi, DMA, dan Interupsi.

The main focus of this course is to give the students the knowledge and skill to analyze the microprocessor architecture and also the wider system consist of it. In this course, will be given the materials about microprocessor basic architecture, including the internal organization, process schemes, set instructions and also comparison between an x86 processor architecture to ARM; interfacing microprocessor to memory and I/O system; communication types and interfaces to other peripherals; interrupt handling; and more modern technologies in microprocessor system as SIMD, MMX, and others.

Daftar Pustaka – Bibliography

1. Barry B. Brey. The Intel Microprocessor: Architecture, Programming, and Interfacing. Prentice Hall. 2009
2. William Stallings. Computer Organization and Architecture: Designing for Performance. Perason. 2010
3. Douglas V Hall. Microprocessor and Interfacing., Prentice Hall, Third Edition, 2006
4. A K Ray, Bhurchandi. Advance Microprocessors and Peripherals. McGraw-Hill. 2006
5. ARM Architecture Refernce Manual. ARM Ltd. 2005

CEH3C3 - Desain Basis Data / CEH3C3 – Database Design

Matakuliah ini berisi teknik perancangan sistem basis data. Diawali dengan konsep tentang sistem basis data, pelajaran dilanjutkan dengan model relasional dan entity relationship

diagram. Implementasi dilakukan dengan Structured Query Language (SQL). Bentuk Normal diberikan sampai derajat 3 dan BCNF. Di akhir kuliah diberikan pembuatan proyek basis data.

This course provides engineering design of the database system. Beginning with the concept of a database system, the lesson continued with the relational model and entity relationship diagram. Implementation is done by Structured Query Language (SQL). Normal Form is given to grade 3 and BCNF. At the end of the lecture given manufacture database project.

Daftar Pustaka – Bibliography :

- [1] Raghu Ramakrishnan and Johannes Gehrke. (2003). *Database Management Systems Third Edition*. McGraw-Hill.
- [2] Henry F. Korth, Abraham Silberschatz. (2011). *Database system concepts 6th Edition*. McGraw-Hill
- [3] C. J. Date. (2006). *An Introduction to Database Systems 8th*. Pearson Education
- [4] Jeffrey Ullman, Jennifer Widom, and Hector Garcia-Molina. (2013). *Database Systems: Pearson New International Edition*. The Complete Book, 2009

CEH3D3 - Keamanan Sistem Komputer / CEH3D3 - COMPUTER SYSTEM SECURITY

Mendiskusikan mengenai kewanaman sistem komputer. Kuliah ini, memiliki tujuan sebagai berikut : mengenalkan dasar kriptografi, memahami perilaku sebuah program(non-malicious program errors, viruses and other malicious code), penanganan pada sistem operasi umum (ACL, kerberos, user authentication), melakukan perancangan keamanan pada sistem operasi (security policies, and models of security), keamanan sistem pada jaringan komputer(ancaman pada jaringan, network security controls, firewalls, IDS), konsep audit security, efek ekonomis dari keamanan, privasi pada komputerisasi, kode etik pada keamanan sistem komputer.

Discussing about computer security basics. In this course, we learn basic cryptography, understanding behaviour of a program(non-malicious program errors, viruses and other malicious code), how to handle general operating system(ACL, Kerberos, User Authentication), designing security on general operating system (security policies, and models of security), network security system (threat, networks security controls, firewalls, IDS), concept of audit security, economy aspect of security, privacy in computing, ethics in security system.

Daftar Pustaka – Bibliography :

- [1] William Stallings, "Network Security Essentials: Application and Standards" , Prentice Hall. 2000
- [2] John E.Canavan, " Fundamental of Network Security, Artech House, 2001
- [3] Simon Garfinkel and Gene Spafford , "Practical UNIX and Internet Security", O'Reilly & Assoc.Inc., 1996
- [4] Anderson, Ross. "Security Engineering", 2013
- [5] Pfleeger, Charles. "Security in Computing",2015
- [6] Bishop, Matt, "Introduction to Computer Security", 2004
- [7] Scheneier, Bruce. "Applied Cryptography", 1994
- [8] Certified Ethical Hacker, 2014

CEH3D3 - Jaringan Komputer dan Data II/ CEH3D3 - Computer Network and Data II

Membahas mengenai protokol-protokol utama pada protokol TCP/IP yang meliputi TCP, UDP, SMTP, POP, SNMP, FTP dan lain- lain beserta pendalaman mengenai router, routing, algoritma dan protokol routing beserta implementasi dan simulasi routing pada simulator packet tracer. Selain itu dibahas pula mengenai uji dan perbandingan berbagai algoritma dan protokol routing sehingga dapat memahami karakteristik diantaranya.

Discusses the main protocols in TCP / IP protocol that includes TCP, UDP, SMTP, POP, SNMP, FTP and others along with the deepening of the router, routing, algorithms and routing protocols and their implementation and simulation of tracer packet routing on the simulator. In addition, it also discusses the test and comparison of various algorithms and routing protocols so as to understand the characteristics of them.

Daftar Pustaka – Bibliography :

- [1] Alberto Leon-Garcia dan Indra Widjaja, Communications Networks, Fundamental Concepts and Key Architecture, McGraw-Hill, 2003.
- [2] Cisco Network Academy, CCNA Exploration 4.0 1 : Network Fundamentals, Cisco System Inc, 2007
- [3] William Stallings, Data and Computer Communications, Eighth Edition, Prentice Hall, 2006.
- [4] CISCO Networking Simplified Second Edition, 2007
- [5] CISCO Certified Network Associate Study Guide Sixth Edition, 2012

CEH3F1 - Praktikum SK III / CEH3F1 - COMPUTER ENGINEERING Lab Works II

Terdiri dari dua Mata Praktikum yang masing-masing memberikan enam modul Praktikum, yaitu mikroprosesor dan antarmuka (ARM) dan Keamanan Sistem Komputer

Practicum consists of two courses, each of which provides Practicum six modules, namely microprocessors and interfaces (ARM) and Computer System Security

Daftar Pustaka – Bibliography :

