1

S1 TEKNIK KOMPUTER

STRUKTUR KURIKULUM S1 TEKNIK KOMPUTER

KODE

MATA KULIAH

SUBJECT

SKS

Semester 1

1st Semester

UIGE600002

MPKT B

Integrated Character Building B

6

ENGE600007

Fisika Listrik, MGO

Physics (Electricity, MWO)

3

ENGE600008

Prak. Fisika Listrik, MGO

Physics (Electricity, MWO) Lab

1

ENGE600003

Kalkulus

Calculus

4

ENCE601001

Dasar Sistem Digital + P

Fund. of Digital System + Lab

3

UIGE600003

Bahasa Inggris

English

3

Sub Total

20

Semester 2

2nd Semester

UIGE600001

MPKT A

Integrated Character Building A

6

UIGE600010 -

UIGE600015

Agama

Religion

2

UIGE600020

UIGE600048

Olah Raga/Seni

Sports/Arts

1

ENGE600002

Aljabar Linier

Linear Algebra

4

ENGE600005

Fisika Mekanika dan Panas

Physics (Mechanics and Thermal)

3

ENGE600006

Prak. Fisika Mekanika dan Panas

Physics (Mechanics and Thermal) Lab

1

ENCE602002

Pengantar Teknik Komputer + P

Intro to Computer Engineering + Lab

3

Sub Total

20

Semester 3

3rd Semester

ENCE603003

Matematika Teknik

Engineering Mathematics

4

ENCE603004

Dasar Rangkaian Elektronika

Basics of Electronic Circuits

2

ENCE603005

Rangkaian Listrik

Electric Circuit

2

ENCE603006

Prakt Rangkaian Listrik & Elektronik

Electric & Electronic Circuits Lab

1

ENCE603008

Organisasi dan Arsitektur Komputer

Computer Organization & Architecture

3

ENCE603009

Struktur Diskrit

Discrete Structures

3

ENCE603010

Analisis Vektor dan Peubah Kompleks

Vector Analysis Complex Variables

2

ENCE603012

Pemrograman Lanjut

Advanced Programming

3

Sub Total

20

Semester 4

4th Semester

ENCE604011

Sinyal dan Sistem

Signal and Systems

3

ENCE604013

Perancangan Sistem Digital + P

Digital System Design + Lab

3

ENCE604014

Sistem Berbasis Komputer

Computer Based Systems

4

ENCE604015

Praktikum Sistem Berbasis Komputer

Computer Based Systems Laboratory

1

ENCE604016

Jaringan Komputer dan Praktikum

Computer Networks and Laboratory

4

ENCE603007

Algoritma

Algorithm

3

Sub Total

18

Semester 5

5th Semester

ENCE605017

Probabilitas dan Proses Stokastik

Probability and Stochastic Process

3

ENCE605018

Rekayasa Perangkat Lunak

Software Engineering

3

ENCE605019

Sistem Embedded 1

Embedded System 1

2

ENCE605020

Sistem Operasi

Operating Systems

3

ENCE605021

Desain & Manajemen Jaringan Komputer + P

Design & Management Computer Networks + Lab

4

ENCE605022

Sistem Basis Data dan Praktikum

Database Systems and Laboratory

3

Sub Total

18

2

S1 TEKNIK KOMPUTER

Semester 6

6th Semester

ENCE607031

Penulisan Ilmiah

Academic Writing

2

ENCE606024

Jaringan Telekomunikasi

Telecommunication Networks

3

ENCE606025

Keamanan Jaringan Komputer + P

Computer Networks Security + Lab

3

ENCE606026

Sistem Embedded 2 + Lab

Embedded Systems 2 + Lab

3

ENCE606027

Profesionalisme & Etika dalam TI

Professionalism and Ethics in IT

2

ENCE606028

Pemrograman Berorientasi Objek + P

Object Oriented Programming + Lab

3

ENCE606029

Teknologi Nirkabel

Wireless Technology

2

Sub Total

18

Semester 7

7th Semester

ENCE607030

Seminar

Seminar

2

ENCE606023

Kerja Praktik

Internship

2

ENCE607032

Kewirausahaan dalam Teknologi Informasi

Entrepreneurship in Information Technology

2

ENCE607033

Kapita Selekta Teknik Komputer

Capita Selecta in Computer Engineering

2

ENCE607034

Praktikum Jaringan Telekomunikasi

Telecommunication Networks Lab

1

ENCE607035

Interaksi Manusia dan Komputer

Human Computer Interaction

2

Pilihan

Electives

6

Sub Total

17

Semester 8

8th Semester

ENCE608036

Skripsi

Bachelor Thesis

4

ENCE608037

Manajemen Proyek Teknologi Informasi

Project Management in IT

3

ENCE608038

Pemrosesan Sinyal Multimedia

Multimedia Signal Processing

3

Pilihan

Electives

3

Sub Total

13

Total

144

KODE

MATA KULIAH

SUBJECT

SKS

Semester Ganjil

Odd Semester

ENCE607101

Dasar Regulasi dan Kebijakan Publik TIK

Regulation & Public Policy on ICT Sector

3

ENCE607102

Rekayasa dan Analisis Data

Data Analysis Engineering

3

Semester Genap

Even Semester

ENCE608103

Perancangan VLSI

VLSI Design

2

ENCE608104

Teknologi Big Data

Big Data Technology

3

ELECTIVE COURSES

3

S1 TEKNIK KOMPUTER

Silabus Mata Ajar

Silabus Mata Kuliah pada Program Studi Teknik Komputer berdasarkan kemunculan dalam struktur kurikulum:

UIGE600002

MPKT B

6 SKS

Lihat Silabus Teknik

ENGE600007

FISIKA LISTRIK, MGO

3 SKS

Lihat Silabus Teknik

ENGE600008

PRAK. FISIKA LISTRIK, MGO

1 SKS

Lihat Silabus Teknik

ENGE600003

KALKULUS

4 SKS

Lihat Silabus Teknik

ENCE601001

DASAR SISTEM DIGITAL + P

3 SKS

Capaian Pembelajaran: Dalam kuliah ini, mahasiswa akan mempelajari semua tahapan perancangan dan implementasi

dari sebuah sistem dijital. Setelah mengikuti kuliah ini, mahasiswa akan mampu menganalisis rangkaian sistem digital

sederhana, dan mampu membuat rancangan sistem digital menggunakan blok kombinasional dan sekuensial sederhana.

Kuliah ini juga melibatkan beberapa kegiatan praktikum di laboratorium untuk melakukan desain, implementasi dan

verifikasi sistem logika dijital. Beberapa perangkat keras dan perangkat lunak simulasi untuk rangkaian digital akan

digunakan

Topik: Prinsip Aljabar Boolean dan aplikasinya; Interface Logic Families; Number System & Data Encoding; Basic Logic

Circuits; Basic Modular Design of Combinational Circuits; Basic Modular Design of Sequential Circuits.

Praktikum: Modul 1 - Pengantar dan Pengenalan Dasar Rangkaian Digital, Modul 2 - Aljabar Boolean dan Gerbang Logika

Dasar, Modul 3 - Karnaugh Map, Modul 4 - Gerbang Logika Kompleks, Modul 5 - Dekoder dan Enkoder, Modul 6 - Mul-

tiplexer dan Demultiplexer, Modul 7 - Rangkaian Aritmatika Digital, Modul 8 - Flip-Flop dan Latch, Modul 9 - Register

dan Counter, Modul 10 - Proyek Praktikum Dasar Sistem Digital

Prasyarat: tidak ada.

Buku Ajar:

M. Morris R. Mano, Charles R. Kime, Tom Martin, Logic & Computer Design Fundamentals, 5th ed, Prentice Hall,

1.

2015

Ronald J. Tocci, Neal S. Widmer, and Gregory L. Moss, Digital Systems: Principles and Applications, 11th Ed.,

2.

Prentice Hall, 2010

Modul Praktikum Dasar Sistem Digital

3.

UIGE600003

BAHASA INGGRIS

3 SKS

Lihat Silabus Teknik

UIGE600001

MPKT A

6 SKS

Lihat Silabus Teknik

4

S1 TEKNIK KOMPUTER

UIGE600010 - UIGE600015

AGAMA

2 SKS

Lihat Silabus Teknik

UIGE600020 UIGE600048

OLAH RAGA/SENI

1 SKS

Lihat Silabus Teknik

ENGE600002

ALJABAR LINIER

4 SKS

Lihat Silabus Teknik

ENGE600005

FISIKA MEKANIKA & PANAS

3 SKS

Lihat Silabus Teknik

ENGE600006

PRAK. FISIKA MEKANIKA & PANAS

1 SKS

Lihat Silabus Teknik

ENCE602002

PENGANTAR TEKNIK KOMPUTER + P

3 SKS

Capaian Pembelajaran: Kuliah ini merupakan sebuah pengantar pada dunia teknik komputer. Pada kuliah ini akan

dibahas dasar-dasar yang dibutuhkan dalam pendidikan teknik komputer. Setelah mahasiswa mengikuti kegiatan mata

kuliah ini, maka mahasiswa akan mampu menjelaskan perangkat yang terdapat dalam sistem komputer baik perangkat

keras maupun perangkat lunaknya. Melalui kuliah ini, mahasiswa juga akan mampu merancang algoritma sederhana

dalam pseudocode dan dapat mengimplementasikan algoritma tersebut dalam program dengan menggunakan bahasa

pemrograman tertentu.

Topik: Pengenalan Komputer, Pengenalan Perangkat Keras Komputer, Pengenalan Perangkat Lunak Komputer, Algoritma,

Pseudocode, Pengenalan bahasa C, Pengendalian program dalam bahasa C, Program terstruktur dalam bahasa C.

Praktikum: Modul 1 Pengantar Praktikum Pengantar Teknik Komputer, Modul 2 - Perangkat Keras Komputer, Modul

3 - Perangkat Lunak Komputer, Modul 4 - Modul Diagram Alir, Modul 5 Pseudocode, Modul 6 - Dasar Pemrograman

Bahasa C, Modul 7 - Pencabangan Bahasa C, Modul 8 - Perulangan Bahasa C, Modul 9 - Proyek Pemrograman Bahasa

C

Prasyarat: Dasar Sistem Digital

Buku Ajar:

Alan Evans, Kendall Martins, Mary Anne Poatsy, Technology in Action, Complete, 11th Edition, Pearson, 2015

1.

Deitel & Deitel, C How to Program, 5

2.

th Edition, Pearson Education, 2007.

ENCE603003

MATEMATIKA TEKNIK

4 SKS

Lihat Silabus Teknik Elektro

ENCE603004

DASAR RANGKAIAN ELEKTRONIKA

2 SKS

Capaian Pembelajaran: Pada mata kuliah ini mahasiswa akan mempelajari komponen-komponen serta rangkain dasar

elektronika. Setelah mengikuti mata kuliah ini mahasiswa mampu menjelaskan properti material dan cara

kerja

komponen elektronika dasar, seperti diode, transistor, op-amp, filter dan sebagainya.

Topik: Electronics Materials, diodes, and bipolar transistor; MOS transistor circuit, timing, and power; Storage cell

5

S1 TEKNIK KOMPUTER

Architecture; Operational Amplifiers

Prasyarat: Fisika Listrik, Magnet, Optik dan Gelombang

Buku Ajar:

Robert Boylestad & Louis Nashelsky, Electronic Devices And Circuit Theory, Ninth Edition, Prentice Hall,

1.

Upper Saddle River, New Jersey Columbus, Ohio, 2006.

ENCE603005

RANGKAIAN LISTRIK

2 SKS

Capaian Pembelajaran: Kuliah ini bertujuan untuk memperkenalkan kepada mahasiswa mengenai dasar rangkaian

listrik. Setelah mengikutu kuliah ini mahasiswa akan mampu menganalisis rangkaian listrik dan elektronika sederhana

menggunakan teknik yang sesuai. Mahasiswa diharapkan dapat menganalisis rangkaian resistif, AC dan DC yang menjadi

komponen dasar dalam teknik elektro.

Topik: Introduction, resistive circuits, dependent sources and op. amps, analysis methods, energystorage elements,

firstorder circuits, secondorder circuits, sinusoidal sources and phasors, AC steadystate analysis, AC steadystate

power.

Prasyarat: Fisika Listrik, Magnet, Optik dan Gelombang

Buku Ajar:

D.E. Johnson, J.R. Johnson, et.all., Electric Circuit Analysis, 3rd Edition, Prentice Hall International, Inc., 1997,

1.

(Chapter 1-9).

J. W. Nilsson, S.A. Riedel, Electric Circuits, 10th Edition, Prentice Hall International Inc., 2014.

2.