- [1] Modul Praktikum mikroprosesor dan antarmuka Prodi Sistem Komputer 2016
- [2] Modul Praktikum Keamanan Sistem Komputer Prodi Sistem Komputer 2016

FEH2E2 - Ekonomi Teknik B / FEH2E2 - Engineering Economics B

Mempelajari proses pengambilan keputusan atas alternatif di bidang rekayasa dan bisnis dengan pertimbangan/kriteria ekonomi. Mengenalkan proses atau model pengambilan keputusan di bidang rekayasa. Mempelajari konsep *time value of money*, konsep bunga (*interest*), *cash flow diagram*, ekivalensi (*Present Worth, Annual Worth, Future Worth*). Mempelajari metode-metode analisis sebagai dasar perbandingan alternatif (analisis: PW; AW/EUA; FW; IRR; BCR; *Pay back period; Incremental*). Menjelaskan metode – metode depresiasi, konsep pajak, analisis cash flow setelah pertimbangan pajak dan depresiasi. Mempelajari analisis investasi dengan pertimbangan sensitivitas dan ketidakpastian. Mempelajari analisis replacement.

Study the decision-making process on alternatives in engineering and business considerations / economic criteria. Introduce process or model of decision-making in the field of engineering.

Studying the concept of time value of money, the concept of interest, cash flow diagram, the equivalence (Present Worth, Annual Worth, Future Worth). Studying the methods of analysis as a basis for comparison of alternative (analysis: PW; AW / EUA; FW; IRR; BCR; Pay back period; Incremental). Explaining the method - the method of depreciation, tax concept, analysis of cash flow after tax considerations and depreciation. Studying the investment analysis with consideration of sensitivity and uncertainty. Studying the replacement analysis.

Daftar Pustaka – Bibliography:

1. Bilal M Ayyub, "Risk Analysis in Engineering and Economics", CRC Press, 2014
2. Pedro Franco, "Understanding Bitcoin : Cryptography, Engineering and Economics", Jhon Wiley, 2014
3. Sullivan, Wicks, Luxhoj, "Engineering Economy", 12th Edition, Pearson Education, Inc., 2003, New Jersey, USA
4. Grant, Ireson, Levenworth, "Dasar-Dasar Ekonomi Teknik", PT Rineka Cipta, 2001, Jakarta
5. Thuesen, G.J. & Fabrycky, W.J., "Engineering Economy", 9th Edition, Prentice Hall, Inc., 2001, New Jersey, USA
6. DeGarmo, Sullivan, Bontadelli, Wicks, "Engineering Economy", Tenth Edition, Prentice Hall, Inc., 1997, New Jersey, USA
7. Newnan, Donald G., "Engineering Economic Analysis", Engineering Press, Inc., 1992, California, USA Grant, Ireson, Leavenworth, "Principles of Engineering Economy", John Wiley & Sons, 1990, Singapore

CEH3L1 - Praktikum SK IV / CEH3L1 - COMPUTER ENGINEERING Lab Works IV

Terdiri dari dua Mata Praktikum yang masing-masing memberikan enam modul Praktikum, yaitu pengolahan sinyal digital dan Kecerdasan Buatan

Practicum consists of two courses, each of which provides Practicum six modules, namely digital signal processing and Artificial Intelligence

Daftar Pustaka – Bibliography :

- [1] Modul Praktikum Pengolahan Sinyal Digital Prodi Sistem Komputer 2016
- [2] Modul Praktikum Kecerdasan Buatan Prodi Sistem Komputer 2016

CEH3G3 - Pengolahan Sinyal Digital / CEH3G3 - DIGITAL SIGNAL PROCESSING

Sinyal pada umumnya merupakan sinyal analog, namun pemrosesan sinyal saat ini yang berkembang adalah pemrosesan sinyal digital. Maka, perlu dipelajari proses pengubahan sinyal analog menjadi digital (Analog to Digital Converter). Sinyal digital dapat diproses dalam kawasan waktu yang dijabarkan dengan berbagai operasi sinyal, antara lain konvolusi dan korelasi sinyal. Pemrosesan sinyal juga dapat dilakukan dalam kawasan frekuensi dengan memanfaatkan Transformasi Fourier, Transformasi-Z serta transformasi diskrit lainnya yang akan mendukung keperluan analisis sistem diskrit. Analisis sistem diskrit diantaranya adalah analisis kestabilan sistem menggunakan fungsi transfer, analisis respon frekuensi sistem sehingga dapat diketahui jenis filter pada sistem yang digunakan, serta perancangan filter digital. Pengajaran didukung dengan demo simulasi untuk menunjang teori perkuliahan.

The signal is generally an analog signal, but the signal processing which currently developed is digital signal processing. Thus, it is necessary to learn the process of converting analog signal into digital signal (Analog to Digital Converter). Digital signal can be processed within the time which is described in various operating signals, convolution and correlation of signals. Signal processing can also be performed in frequency domain by using Fourier transform, Z-transform and other discrete transformations for the purpose of discrete systems analysis. Discrete systems analysis consist of system stability analysis using Transfer Function, Frequency Response analysis of a system to find out filter types on a system and also to design digital filter. This course is conducted with simulations.

Daftar Pustaka – Bibliography:

- [1] Ludeman, Lonie C. Fundamental of Digital Signal Processing, John Wiley & Sons, Canada, 1987
- [2] Ifeachor, C. Immanuel. Digital Signal Processing : A Practical Approach, Addison Wesley Publishing Co., 1993
- [3] Proakis, G. John & Manolakis, G. Dimitris, Introduction to Digital Signal Processing, Maxwell MacMillan, International Edition, 1989.
- [4] R.H. Sianipar, I.K. Wiryajati, M.Irwan. Pemrosesan Sinyal Digital. Penerbit Andi. 2012.
- [5] Ir. Harlianto Tanudjaja, M.Kom. Pengolahan Sinyal Digital dan Sistem Pemrosesan Sinyal. Penerbit Andi. 2007
- [6] Hayes, Monson H. Digital Signal Processing, Schaum's Outlines. McGraw-Hill. 1999.
- [7] Vasegi, V Saeed. Advanced Digital Signal Processing and Noise Reduction, John Wiley and Sons Ltd, Second Edition. 2000
- [8] Ifeachor, C. Immanuel. Digital Signal Processing : A Practical Approach, Addison Wesley Publishing Co., 1993