ENCE603006

PRAKT. RANGKAIAN LISTRIK DAN ELEKTRONIK

1 SKS

Capaian Pembelajaran: Pada mata kuliah ini mahasiswa mempelajari secara praktik komponen-komponen serta rangkain

dasar elektronika dan rangkaian listrik. Setelah mengikuti praktikum ini, mahasiswa mampu menganalisis cara kerja

rangkaian listrik dan elektronika sederhana menggunakan teknik yang sesuai

Topik: Modul 1 - Pengenalan; Modul 2 - Dioda; Modul 3 - BJT Amplifier; Modul 4 - FET Amplifier; Modul 5 - Op-Amp

Amplifier; Modul 6 - Filter; Modul 7 - Dasar Kelistrikan; Modul 8 - Linearitas Analisa Mesh dan Simpul; Modul 9 - Analisis

Superposisi Thevenin dan Norton;

Prasyarat: Fisika Listrik, Magnet, Optik dan Gelombang, Rangkaian Listrik, Dasar Rangkaian Elektronika

Buku Ajar:

Robert Boylestad & Louis Nashelsky, Electronic Devices And Circuit Theory, Ninth Edition, Prentice Hall,

1.

Upper Saddle River, New Jersey Columbus, Ohio, 2006.

D.E. Johnson, J.R. Johnson, et.all., Electric Circuit Analysis, 3rd Edition, Prentice Hall International, Inc., 1997,

2.

(Chapter 1-9).

J. W. Nilsson, S.A. Riedel, Electric Circuits, 10th Edition, Prentice Hall International Inc., 2014.

3.

Modul Praktikum Rangkaian Listrik dan Elektronik

4.

ENCE603007

ALGORITMA

3 SKS

Capaian Pembelajaran: Pada mata kuliah ini mahasiswa mempelajari cara mengevaluasi algoritma. Setelah mengikuti

kuliah ini, mahasiswa akan mampu menjelaskan dasar analisis algoritma; mampu menjelaskan algoritma klasik; mampu

mengevaluasi algoritma berdasarkan kompleksitasnya

Topik: Dasar analisis algoritma; Strategi algoritma; Algoritma klasik untuk tugas umum; Analisis dan desain algoritma

untuk aplikasi khusus Algoritma parallel dan multi-threading; Kompleksitas algoritma

Prasyarat: Pemrograman Lanjut

Buku Ajar:

Gilles Brassard, Paul Bratley, Algorithms: Theory and Practice, Prentice Hall Professional Technical Reference,

1.

1988

Thomas H. Cormen, Introduction to Algorithms, 3rd Edition, MIT Press, 2009

2.

Robert Sedgewick & Kevin Wayne, Algorithms, 4th Ed., Addison-Wesley Professional, 2011

3.

ENCE600008

ORGANISASI DAN ARSITEKTUR KOMPUTER

6

S1 TEKNIK KOMPUTER

3 SKS

Capaian Pembelajaran: Pada mata kuliah ini akan dibahas mengenai arsitektur dan organisasi dari sistem komputer.

Setelah mengikuti mata kuliah ini mahasiswa akan mampu membedakan makna organisasi komputer dan arsitektur

komputer, mampu menganalisis arsitektur komputer, khususnya desain instruksi-set, korelasi antara clock-speed dan

kinerja CPU dan pengaruh struktur bus untuk kecepatan komputasi, mampu menguraikan peran memori cache da-

lam meningkatkan waktu akses memori, termasuk organisasinya dan metode updates. Mahasiswa juga akan mampu

mengembangkan program-program kecil menggunakan set instruksi dasar dari hypothetical processor. Mahasiswa juga

akan mampu menguraikan pengaruh teknik pemrograman untuk kecepatan komputasi. Mahasiswa juga akan mampu

menganalisis desain prosesor canggih dalam meningkatkan komputasi kinerja seperti pipelining, prosesor paralel dan

prosesor multicore.

Topik: Dasar Instruction set architecture; Organisasi Prosesor; Memory; Peripheral subsystems; Multi-many core

architectures; Pipelining

Prasyarat: Pengantar Teknik Komputer dan

Buku Ajar:

W. Stallings, Computer Organization and Architecture, 9th Edition, Pearson International, 2012

1.

Petterson and Hennesy, Computer Organization and Design 5

2.

th edition, Morgan Kaufman, 2013

ENCE603009

STRUKTUR DISKRIT

3 SKS

Capaian Pembelajaran: Pada kuliah ini mahasiswa akan mempelajari prinsip-prinsip dasar matematika diskrit dan

menerapkannya untuk memeriksa dan mempelajari teknik-teknik komputasi modern dan membangun landasan untuk

menganalisis masalah dalam teknik komputer dan mengembangkan solusi. Setelah mengikuti kuliah ini, mahasiswa

akan mampu membuat set dan fungsi, menerapkan teknik pembuktian serta, mampu menggunakan teori graph, tree,

iterasi dan rekursi dalam berbagai kasus permasalahan di bidang teknik komputer

Topik: set; fungsi; relasi; aljabar boolean; teknik pembuktian; dasar pembuktian; graph; tree; iterasi; rekursi

Prasyarat: Tidak ada.

Buku Acuan:

Kenneth H. Rosen, Discrete Mathematics and Its Applications, 7th Edition, McGraw- Hill Science/Engineering/

1.

Math; 2011

Richard Johnsonbaugh, Discrete Mathematics, 7th Edition, Pearson Intl. Edition, Prentice-Hall, NJ, 2009

2.

ENCE603010

ANALISIS VEKTOR DAN PEUBAH KOMPLEKS

2 SKS

Lihat Silabus Teknik Elektro

ENCE604011

SINYAL DAN SISTEM

3 SKS

Lihat Silabus Teknik Elektro

ENCE604012

PEMROGRAMAN LANJUT

3 SKS

Capaian Pembelajaran: Pada mata kuliah ini akan dipelajari mengenai pemrograman menggunakan bahasa tingkat

tinggi. Setelah mengikuti kuliah ini diharapkan mahasiswa mampu mengimplementasikan pemrograman modular

dalam bentuk fungsi (by value dan by reference); mampu mengimplementasikan algoritma rekursi ke dalam bahasa

C; mampu menggunakan array dalam program C; mampu membuat program dengan struktur data; mampu membuat

program dengan struktur data dinamis.

Topik: Programming constructs and paradigms: Array, pointer, linked list; Problem-solving strategies: searching, sort-

ing; Data structures; Recursion

Prasyarat: Pengantar Teknik Komputer dan Praktikum

Buku Ajar:

Deitel & Deitel, C How to Program, 7th Edition, Pearson International Edition, 2012.

1.

ENCE604013

7

S1 TEKNIK KOMPUTER

PERANCANGAN SISTEM DIGITAL + P

3 SKS

Capaian Pembelajaran: Pada mata kuliah ini akan dibahas mengenai prinsip-prinsip dalam merancang sistem

digital. Setelah mengikuti kuliah ini diharapkan mahasiswa mampu mendesain dan menganalisis rangkaian sekuen-

sial dan rangkaian kombinasional dengan menggunakan bahasa pemodelan hardware definition language (HDL) dan

mampu melakukan sintesis ke dalam perangkat PLD seperti CPLD dan FPGA.

Topik: Modular Design of Combinational Circuits; Modular Design of Sequential Circuits; Control and Data-path de-

sign; design with programmable logic; system design constraints; fault model & testing

Prasyarat: Dasar Sistem Digital + P

Buku Ajar:

Charles H. Roth, Jr., Lizy K. John, Digital Systems Design Using VHDL, 2007

1.

Bryan mealy, Fabrizio Tappero, Free Range VHDL, freerangefactory.org

2.

Modul Praktikum Perancangan Sistem Digital

3.

ENCE604014

SISTEM BERBASIS KOMPUTER

4 SKS

Capaian Pembelajaran: Pada mata kuliah ini akan dibahas mengenai teknologi mikroprosesor dan mikrokontroler.

Setelah mengikuti mata kuliah ini diharapkan mahasiswa mampu melakukan proses antarmuka ke alat I/O; mampu

membuat program sederhana dalam bahasa Assembly untuk sistem embedded; mampu merancang sistem embedded

sederhana meggunakan mikrokontroler

Topik: Pengenalan sistem komputer, mode pengalamatan, data transfer, pemrograman mikroprosesor dengan Bahasa

Assembly, antarmuka memory, pengenalan sistem berbasis komputer, pemrograman Input/Output, interrupt handling,

timer

Prasyarat: Organisasi Arsitektur Komputer

Buku Ajar:

Brey, Barry B, The Intel Microprocessors: 8086/8088, 80186/80188, 80286, 80386, 80486, Pentium, Pentium Pro

1.

Processor, Pentium II, Pentium III, Pentium 4, and Core2 with 64-bit Extensions, 8th Ed., PHI Inc, USA, 2011.

The 8051 Microcontroller and Embedded Systems, Second Edition, Muhammad Ali Mazidi, Prentice Hall, 2006

2.

Joseph Yiu, The Definitive Guide to the ARM Cortex-M0, Academic Press, 2011

3.

ENCE604015

PRAKTIKUM SISTEM BERBASIS KOMPUTER

1 SKS

Capaian Pembelajaran: Pada mata kuliah ini mahasiswa akan mempelajari secara praktek cara memprogram mikroprosesor dan mikrokontroler serta merangkai sistem embedded berbasis mikrokontroller. Setelah mengikuti

praktikum ini diharapkan mahasiswa mampu melakukan proses antarmuka ke alat I/O, mampu membuat program

sederhana dalam bahasa Assembly untuk sistem embedded dan mampu merancang sistem embedded sederhana

meggunakan mikrokontroler 8051 dan ARM

Topik: Modul 1- Pengantar Praktikum Mikroprosesor & Mikrokontroler, Modul 2 - Pemrograman Mikroprosesor dengan

Bahasa Assembly, Modul 3 - Modul Instruksi Program Kontrol, Modul 4 - Procedure dan Macro, Modul 5 - Proyek

Mikroprosesor, Modul 6 - Pemrograman Mikrokontroler dengan Bahasa Assembly, Modul 7 Subrutin, Modul 8 - Input/

Output, Modul 9 - Pengenalan Pemrograman Mikrokontroler dengan Bahasa C, Modul 10 - Proyek Mikrokontroler

Prasyarat: Sistem Berbasis Komputer

Buku Ajar:

Modul Praktikum Sistem Berbasis Komputer, Laboratorium Digital Departemen Teknik Elektro

1.

Brey, Barry B, The Intel Microprocessors: 8086/8088, 80186/80188, 80286, 80386, 80486, Pentium, Pentium Pro

2.

Processor, Pentium II, Pentium III, Pentium 4, and Core2 with 64-bit Extensions, 8th Ed., PHI Inc, USA, 2011.

The 8051 Microcontroller and Embedded Systems, Second Edition, Muhammad Ali Mazidi, Prentice Hall, 2006

3.

Joseph Yiu, The Definitive Guide to the ARM Cortex-M0, Academic Press, 2011

4.

ENCE604016

JARINGAN KOMPUTER DAN PRAKTIKUM

4 SKS

Capaian Pembelajaran: Pada mata kuliah ini mahasiswa mempelajari topik-topik mengenai jaringan komputer

yang dibahas secara komprehensif dari layer 1 hingga layer 7. Setelah mengikuti kuliah ini, mahasiswa akan mampu

menerapkan berbagai protokol TCP/IP dan teknologi jaringan ethernet serta pengalamatan yang tepat dalam jaringan

sederhana, mampu mengimplementasikan jaringan sederhana berbasis VLAN dan menerapkan berbagai routing

protokol seperti static routing, RIP, Single Area OSPF serta memanfaatkan Access Control List, DHCP dan NAT untuk

mendukung kemampuan jaringan, dan mampu menerapkan fitur akses kontrol dasar dalam jaringan komputer dan

mampu memanfaatkan konsep pengalamatan dinamis dan menerapkan network address translation dalam jaringan

komputer sederhana

Topik: arsitektur dan topologi jaringan, protokol dan komunikasi jaringan; OSI dan TCP/IP Layer; teknologi jaringan

akses pada LAN dan WAN; teknologi ethernet; network layer; IP Address & Subnetting; network transport

dan application

protocol; Dasar switched networks; VLAN & InterVAN; Konsep routing static & dinamik; Routing Protokol RIP; Single

Area OSPF; Access Control List Standard & Extended; DHCP Server, Client, & Relay, Static & Dynamic NAT

Prasyarat: Pengantar Teknik Komputer + P

Buku Ajar:

A. Tanenbaum, Computer Networks, Prentice Hall, 5th Eds, 2010

1.

CISCO Networking Academy Program: Network Fundamentals, CCNA Exploration ver 4, http://cisco.netacad.net

2.

ENCE605017

PROBABILITAS DAN PROSES STOKASTIK

3 SKS

Lihat Silabus Teknik Elektro

ENCE605018

REKAYASA PERANGKAT LUNAK

3 SKS

Capaian Pembelajaran: Pada kuliah ini, mahasiswa akan mempelajari cara merancang perangkat lunak dengan tahapan

yang benar dan mampu mendokumentasikannya. Setelah mengikuti kuliah ini, mahasiswa akan mampu membuat ran-

cangan perangkat lunak menggunakan tahapan software life cycle yang benar dengan tingkat risiko yang diinginkan,

mampu membuat rancangan perangkat lunak dengan tahapan yang benar; mampu mendokumentasikan tahapan ran-

cangan perangkat lunak

Topik: Hardware and software processes; Requirements analysis and elicitation; System specifications; System archi-

tectural design and evaluation; Concurrent hardware and software design; System integration,Software testing and

validation; Maintainability, sustainability, manufacturability

Prasyarat: Pemrograman Lanjut

Buku Acuan:

Ian Sommerville, Software Engineering, 10th Ed., Pearson, April 3, 2015

1.