CEH3H3 - Organisasi Komputer / CEH3H3 - COMPUTER ORGANIZATION

Materi yang disampaikan adalah sebagai berikut Evolusi dan Kinerja Komputer, Abstraksi dan Teknologi komputer, Representasi Data, Aritmatika Komputer, Arsitektur Instruksi Komputer, Jalur data dan Kontrol, Memori, Bus dan Perangkat Masukan/Keluaran, Unjuk kerja komputer, Pengantar pemrosesan parallel

Material presented is as follows Evolution and Computer Performance, Abstraction and Computer Technology, Data Representation, Computer Arithmetic, Instruction Computer Architecture, Data Path and Control, Memory, Bus and Device Input / Output, Performance Computer, Introduction to parallel processing

Daftar Pustaka – Bibliography:

- [1] "Computer Organization and Design: The Hardware/Software Interface," Revised Printing Third Edition, by David A. Patterson and John L. Hennessy, 2014
- [2] "Computer Architecture and Organization: An Integrated Approach", by Miles J. Murdocca and Vincent P. Heuring, John Wiley & Sons, (2007)
- [3] Stallings, William, Computer Organization and Architecture, 6th ed., Prentice Hall, Inc., 2003.

- [4] Hennessy, John L., & David A. Peterson, Computer Architecture, A Quantitative Approach, Morgan Kaufmann Inc., 1996.
- [5] Hwang, Kai., Advanced Computer Architecture, McGraw-Hill, 1993.
- [6] Mano, M. Morris, Computer System Architecture, Prentice Hall Inc., 1990.
- [7] Randal E. Bryant, David R., Computer Systems A Programmer's Perspective, 2002.
- [8] John L. Hennessy and David A. Patterson , Computer Organization and Design: The Software, 2012
- [9] Hardware Interface, Morgan Kaufmann Publishers, Fourth Edition, 2009.

CEH3I3 - Kecerdasan Buatan B / CEH3I3 - ARTIFICIAL INTELLIGENT B

Kuliah ini membahas tentang konsep dasar dan prinsip-prinsip kecerdasan buatan, yang meliputi: dasar-dasar kecerdasan buatan, teknik pencarian atau searching, teknik heuristik, representasi pengetahuan (knowledge), sistem pakar, dan dasar-dasar sistem cerdas yang mencakup konsep Fuzzy Logic, algoritma genetika, dan contoh-contoh implementasinya.

This course provides basic concept and principles of artificial intelligence which covers these chapters: introduction and basic principles of artificial intelligence, searching techniques, knowledge representation, expert system, basic computation of intelligent system such as Fuzzy Logic, Genetic Algorithm and their implementation.

Daftar Pustaka – Bibliography:

- [1] Artificial Intelligence A Modern Approach, Stuart J. Russel and Peter Norvig, Prentice Hall, 2009
- [2] Artificial Intelligence: Foundations of Computational Agents, David Poole and Alan Mackworth, Cambridge University Press, 2010
- [3] The Quest of Artificial Intelligence, Nils J. Nilsson, Cambridge University Press, 2010
- [4] Fuzzy Logic with Engineering Applications, Timothy J. Ross, John Wiley & Sons, 3rd Edition, 2010
- [5] Introduction to Genetic Algorithms, S.N. Sivanandam, S.N. Deepa, Springer, 2008

CEH3J3 - Interaksi Mesin Manusia / CEH3J3 - HUMAN MACHINE INTERACTIONS

Mata Kuliah ini mempelajari tentang interaksi antara manusia dan mesin dalam sebuah sistem. Manusia bertindak sebagai kontrol terhadap mesin atau alat yang menyediakan sebuah keluaran. Interaksi antara manusia dan mesin dapat dikatakan baik apabila interaksi yang terjadi adalah hubungan timbal balik yang produktif dan memiliki tingkat kebergunaan yang tinggi.

This course study about interaction between human and machine in a system. Human acts as control of machine or tools that provide an output. Interaction between human and machine can be good if the interaction is productive and have a high usability.

Daftar Pustaka – Bibliography:

1. Yvonne Rogers, Helen Sharp, Jenny Preece. Interaction Design (3rd Edition). Wiley. 2011

2. Ben Shneiderman and Catherine Plaisant. Designing the User Interface (5th Edition). Addison Wesley. 2010
3. Dan Saffer. Designing for Interaction: Creating Innovative Applications and Devices (2nd Edition). New Riders Publishing. 2009
3. Bennet, Simon, etc, Object Oriented System Analysis and Design using UML, McGraw Hill., 3/e, 2005,
4. Denis Lalanne and Jurg Kohlas. Human Machine Interaction. Springer. 2009

CEH3K3 - Sistem Kendali dan Mekanika / CEH3K3 - CONTROL SYSTEM AND MECHANICS

Mahasiswa akan mempelajari tentang prinsip dasar sistem, perancangan dan analisis sistem kendali berbasis mekanik dan performansinya. Fokus utama sistem kendali yang dibahas merupakan sistem kendali dengan feedback yang berbasis digital. Analisis performansi ditekankan pada transient-response dan steady state error dari sistem kendali yang dibangun, dengan menggunakan tools software Matlab. Secara umum kuliah ini berisikan materi tentang prinsip dasar sistem, sistem kendali, kestabilan sistem kendali, analisis performansi sistem kendali orde 1 dan orde 2 dengan melihat respon transiennya, analisis sistem kendali pada time dan frequency domain, dan perancangan analisis sistem kendali PID. Akan diberikan juga tentang praktis pengendalian motor DC pada akhir materi.

The main goal of this course is to make sure that students have competencies in designing and analyzing the control system based on mechanical and electrical system model. The main focus of the contents are in performance analysis of digital feedback control system, both time-response and frequency-response. Matlab is used for analyze that kind of problems. Generally, materials of this course contain basic principal of system and signal; control system and its representations; control system stability; performance analysis of control system; mechanical and electrical models of control system; and PID control system. At last, will be given how to implement the control system model to move and stabilize Motor DC movements.