Robert C. Martin, Agile Software Development, Principles, Patterns, and Practices, Pearson 2002

2.

ENCE605019

SISTEM EMBEDDED 1

2 SKS

Capaian Pembelajaran: Pada mata kuliah ini, mahasiswa belajar membuat rancangan sistem tertanam (perangkat

keras dan perangkat lunak) untuk aplikasi khusus. Setelah mengikuti mata kuliah ini mahasiswa mampu membuat

rancangan sistem embedded dengan sensor dan aktuator secara sinkron dan asinkron

Topik: Characteristics of embedded systems; Asynchronous and synchronous serial communication; Data acquisition,

control, sensors, actuators

Prasyarat: Sistem Berbasis Komputer, Rangkaian Listrik, Dasar Rangkaian Elektronika

Buku Ajar:

Lee & Seshia, Introduction to Embedded Systems - A Cyber-Physical Systems Approach, 2

1.

nd edition, UC-Berkeley,

2015

ENCE605020

SISTEM OPERASI

3 SKS

Capaian Pembelajaran: Pada mata kuliah ini akan dibahas mengenai prinsip dasar sistem operasi generasi awal dan

terkini. Setelah mengikuti kuliah ini mahasiswa akan mampu menjelaskan sistem pengelolaan sumber daya sistem

komputer, mampu menjelaskan teknik-teknik manajemen memori; mampu menjelaskan teknik-teknik manajemen

penyimpanan data; mampu menjelaskan teknik-teknik manajemen sumber daya komputer; mampu menjelaskan

arsitektur distributed systems

Topik: Operating Systems Structures; Process; Thread; CPU Scheduling; Concurency; Memory-system management,

storage management; distributed system architectures

Prasyarat: Organisasi Arsitektur Komputer

Buku Ajar:

Abraham Silberschatz, Operating System Concepts, 9th Ed., Dec. 17, 2012

1.

Andrew S. Tanenbaum, Modern Operating Systems, Pearson, Mar. 20, 2014

2.

ENCE605021

DESAIN DAN MANAJEMEN JARINGAN KOMPUTER DAN PRAKTIKUM

4 SKS

Capaian Pembelajaran: Pada mata kuliah ini akan dipelajari cara merancang jaringan dengan skala yang lebih besar

dengan mempertimbangkan aspek skalabilitas dan reliabilitas. Setelah mengikuti mata kuliah ini mahasiswa akan

mampu mengimplementasikan berbagai teknik LAN redudancy dan Link Aggregation untuk meningkatkan skabalitas

dan reliabilitas jaringan, mampu menggunakan OSPF dan EIGRP Routing protokol dalam skala jaringan yang lebih besar,

serta mampu mendesain jaringan WAN dan Internet serta menerapkan prinsip dan prosedur manajemen jaringan

Topik: Skabalitas Jaringan; LAN redudancy; Link Aggregation; Wireless LAN; OSPF Multiaccess dan Multiarea; EIGRP.

Hierarchical Network Design; WAN technologies; Koneksi Point to Point dan Frame Relay; Solusi Broadband; Internet

VPN; Network Monitoring; Troubleshooting the networks; Network performance evaluation. Proyek: Perancangan

jaringan komputer pada suatu organisasi perusahaan.

Prasyarat: Jaringan Komputer + P

Buku Ajar:

CISCO Networking Academy Program: Network Fundamentals, CCNA Exploration ver 4,

1.

http://cisco.netacad.net

James D. McCabe, Analisis Jaringan, Arsitektur dan Desain, 3nd Edition, Morgan Kaufmann, 2007.

2.

ENCE605022

SISTEM BASIS DATA DAN PRAKTIKUM

3 SKS

Capaian Pembelajaran: Pada kuliah ini, mahasiswa akan mempelajari konsep-konsep sistem basis data dan aplikasinya.

Setelah mengikuti kuliah ini, mahasiswa mampu merancang basis data terstruktur dalam perancangan perangkat lunak

dan mengimplementasikannya ke dalam sistem basis data SQL

Topik: Database systems; Event-driven and concurrent programming; Using application programming interfaces

Prasyarat: Struktur Diskrit

Buku Acuan:

Ramez Elmasri, Shamkant B. Navathe, Fundamentals of Database Systems, 7th ed., Pearson, June 18, 2015

1.

Avi Silberschatz et al., Database System Concepts, 6th Edition, McGraw-Hill, 2011.

2.

ENCE607031

PENULISAN ILMIAH

2 SKS

Capaian Pembelajaran: Pada mata kuliah ini mahasiswa akan mempelajari cara membuat proposal dan makalah ilmiah

untuk dipublikasikan. Setelah mengikuti kuliah ini mahasiswa akan mampu menulis karya ilmiah dengan struktur yang

baik, mampu menggunakan bahasa Indonesia dan Bahasa Inggris dalam penulisan ilmiah, dan mampu menggunakan

perangkat lunak untuk menulis karya ilmiah dengan format yang baik.

Topik: sistematika penulisan ilmiah; experimental variables and set up; statistical analysis tools; Penggunaan bahasa

Indonesia yang baik dalam karya ilmiah; Penggunaan bahasa Inggris dalam karya ilmiah; word processing software;

styling; referencing tools

Prasyarat: tidak ada

Buku Ajar:

Ranjit Kumar,

1.

Research Methodology: A Step-by-Step Guide for Beginners, 3rd.ed. Sage Publication, 2012

Robert A. Day and Barbara Gastel,

2.

How to Write and Publish a Scientific Paper, 6th ed., Greenwood Press, London,

2006

ENEE606024

JARINGAN TELEKOMUNIKASI

3 SKS

Capaian Pembelajaran: Pada kuliah ini akan dibahas mengenai sistem jaringan telekomunikasi. Setelah mengikuti

kuliah ini mahasiswa akan mampu menjabarkan prinsip dan metode dasar teknik telekomunikasi serta penggunaan

perangkat telekomunikasi dalam sistem jaringan, mampu menjabarkan teknik-teknik modulasi dan multiplexing;

mampu menjelaskan fungsi perangkat telekomunikasi dalam sistem jaringan

Topik: Pengantar Teknik Telekomunikasi; Teknik Modulasi (Amplitudo dan frekuensi); Modulasi Digital; Teknik Multi-

plexing; Coding; Sistem Teleponi; Teknologi perangkat telekomunikasi

Prasyarat: Sinyal dan Sistem

Buku Ajar:

S. Haykin, Communication Systems, 5

1.

th Edition, John Wiley & Sons Inc., 2008.

R.L. Freeman, Telecommunication Systems Engineering, 4

2.

th Edition, John Wiley & Sons Inc., 2004.

ENCE606025

KEAMANAN JARINGAN KOMPUTER DAN PRAKTIKUM

3 SKS

Capaian Pembelajaran: Pada mata kuliah ini akan dipelajari teknik-teknik keamanan dalam jaringan komputer. Set-

elah mengikuti kuliah ini mahasiswa mampu menganalisis dan mengimplementasikan aspek keamanan pada jaringan

komputer, mampu menganalisa keamanan dan integritas data serta melakukan proteksi, mampu menerapkan teknik-

teknik authentikasi dan kriptografi dalam keamanan jaringan dan web.

Topik: Keamanan dan Integritas Data; Vulnerabilities; Resource Protection; Private & Public Key Kriptografi; Auten-

tikasi; Network and Web Security.

Prasyarat: Desain dan Manajemen Jaringan Komputer + P

Buku Ajar:

W. Stallings, Network Security Essentials: Application and Standards, 5/E, Prentice Hall, 2013.

1.

R.R.Panko, Corporate Computer and Network Security, Prentice-Hall, 2004

2.

M.E.Whitman and H.J.Mattord, Principles of Information Security, Thomson Course, 2003

3.

ENCE606026

SISTEM EMBEDDED 2 DAN PRAKTIKUM

3 SKS

Capaian Pembelajaran: Pada mata kuliah ini, mahasiswa belajar mengoptimalkan sumber daya dalam sistem em-

bedded yang meliputi CPU, memory dan sumber daya lainnya. Setelah mengikuti kuliah ini mahasiswa akan mampu

membuat rancangan sistem embedded lanjut dengan memperhatikan hemat daya energi dan keperluan mobile dan

networking

Topik: Periodic interrupts, waveform generation, time measurement; Implementation strategies for complex embed-

ded systems; Techniques for low-power operation; Mobile and networked embedded systems.

Prasyarat: Sistem Embedded 1, Sistem Operasi, Perancangan Sistem Digital + P

Buku Ajar:

Sam Siewer & John Pratt, Real-Time Embedded Components and Systems with Linux and RTOS, 2nd ed., Mercury

1.

Learning, 2015

ENCE606027

PROFESIONALISME DAN ETIKA DALAM TEKNOLOGI INFORMASI

2 SKS

Capaian Pembelajaran: Pada kuliah ini, mahasiswa akan mempelajari konsep profesionalisme dan etika dalam bi-

dang teknologi informasi. Setelah mengikuti kuliah ini, mahasiswa mampu menjabarkan isue terkini dalam

kode etik

IT; mampu mengelaborasi etika profesional, peran dari organisasi profesional terhadap para anggotanya; mampu

menjelaskan klasifikasi pekerjaan terkini dalam bidang IT dan sertifikasi profesional bidang IT; mampu menjabarkan

pentingnya kode etik profesi dan dampaknya terhadap masyarakat luas; mampu menjelaskan tanggung jawab sosial

dalam bidang IT; mampu menerapkan konsep profesionalisme dan etika pada kasus tertentu

Topik: Etika; Job, Profesi dan Profesional; Profesi dalam teknologi informasi; organisasi dan kode etik ahli IT; etika

cyber; hak cipta intelektual; kejahatan Internet

Prasyarat: Tidak ada.

Buku Acuan:

ACM Code of Ethics and Professional Conduct, https://www.acm.org/about-acm/acm-code-of-ethics-and-

1.

professional-conduct

Tavani, Herman T., Ethics & Technology: Ethical Issues in an Age of Information and Communication Technology,

2.

John Wiley & Sons, 2004

ENCE606028

PEMROGRAMAN BERORIENTASI OBJEK DAN PRAKTIKUM

3 SKS

Capaian Pembelajaran: Pada kuliah ini akan dipelajari cara membuat program dengan konsep berorientasi objek.

Setelah mengikuti kuliah ini mahasiswa mengimplementasikan rancangan perangkat lunak ke dalam bahasa pemrogra-

man berorientasi objek; Mampu mendeklarasikan konsep pemrograman berorientasi objek (class, constructor, scope

of variables); Mampu menjabarkan objek-objek dasar (array, array list, koleksi objek, iterator); mampu menjabarkan

konsep perancangan class (coupling, kohesi, refactroing, inheritance, polymorph, subtitusi); mampu menerapkan

pemrograman berbasis GUI, exception handling dan multithreading.

Topik: Java Language Elements; Java Language Operation; Defining and Using Class; System, Strings, StringBuffer,

Math & Wrapper Classes; Array; Class & Inheritance; Design Graphical User Interface & Event Driven; Exceptions;

Collections; Threads and Javadoc

Prasyarat: Pemrograman Lanjut

Buku Ajar:

David J. Barnes, Objects First with Java: A Practical Introduction Using BlueJ, 5th Ed., Pearson, 2011

1.

Bart Baesens et.al., Beginning Java Programming: The Object-Oriented Approach, Wrox, 2015

2.

ENCE606029

TEKNOLOGI NIRKABEL

3 SKS

Capaian Pembelajaran: Pada mata kuliah ini, mahasiswa belajar dasar-dasar teknologi nirkabel termasuk cara kerja,

teknik-teknik, dan standarisasi pada jaringan nirkabel dan mobile. Setelah mengikuti mata kuliah ini, peserta

mampu

menjelaskan dasar-dasar teknologi nirkabel, teknik-teknik pada jaringan nirkabel, standar teknologi IEEE 802.11,

802.15 serta mampu menganalisis proyeksi teknologi nirkabel masa depan.

Topik: Teknologi 802.11 (Wireless LAN); Teknologi 802.15 (Bluetooth, Zigbee, WPAN)

Prasyarat: Jaringan Komputer + P

Buku Ajar:

Eldad Perahia, Next Generation Wireless LANs: 802.11n and 802.11ac, 2nd Edition, Cambridge University Press;

1.

2 edition, June 24, 2013

Al Petrick, "IEEE 802.11 Handbook: A Designer's Companion," 2nd Edition, IEEE Standards Information Network,

2.