Daftar Pustaka – Bibliography

1. Katsuhiro Ogata. Modern Control Engineering. Pearson. 2010
2. Robert H Bishop. Modern Control System. Prentice Hall. 2011
3. Robert H Bishop. The Mechatronic Handbook. CRC Press. 2002
4. Haadi Saadat. Computational Aids in Control System Using Matlab. Milwaukee University, 2009
5. The Electronics Engineers Handbook. McGraw-Hill. 2005

DUH2A2 – Kewirausahaan / DUH2A2 – Entrepreneurship

Matakuliah Kewirausahaan ini adalah matakuliah dengan konsentrasi pada Business Plan yang dapat diimplementasikan oleh mahasiswa selama satu semester. Mahasiswa dalam tiap tahapan belajar akan mengkaji pokok bahasan Pengertian Kewirausahaan, Motivasi, Inovasi, Kepemimpinan, Kreativitas, Pengembangan Ide, Kerja Sama, Negoisasi – Relasi Usaha, Business Plan, dan Praktik Business Plan yaitu merancang dan mengevaluasi business plan.

Entrepreneurship course this is subject to the concentration in the Business Plan that can be implemented by a student for one semester. Students in each stage study will examine the subject of Understanding Entrepreneurship, Motivation, Innovation, Leadership, Creativity, Idea Development, Cooperation, Negotiations - Business Relations, Business Plan, and Practice Business Plan is to design and evaluate the business plan.

Daftar Pustaka – Bibliography :

- [1] Ir. Hendro, MM, *Dasar-dasar Kewirausahaan*, Penerbit Erlangga 2011
- [2] John C. Maxwell, *The Five Level of Leadership*, MIC 2014
- [3] Deepak Malhotra, *I Move Your Cheese*, MIC 2014
- [4] Tim Kick Andy, *Kreativitas Tanpa Batas*, Bentang Pustaka 2014
- [5] John C. Maxwell, *Teamwork Makes The Dream Work: Wujudkan Impian Besarmu*, MIC 2015
- [6] Robby I. Chandra, *Serial Perjalanan Kepemimpinan: Kamu Juga Bisa!*, Young Leaders Indonesia 2010

FEH4A2-Penulisan Karya Ilmiah dan Proposal / FEH4A2 - Scientific Writing and Proposal

Matakuliah ini bertujuan membantu mahasiswa dalam menyiapkan rencana penelitian dalam tugas akhirnya. Selama proses ini, mahasiswa diarahkan dalam menyusun proposal penelitian dari tahap pemilihan topik sampai dengan penulisan rencana penelitian kedalam proposal. Mata kuliah ini dilakukan secara kelompok dengan minimal 2 mahasiswa dalam satu kelompok. Topik besar diberikan oleh calon dosen pembimbing kemudian dibagi ke dalam sub topik, dimana setiap mahasiswa dalam kelompok membuat proposal pengerjaan sub topik tersebut. Pada akhir perkuliahan, masing-masing mahasiswa mempresentasikan proposal tugas akhirnya dalam forum kelas.

This course is to help students prepare their final project/research proposal. This course guides students to write research proposals from selecting research topics to writing their research plans in proposals. This course is done in groups/capstone design with a minimum of 2 students in one group. Great topic by the prospective supervisor then divided into sub-topics, where each student in the group making the proposal workmanship sub topics. By the end of the course, each student is required to present their final project proposal to the class.

Daftar Pustaka – Bibliography :

1. Buku Pedoman Penulisan Proposal Tugas Akhir Prodi Sistem Komputer 2016
2. Alexander M. Novikov, Dmitry A. Movikov, "Research Methodology : From Philosophy of Science to Research Design", CRC Press, 2013
3. Loraine Blaxter, Christina Hughes and Malcolm Tight, "How To Research", 4th edition, Mc Graw Hill, 2010
4. Pat Cryer, "The Research Student's Guide to Success", 3rd edition. Mc Graw Hill, 2006
5. Thomas E. Ogden, "Research Proposals : A guide to Success", 3rd edition, Academic Press Elsevier, 2002

CEH4A3 - Pengkodean dan Kompresi data / CEH4A3 - CODING AND COMPRESSION

Mata kuliah ini mencakup materi pengantar kompresi data, teori informasi dasar untuk Lossless Coding: kuantitas informasi, entropi, Kraft-McMillan Inequality, Prefix- Free Code; teknik-teknik kompresi untuk lossless coding: Huffman Coding, Golomb dan Tunstall Code, Arithmetic Coding, Dictionary Technique, RLE dan BW Transform; pengantar kompresi lossy, kuantisasi skalar dan vektor pada teks dan citra.

This course covers introductory material data compression, information theory basis for Lossless Coding: the quantity of information, entropy, Kraft-McMillan Inequality, Prefix- Free Code; techniques for lossless compression coding: Huffman Coding, Golomb and Tunstall Code,

Arithmetic Coding, Dictionary Technique, RLE and BW Transform; introduction lossy compression, scalar and vector quantization in text and image.

Daftar Pustaka – Bibliography :

- [1] Yo Sung Ho, "Advanced Video Coding for Next Generation Multimedia Services," In Tech Publishing, 2013
- [2] Khalid Sayood, 'Introduction to Data Compression', Morgan Kaufmann Publishers, 2nd Edition, 2000.
- [3] T.M. Cover, J.A. Thomas, *Elements of Information Theory*, 2nd Edition, John Wiley&Sons, 2006
- [4] Adam Drozdek, *Elements of Data Compression*, Thomson Brooks/Cole, 2002
- [5] Khalid Sayood, *Introduction to Data Compression*, Academic Press, 2000.

CEG4B3 - Sistem Multimedia / CEG4B3 – Multimedia Systems

Pengenalan Sistem Multimedia, ADC-DAC, Pengenalan dan Perhitungan Ukuran File/Data, Dasar Pengolahan Citra Digital, Peningkatan Kualitas Citra, Perbaikan Citra, Segmentasi Citra, Aplikasi Pengolahan Citra Digital, Pemrosesan Sinyal Audio, Pengenalan Ucapan, Pemfilteran Audio, Pengolahan Video Digital.