2005

ENCE607030

SEMINAR

2 SKS

Capaian Pembelajaran: Pada kuliah ini mahasiswa belajar membuat proposal skripsi berupa rancangan sistem,

komponen, dan proses dalam bidang sistem embedded atau jaringan komputer dalam sebuah kerangka penelitian

Topik: Pendahuluan dan latar belakang penelitian; studi literatur; perancangan penelitian

Prasyarat: sudah memperoleh 120 SKS

Buku Ajar:

-

ENEE606023

KERJA PRAKTIK

2 SKS

Capaian Pembelajaran: Kuliah ini merupakan kuliah kerja pada perusahaan. Setelah mengikuti kuliah ini mahasiswa

akan mampu ikut serta secara nyata dalam tim untuk menyelesaikan pekerjaan yang berkaitan dengan bidang TIK.

Pada kuliah ini mahasiswa akan diminta untuk dapat berperan secara aktif dalam bekerja secara nyata di perusa-

haan dalam menyelesaikan pekerjaan bersama tim. Mahasiswa juga akan mampu menyampaikan hasil pekerjaannya

dalam Sidang Kerja Praktik.

Topik: Kerja Praktik di perusahaan

Prasyarat: telah memperoleh 90 SKS

Buku Ajar:

-

ENCE607032

KEWIRAUSAHAAN DALAM TEKNOLOGI INFORMASI

2 SKS

Capaian Pembelajaran: Pada mata kuliah ini mahasiswa mempelajari konsep dasar manajemen proyek dan pemasaran yang dikhususkan pada bidang Teknologi Informasi. Setalah mengikuti mata kuliah ini mahasiswa mampu

mengimplementasikan konsep dan keterampilan kewirausahaan dalam inovasi teknologi informasi dalam bentuk rencana

bisnis dalam inovasi expertise/product yang sesuai dengan perkembangan teknologi informasi.

Topik: Charging for Expertise, Think, Plan, Act Like Entrepreneur, Making a Business Successful, Taking the Initiative,

Enabling an E-Business, Providing Outsource Services & Building a Contracting Business, kuliah tamu

Prasyarat: Sistem Berbasis Komputer

Buku Ajar:

12

S1 TEKNIK KOMPUTER

Bill Aulet, Disciplined Entrepreneurship: 24 Steps to a Successful Startup, Wiley, Aug 12,2013

1.

ENCE607033

KAPITA SELEKTA TEKNIK KOMPUTER

2 SKS

Capaian Pembelajaran: Pada kuliah ini mahasiswa akan mempelajari topik-topik terkini pada industri bidang teknik

komputer. Setelah mengikuti kuliah ini mahasiswa mampu menganalisis perkembangan industri pada bidang teknik

komputer dan permasalahan yang dihadapinya secara umum.

Topik: Konsep teknologi komputer terbaru; Aplikasi teknologi komputer terbaru; Tradeoff pada teknologi baru bidang

teknik komputer; Masalah terbaru dalam Teknik Komputer

Prasyarat: Tidak ada.

Buku Ajar: Tidak ada. (akan ditentukan kemudian)

ENCE607034

PRAKTIKUM JARINGAN TELEKOMUNIKASI

1 SKS

Capaian Pembelajaran: Kuliah ini bertujuan untuk memberikan pengalaman kepada mahasiswa dalam melakukan

eksperimen-eksperimen yang menganalisa dan mendemonstrasikan konsep-konsep teknik telekomunikasi. Setelah me-

nyelesaikan kuliah ini, mahasiswa mampu menjelaskan teknik-teknik modulasi dan multiplexing; mampu menjabarkan

cara kerja semua komponen perangkat telekomunikasi dalam sistem jaringan

Topik: Pengantar Teknik Telekomunikasi, Modulasi Amplitudo, Modulasi Frekuensi, Sistem Teleponi, PCM dan TDM,

Modulasi Digital, Digital Line Coding, Filter FIR

Prasyarat: Jaringan Telekomunikasi

Buku Ajar:

Modul Praktikum Teknik Telekomunikasi Laboratorium Telekomunikasi.

1.

S. Haykin, Communication Systems, 5

2.

th Edition, John Wiley & Sons Inc., 2008.

R.L. Freeman, Telecommunication Systems Engineering, 4

3.

th Edition, John Wiley & Sons Inc., 2004.

ENCE607035

INTERAKSI MANUSIA DAN KOMPUTER

2 SKS

Capaian Pembelajaran: Pada mata kuliah ini, mahasiswa mempelajari dan menerapkan pendekatan analitis dan teori

HCI dalam memproduksi sebuah prototipe interaksi manusia dan komputer yang berkualitas tinggi, efektif, dan efisien.

Setelah mengikuti mata kuliah ini, mahasiswa akan mampu Mampu membuat rancangan dan menganalisis antarmuka

sebuah sistem berbasis komputer manusia.

Topik: faktor dalam HCI; alat input output; interaksi; rancangan interaksi; HCI dalam software process; design

rules;

implementation support; evaluation techniques; universal design

Prasyarat: Tidak ada

Buku Ajar:

A.J. Dix, J.E. Finlay, G.D. Abowd and R. Beale, Human-Computer Interaction, Third Edition, Prentice Hall, USA,

1.

2003.

B. Shneiderman and C. Plaisant, Designing The User Interface: Strategies for Effective Human Interaction, Fifth

2.

Edition, Pearson-Addison Weasley, 2010.

ENCE608036

SKRIPSI

3 SKS

Capaian Pembelajaran: Pada mata kuliah spesial ini, mahasiswa akan belajar meneliti dan terlibat dalam sebuah tim

peneliti. Setelah mengikuti mata kuliah ini, mahasiswa akan mampu mampu membuat rancangan sistem, komponen,

dan proses dalam bidang sistem embedded atau jaringan komputer dalam kerangka penelitian. Mahasiswa akan

mampu melaksanakan penelitian yang direncanakan, mampu menganalisis hasil penelitian, mampu menyampaikan

hasil penelitian dalam sidag skripsi.

Topik: Implementasi rancangan dan eksperimen penelitian; Analisis data; Kesimpulan

Prasyarat: Seminar

Buku Ajar:

-

ENCE608037

13

S1 TEKNIK KOMPUTER

MANAJEMEN PROYEK TEKNOLOGI INFORMASI

3 SKS

Capaian Pembelajaran: Pada mata kuliah ini akan dibahas mengenai prinsip manajerial pada proyek IT. Setelah mengi-

kuti kuliah ini diharapkan mahasiswa mampu menerapkan manajemen proyek, termasuk manajemen tim, penjadwalan,

konfigurasi proyek, manajemen informasi, dan desain rencana proyek

Topik: Project management principles; Risk, dependability, safety and fault tolerance; IT Project Collaboration strate-

gies; Relevant tools, standards and/or engineering constraints

Prasyarat: Rekayasa Perangkat Lunak

Buku Ajar:

K. Schwalbe, Information Technology Project Management, 7th Edition, Course Technology, 2013.

1.