Introduction to Multimedia System, ADC-DAC, Introduction and Size Computation of File/Data, Fundamental Digital Image Processing, Image Enhancement, Image Restoration, Image Segmentation, Image Processing Application, Audio Signal Processing, Speech Recognition, Audio Filtering, Digital Video Processing.

Daftar Pustaka – Bibliography

- [1] Yo Sung Ho, "Advanced Video Coding for Next Generation Multimedia Services," In Tech Publishing, 2013
- [2] A. Milovanovic, Zoran S. Bojkovic, Dragorad A. Milovanovic, Kamisetty Ramamohan Rao: "Multimedia Communication Systems: Techniques, Standards, and Networks", 2002 Prentice Hall
- [3] F. Halsall: "Multimedia Communications: Applications, Networks, Protocols, and Standards", 1/e 2000 Addison-Wesley
- [4] Ludeman, Lonie C. *Fundamental of Digital Signal Processing*, John Wiley & Sons, Canada, 1987
- [5] Ifeachor, C. Immanuel. *Digital Signal Processing : A Practical Approach*, Addison Wisley Publishing Co., 1993
- [6] F. Halsall: "Multimedia Communications: Applications, Networks, Protocols, and Standards", 1/e 2000 Addison-Wesley
- [7] *Image Processing and Video Processing, Matlab*
- [8] *Speech and Audio Processing, Matlab.*

FEH2D2- Studium General / FEH2D2-Studium Generale

Mata kuliah ini memberikan wawasan terkini kepada mahasiswa terkait isu – isu di bidang ICT, lingkungan, politik, hukum, ekonomi, sosial dan budaya. Diharapkan agar mahasiswa dapat memanfaatkan wawasan tersebut untuk mengaplikasikan ICT di bidang- bidang tersebut serta mengetahui dampak penerapannya.

This course provides the latest insights to the students related issues in the field of ICT, environmental, political, legal, economic, social and cultural. It is expected that students can take advantage of that insight to apply ICT in these areas and know the effects of its application.

Daftar Pustaka – Bibliography

1. Vojin G. Oklobdzija, "The Computer Engineering Handbook, Second Edition - 2 Volume Set", CRC Press, 2008
2. Jyrki T.J Penttinen, "The Telecommunication Handbook", Jhon Wiley, 2015
3. Daniel B. Botkin, Edward A. Keller, "Environmental Science : Earth as Living Planet, 9th edition, Jhon Wiley, 2014
4. Daniel Batu, "New Telecommunication Networks : Enterprise and Security", Wiley, 2014

FEH3D3 - Manajemen Proyek /FEH3C3-Project Management

Kuliah ini mempelajari hubungan antara manajemen proyek, manajemen operasi dan strategi secara organisasi serta bisnis yang terkandung dalam manajemen proyek. Mahasiswa juga dibekali dengan aturan, prosedur dan kemampuan sebagai manajemen proyek. Kuliah ini memberikan kemampuan komunikasi dan kerjasama dalam tim.

This study looks at the relationship between project management, operations management and strategy as well as business organizations contained in project management. Students are also provided with the rules, procedures and capabilities as project management. This lecture provides communication and cooperation within the team.

Daftar Pustaka – Bibliography

1. Project Management Institute," A Guide To The Project Management Body Of Knowledge (PM BOK Guide)", 5th edition, Project Management Institute Inc, 2013
2. Project Management Institute," Organizational Project Management Maturity ", 3rd edition, Project Management Institute Inc, 2013
3. Project Management Institute," The Standard For Portfolio Management", 3rd edition, Project Management Institute Inc, 2013

FEH4B4 -Tugas Akhir / FEH4B4-Final Project

Matakuliah ini merupakan kelanjutan untuk mengimplementasikan hasil penulisan karya ilmiah dan Proposal yang telah diseminarkan. Mata kuliah ini dilakukan secara kelompok dengan minimal 2 mahasiswa dalam satu kelompok. Topik besar diberikan oleh calon dosen pembimbing kemudian dibagi ke dalam sub topik, dimana setiap mahasiswa dalam kelompok mengerjakan sub topik tersebut. Judul, Pembimbing I, dan Pembimbing II Tugas Akhir dikukuhkan melalui Surat Keputusan yang mendukung keabsahan proses kegiatan Tugas Akhir, dengan masa berlaku selama 1 (satu) semester, yang dapat diterbitkan setelah mahasiswa lulus Tingkat III dan lulus matakuliah minimal 120 sks. Implementasi dimulai dari studi pustaka yang lebih mendalam, menarik hipotesa dari penelitian pendahuluan dan penelitian terdahulu, melakukan percobaan untuk mendapatkan data, menganalisa data dan menarik kesimpulan. Hasil penelitian akan ditulis dan disidangkan pada suatu Sidang Tugas Akhir.

This course is a continuation to implement the results of the draft of the final project Proposals that have presented. This course is done in groups /capstone design with a minimum of 2

students in one group. Great topic by the prospective supervisor then divided into sub-topics, where each student in the group working on the sub topics. *Title, Supervisor I and Supervisor II final project confirmed by letter of decision that supports the legitimacy of activities final project, with validity period of 1 (one) term, which may be issued after students graduated and passed the Level III course minimum 120 credits. Implementation starts from the literature more profound, interesting hypothesis of preliminary research and the previous study, experiment to obtain the data, analyze the data and draw conclusions. Results of the research will be written and brought to trial in a Session Final Project.*

Daftar Pustaka_Bibliography:

- [1] Buku Panduan Penulisan Tugas Akhir Fakultas Teknik Elektro 2016
- [2] Buku Pedoman Pendidikan Telkom University 2015

FEH4B2-Kerja Praktek / FEH4B2 - Internship

Pada program ini, mahasiswa melakukan pekerjaan yang sesuai dengan keahlian bidang ICT di perusahaan multinasional. Melalui program ini mahasiswa diharapkan dapat meningkatkan kemampuan keterampilannya, kemampuan berkomunikasi dan kemampuan bekerja sama. Mahasiswa mencari lokasi tempat kerja praktek dan dibimbing oleh pembimbing akademik serta pembimbing lapangan. Pada akhir program, mahasiswa membuat laporan tertulis dan akan dinilai oleh pembimbing akademik dan pembimbing lapangan.

In this program, the students do the work in accordance with expertise in the field of ICT in multinational companies. Through this program, students are expected to improve their skills, communication skills and ability to cooperate. Students find the location of workplace practices and guided by counselors and tutors field. At the end of the program, students make a written report and will be assessed by counselors and tutors field.

Daftar Pustaka_Bibliography:

- 1. Buku Pedoman Kerja Praktek Fakultas Teknik Elektro 2016
- 2. Buku Pedoman Pendidikan Telkom University 2015

DUH2B2 - Geladi / DUH2B2 - BASIC ON THE JOB TRAINING

Pada program ini, mahasiswa dikenalkan sedini mungkin tentang ruang lingkup pekerjaan di bidang ICT di perusahaan mitra. Mahasiswa melakukan beberapa pekerjaan kecil agar mahasiswa lebih mengenal ruang lingkup pekerjaan mereka ketika lulus dari universitas. Mahasiswa dibimbing oleh pembimbing akademik dan pembimbing lapangan. Pada akhir program, mahasiswa membuat laporan tertulis dan akan dinilai oleh pembimbing akademik dan pembimbing lapangan.

In this program, students are introduced as early as possible about the scope of work in the field of ICT in the partner company. Students do several small jobs to make students more familiar with the scope of their employment when graduating from university. Students are guided by counselors and tutors field. At the end of the program, students make a written report and will be assessed by counselors and tutors field

Daftar Pustaka – Bibliography :

1. Buku Pedoman Geladi Universitas Telkom
2. Buku Pedoman Pendidikan Telkom University 2015

CEH4E3 – Robotika dan Sistem Cerdas / CEG4F3 – ROBOTICS AND INTELLIGENT SYSTEMS

Kuliah ini membahas tentang konsep dasar robotika dan sistem cerdas, yang meliputi: pengenalan robotika, Sistem Mekanik, Perpindahan Gerak robot, Model Kinematika, Model Statik, Model Dinamik, Perencanaan Gerak Robot, Sensor Robot, Autonomous robot, Emergence Behaviour, Mobile Robot, Visual Persepsi, Fuzzy, dan Q-Learning.

This course discusses the basic concepts of robotics and intelligent systems, which include: the introduction of robotics, System Mechanic, displacement motion robot, Model Kinematics, Model Static, Model Dynamic Planning Motion Robot, Sensor Robot, Autonomous robots, Emergence Behaviour, Mobile Robots, Visual perception, Fuzzy, and Q-Learning

Daftar Pustaka – Bibliography

1. Ming Xie, Fundamentals of Robotics, 2003
2. Ulrich Nehmzow, Scientific Methods in Mobile Robotics, Springer-Verlag London Limited, 2006
3. Roland Siegwart and Illah R. Nourbakhsh, Introduction to Autonomous Mobile Robots, 2004
4. Csaba Szepesvari, Algorithms for Reinforcement Learning, 2009
5. Robin R. Murphy, Introduction to AI Robotics, 2000

CEH4D3 - Komputer Forensik / CEH4D3 – Komputer - Computer Forensics

Membahas tentang pengetahuan dalam investigasi sebuah kejadian yang berhubungan dengan sistem komputer. Pada mata kuliah ini dibahas bagaimana memahami sebuah hard disks dengan jenis partisi tertentu, melakukan duplikasi data, tata cara melakukan menangani bukti digital, bagaimana mencatat rekaman data, investigasi serangan wireless, serangan web, investigasi data terhapus dan partisi terhapus, steganografi, analisis fungsi hash seperti MD5 dan SHA1, dan forensik pada perangkat mobile. Pada mata kuliah ini dibahas pula mengenai pembuatan laporan hasil investigasi dan diajarkan pula bagaimana cara menjadi saksi ahli.

Discussing about knowledge in investigation that happened at computer's attack (hacking). discussing how to understand a specify partition on hard disks, doing duplication data, how to handle digital evidence, how to records data, wireless investigation, web investigation, deleted data and partition investigation, steganografi, MD5 & SHA1 hash function analysis, and mobile forensics. In this course, we also discuss how to make investigation report and how to act as expert witnesses.

Daftar Pustaka – Bibliography:

- [1] E. Casey, "Digital Evidence and Computer Crime, Third Edition: Forensic Science, Computers, and the Internet", Academic Press, 2011.
- [2] A. J. Marcella Jr. and F. Guilloso, "Cyber Forensics: From Data to Digital Evidence", Wiley, 2012

CEH4E3 - Computer Vision A / CEH4E3 - Computer Vision A

Kuliah ini membahas tentang konsep dasar computer vision secara teori beserta aplikasinya dengan cakupan materi meliputi teknik dasar pengolahan citra; segmentasi obyek, pengelompokan obyek dan deteksi tepi; ekstraksi dan pencocokan ciri; deteksi, pengenalan dan klasifikasi obyek; estimasi gerak dan tracking.

This course provides an introduction to computer vision theoretically and practically which covers these topics: fundamentals techniques of image processing; object segmentation, grouping, and boundary detection; feature extraction and matching; object detection, recognition, and classification; motion estimation and tracking.

Daftar Pustaka – Bibliography:

- [1] Computer and Machine Vision: theory, Algorithms, Practicalities, E. R. Davies, Academic Press, 4th edition, 2012
 - [2] Computer Vision: Algorithms and Applications, Richard Szeliski, Springer, 2010
 - [3] An Introduction to 3D Computer Vision Techniques and Algorithms, Boguslaw Cyganek, J. Paul siebert, John Wiley & Sons, 2009
 - [4] Computer Vision and Applications: A Guide for Students and Practitioners, Academic Press, 2000
 - [5] Computer Vision, Linda Saphiro, George Stockman, 2000
-

CEH4F3 - Pembelajaran Mesin / CEH4F3 - Machine Learning

Kuliah ini membahas tentang Machine Learning dan membahas beberapa algoritma, yang meliputi: pengenalan Machine Learning, tipe Machine Learning, Pembelajaran dengan statistik, Aturan dan Logika Program, Algoritma klasifikasi, Pohon Keputusan, Jaringan Syaraf Tiruan, Support Vector Machines, Algoritma Clustering, dan Reinforcement Learning.

This course discusses on Machine Learning and discusses some algorithms, which include: the introduction of Machine Learning, the type of Machine Learning, Learning with statistics, Rules and Logic Program, Algorithms classification, Decision Trees, Neural Networks, Support Vector Machines, Algorithm Clustering, and Reinforcement Learning.

Daftar Pustaka – Bibliography:

- [1] Ethem Alpaydin, Introduction to Machine Learning, 2010
 - [2] Christopher Bishop, Pattern Recognition and Machine Learning. Springer, 2006.
 - [3] Alex Smola and S.V.N. Vishwanathan, Introduction to Machine Learning, 2008
 - [4] Csaba Szepesvari, Algorithms for Reinforcement Learning, 2009
 - [5] Richard S. Sutton and Andrew G. Barto, Reinforcement Learning: An Introduction, 2012
-

CEH4G3 - Arsitektur Komputer / CEH4G3 - COMPUTER ARCHITECTURE

Ruang lingkup : Aspek-aspek fundamental dari desain arsitektur komputer, desain prosesor, pipelining, superscalar, out-of-order execution, static ILP (Instruction-Level Parallelism), dynamic ILP, Thread-Level Parallelism, VLIW (Very Long Instruction Word), arsitektur multicore, grid processor, nano computing, prosesor Itanium, fault tolerance

The scope: Fundamental aspects of the design of computer architecture, processor design, pipelining, superscalar, out-of-order execution, static ILP (Instruction-Level Parallelism),

dynamic ILP, Thread-Level Parallelism, VLIW (Very Long Instruction Word) , multicore architecture, the grid processor, nano computing, the Itanium processor, fault tolerance

Daftar Pustaka – Bibliography:

- [1] Hwang, Kai., “ Advanced Computer Architecture : Parallelism, Scalability, Programmability “, McGraw Hill, Inc., 1992.
- [2] El-Rewini, Hesham and Mostafa Abd-El-Barr., “ Advanced Computer Architecture and Parallel Processing ”, John Wiley & Sons, 2005.
- [3] Akhter, S., and J. Roberts, “ Multicore Processing “, Intel Press, 2006.
- [4] Hennessy, John., and David Patterson, “ Computer Organization and Design “, 4th ed., Morgan Kaufmann, 2007.
- [5] Keckler, S.W., K. Olukotun, and H.P. Hofstee, “ Multiprocessors and Systems “, Springer ed., 2009.
- [6] Patterson, David., and John Hennessy., “ Computer Architecture : A Quantitative Approach “, 5th ed., Morgan Kaufmann, 2011.

CEH4H3 - Sistem Tertanam / CEG4H3 - Embedded System

Mahasiswa diharapkan memiliki kompetensi di bidang perancangan, implementasi, serta analisis perangkat keras bidang kendali dan komputer berbasis sistem tertanam (embedded system). Perkuliahan ini berisi tentang penanaman konsep dasar perancangan sistem tertanam meliputi pengetahuan tentang arsitektur prosesor ARM untuk pengembangan sistem tertanam mulai dari organisasi register hingga penanganan interupsi dan set instruksi, pemrograman hardware berbasis C dan optimasi program, teori dan contoh pembuatan firmware dan embedded operating system, diakhiri dengan proyek membuat aplikasi berbasis sistem tertanam.

The main goal of this course is to make sure that students have competencies in designing and analyzing embedded system including hardware and software. This course contains materials about basic architecture of embedded system including hardware and software; how to design, validate, and evaluate the embedded system model built; ARM SoC system architecture for embedded system including register organization and instruction set, also the exception handling; hardware programming using C language and how to optimize them; how to build the firmware and embedded OS; and the last is final project to implement embedded system application.

Daftar Pustaka – Bibliography :

1. Sloss, Symes, Wright. ARM System Developer's Guide: Designing and Optimizing System Software. Morgan Kauffman. 2004
2. Jason Andrews. Co-Verification Hardware and Software: for ARM SoC Design. Elsevier. 2005
3. Ken Arnold. Embedded Controller Hardware Design. LLH Technology Publishing. 2001
4. ARM Architecture Reference Manual. ARM Ltd. 2005
5. Rajkamal. Embedded System: Architecture, Programming, and Design. McGraw-Hill. 2008

CEH4I3 - Processor Grafis / CEH4I3 - Graphics Processor

Mendiskusikan bagaimana sebuah prosesor grafis bekerja, membahas mengenai perkembangan prosesor grafis. Dan melakukan perbandingan sistem kinerja beberapa jenis prosesor grafis. Mempelajari arsitektur pipeline grafis secara real-time. Kuliah ini ditujukan kepada mahasiswa yang tertarik dengan perkembangan arsitektur grafis atau pemrosesan gambar.

Discussing how a graphics processor works, discussing development of graphic processor. Comparing performance between several graphics processors. Learning real-time graphics architecture pipeline. This Course is designed for student who interested in architecting future graphics or image processing

Daftar Pustaka – Bibliography:

- [1] Tessellation Overview. Direct3D 11 Programming Guide. Microsoft Dev Center Documentation, 2011
- [2] D. Blythe, Rise of the Graphics Processor. Proceedings of the IEEE, 2008
- [3] T. Akinene-Moller and E. Haines, Real-Time Rendering , 2007

CEH4J3 - Desain LSI / CEH4J3 – VLSI Design

Memahami dan membuat Alur Desain VLSI, Belajar Transistor-Tingkat Logika Desain CMOS, memahami Fabrikasi VLSI dan membuat Desain Fisik CMOS, Belajar Menganalisa Gerbang Fungsi dan Timing Karakteristik, mempelajari fungsi blok pada level tinggi digital, Visualisasi Desain Chip Digital CMOS

Understand and Experience VLSI Design Flow, Learn Transistor-Level CMOS Logic Design, Understand VLSI Fabrication and Experience CMOS Physical Design, Learn to Analyze Gate Function and Timing Characteristics, Study High-Level Digital Functional Blocks, Visualize CMOS Digital Chip Design

Daftar Pustaka – Bibliography:

- [1] Neil H.E. Weste and David Money Harris, CMOS VLSI Design a Circuit and Systems Perpective, 4th editin, Addison Wesley, 2011,
- [2] J. Uyemura, Introduction to VLSI Circuits and Systems, Wiley, 2002.

CEH4K3 - Komputasi Bergerak / CEH4K3 - MOBILE COMPUTING

Tujuan perkuliahan ini adalah mengenalkan konsep, arsitektur, dan perangkat komputasi bergerak. Di dalam perkuliahan ini juga dibahas berbagai aspek dalam mobile computing, mencakup routing, data management, bandwidth management, kehandalan, keamanan dan konsumsi daya, jenis-jenis mobile internet mencakup mobile IP dan mobile Web, serta penerapannya dalam berbagai bidang, mencakup kegiatan surveillance, navigasi laut, navigasi udara, pemantauan cuaca dan bencana, mobile learning, penerapannya dalam bidang militer, olah raga, pemantauan kesehatan pasien dalam bidang kedokteran, dan dalam bidang logistik-distribusi.

The purpose of this lecture is to introduce concepts, architectures, and mobile computing devices. In the course of this also discussed various aspects of mobile computing, including routing data management, bandwidth management, reliability, security and power consumption, the types of mobile internet include mobile IP and mobile Web, as well as its application in various fields, including surveillance activity, marine navigation, air navigation,

weather monitoring and disaster management, mobile learning, its application in the military, sports, health monitoring of patients in the medical field, and in logistics-distribution.

Daftar Pustaka – Bibliography:

- [1] Garg, Kumkum., Mobile Computing : Theory and Practice, Darling Kindersley, (India) Private Ltd., 2010.
- [2] Talukder, Ashoke., Hasan Ahmed, Roopa R. Yavagal., Mobile Computing : Technology Applications and Service Creation, Tata McGrawHill, 2010.
- [3] Mainak Chaudhuri, Smartphone Hardware :Anatomy of A Handset, Indian Institute of Technology Kanpur Commonwealth of Learning Vancouver, 2013.
- [4] Adem Korachoca, " Advances and Applications in Mobile Computing ", In Tech Publ. Co, 2012.
- [5] Raj Kamal, " Mobile Computing ", Oxford University Press, 2016.

CEH4L3 - Pengantar Jaringan Masa Depan/ CEH4L3 - NEXT GENERATION NETWORKS

Konsep jaringan terintegrasi berbasis data paket sebagai pembawa semua layanan, arsitektur dasar jaringan masa depan, layering, integrasi dengan jaringan eksisting, langkah migrasi, komponen dasar : softswitch, IMS, SIP. Keamanan system NGN dan regulasinya.

he concept of integrated network-based packet data as the carrier of all the services, the basic architecture of future networks, layering, integration with existing network, step migration, basic components: softswitch, IMS, SIP. NGN security system and its regulation.

Daftar Pustaka – Bibliography

- [1] Daniel Minoli, Nanotechnology Applications to Telecommunications and Networking, 2005
- [2] Syed Asad Hussain, Active and Programmable Networks for Adaptive Architectures and Services, 2006.

CEH4M3 - Komputer Paralel / CEH4M3 - PARALLEL COMPUTING

Mahasiswa diharapkan memahami dasar pemrosesan paralel, bagaimana komunikasi dan kinerja antar prosesor dalam mengeksekusi sebuah instruksi, serta arsitektur paralel. Selain itu, mahasiswa diharapkan mampu membuat program sederhana menggunakan MPI, OpenMP, atau CUDA.

Students are expected to understand basic parallel processing, how the inter-processor communication and performance in executing an instruction, as well as parallel architecture. In addition, students are expected to make a simple program using MPI, OpenMP, or CUDA

Daftar Pustaka – Bibliography :

- [1] G. F. Coulouris, J. Dollimore & T. Kindberg. (2011). *Distributed Systems: Concepts and Design*. Pearson.
- [2] El-Rewini, Hashem.,Theodore G. Lewis & Hesham H. Ali., Task Scheduling in Parallel and Distributed Systems, Prentice Hall,Inc., USA, 1994.
- [3] Lewis, Ted G., Hesham El-Rewini, Introduction to Parallel Computing, Prentice Hall Inc.,1992.

- [4] Bertsekas, Dimitri P., John N. Tsitsiklis, Parallel and Distributed Computation, Prentice Hall Inc., USA, 1989.

CEH4N3 - Antrian dan Rekayasa Trafik / CEH4N3 - QUEUEING AND TRAFFIC ENGINEERING

Ruang lingkup teletraffic engineering, berbagai terminologi trafik, perhitungan trafik, grade of service, berbagai distribusi : Poisson, Erlang, Engset, berbagai tipe / pemodelan antrian : M/M/1, M/M/m, M/G/1, G/M/1, G/M/m, G/G/1, dll; Priority Queueing Model.

The scope of teletraffic engineering, various terms of traffic, the calculation of traffic, grade of service, a variety of distribution: Poisson, Erlang, Engset, various types / modeling queue: M / M / 1, M / M / m, M / G / 1, G / M / 1, G / M / m, G / G / 1, etc; Priority Queueing Model.

Daftar Pustaka – Bibliography:

- [1] Lipsky, Lester R., Queueing Theory, McMillan Co., USA, 1992.
- [2] Walrand, Jean, An Introduction to Queueing Networks, Prentice Hall Inc., USA, 1988.
- [3] Kleinrock, Leonard., Queueing Systems, Vol. I & II, John Wiley & Sons, Inc., USA, 1975.
- [4] Boucher, James R., Voice Teletraffic System Engineering, Artech House, Inc., USA, 1988.
- [5] Schwarz, Mischa., Telecommunications Network, Addison Wesley Inc., USA, 1987.