W.S. Humphrey, Introduction to the Team Software Process, Addison Wesley 2000.

2.

ENCE608036

PEMROSESAN SINYAL MULTIMEDIA

3 SKS

Capaian Pembelajaran: Pada mata kuliah ini akan dibahas mengenai teknologi dalam pemrosesan sinyal multimedia

untuk mendukung penyampaian informasi multimedia. Setelah mengikuti mata kuliah ini diharapkan

mahasiswa akan

mampu melakukan analisis sinyal multimedia dalam jaringan menggunakan teknik-teknik yang sesuai. Mahasiswa akan

mampu menjabarkan komponen-komponen dalam file multimedia, teknik kompresi multimedia, mampu melakukan

pengolahan dan analisis data multimedia seperti gambar, suara dan video. Mahasiswa juga akan mampu menerapkan

algoritma pengolahan citra digital untuk menganalisis informasi di dalamnya.

Topik: Pengantar Jaringan Multimedia, Pengkodean dan Kompresi Sinyal Multimedia (gambar, suara, video), Perbaikan

Kualitas Citra, Pengolahan citra berwarna, Segmentasi citra, Representasi dan deskripsi, Pengenalan obyek.

Prasyarat: Pemrograman Lanjut

Buku Ajar:

J.N. Hwang, Multimedia Networking: From Theory to Practice, Cambridge University Press, 2009.

1.

R.C. Gonzalez and R.E. Woods, Digital Image Processing, 3rd Edition, Prentice-Hall, 2007.

2.

R.C. Gonzalez, R.E. Woods, and S. L. Eddins, Digital Image Processing Using MATLAB, 2nd Edition, Gatesmark

3.

Publishing, 2009.

MATA KULIAH PILIHAN YANG DITAWARKAN OLEH TEKNIK KOMPUTER:

ENCE607101

PERANCANGAN VLSI

2 SKS

Capaian Pembelajaran: Mahasiswa mampu menjelaskan tahapan proses pada perancangan CMOS,

mengimplemen-

tasikan perancangan Scale of Lambda, mengevaluasi karakteristik dan kinerja rangkaian transistor power dan CMOS

dijital, serta menjelaskan teknik optimisasi desain level tinggi.

Topik: Mixed-signal circuits; Design parameters issues; Circuit modelling & Simulation methods

Prasyarat: Dasar Sistem Digital + P

Buku Ajar:

N.E. Weste and K. Eslughian, Principle of CMOS VLSI Design, Addison-Wesley, 1985.

1.

F.M. Berti, Analog Design For CMOS VLSI System, Kluwer Academic Publisher, 2006.

2.

ENCE607102

REKAYASA DAN ANALISIS DATA

3 SKS

Capaian Pembelajaran: Pada mata kuliah ini mahasiswa diarahkan agar mampu mengimplementasikan algoritma

analisis data ke dalam program. Setelah mengikuti kuliah ini mahasiswa akan mampu menggunakan teknik matema-

tika dan statistik dasar yang biasa digunakan dalam pengenalan pola. Mahasiswa akan mampu menggunakan beberapa

teknik umum baik algoritma pembelajaran tersupervisi maupun tanpa supervisi dalam melakukan pengenalan pola,

klasifikasi dan clustering.

Topik: Pengenalan pattern recognition, artificial neural networks, algoritma back-propagation, unsupervised learn-

ing, Principal Component Analysis

Prasyarat: Analisis Vektor dan Peubah Kompleks, Probabilitas & Proses Stokastik, Pemrograman Lanjut

Buku Ajar:

14

S1 TEKNIK KOMPUTER

Christopher M. Bishop, Pattern Recognition and Machine Learning

1.

ENCE608103

TEKNOLOGI BIG DATA

3 SKS

Capaian Pembelajaran: Pada kuliah ini akan dibahas mengenai teknologi yang dapat digunakan untuk menyelesaikan

permasalahan big data di berbagai bidang (misalnya: internet, telekomunikasi, retail). Mahasiswa mampu mengelola

(collection, preparation, processing, validation, interpretation) dan menganalisa data dalam jumlah besar dan ber-

struktur acak.

Topik: Into to Data Engineering, Hadoop Architecture, The Hadoop Distributed Filesystem, Setting Up Hadoop Cluster,

Administering Hadoop, MapReduce Framework, Developing a MapReduce Application, Hive Database, Spark Processing,

Big Data Analytic Project

Prasyarat: Sistem Basis Data

Buku Ajar:

Jure Leskovec, Anand Rajaraman, Jeff Ullman, Mining of Massive Datasets, Cambridge University Press, 2014

1.

Tom White,Hadoop: The Definition Guide, Third Edition, OReilly, 2012

2.

ENCE608104

DASAR REGULASI DAN KEBIJAKAN PUBLIK TIK

3 SKS

Capaian Pembelajaran: Pada mata kuliah ini akan dibahas mengenai dasar-dasar penyusunan dan pengembangan

regulasi dan kebijakan publik, khususnya di era perkembangan teknologi informasi dan komunikasi (TIK) yang sangat

cepat. Setelah mengikuti kuliah ini, mahasiswa akan mampu menjelaskan dasar-dasar kebijakan publik, hukum dan

regulasi Telekomunikasi, dan tata kelola Internet. Pada kuliah ini juga akan dibahas contoh-contoh aplikatif regulasi

dan kebijakan di bidang Telekomunikasi dan Internet, sekaligus mengantisipasi kecepatan perubahan dan dinamika

yang terjadi di tengah masyarakat sebagai implikasi perkembangan TIK.

Topik: Administrasi Publik, Arti Penting Kebijakan Publik, Ragam Penelitian dan Metode Penelitian Kebijakan, Studi

Perbandingan Kebijakan, Pengantar Hukum dan Regulasi Telekomunikasi, Tinjauan Ekonomi atas Regulasi Telekomu-

nikasi, Isu-isu Kunci Regulasi Telekomounikasi, Memahami Tata Kelola Internet, Pemangku Kepentingan Tata Kelola

Internet, Proses Tata Kelola Internet

Prasyarat: -

Buku Ajar:

Ian Walden,Telecommunications Law and Regulation, Oxford University Press, 2012

1.

Jovan Kurbalija, Tentang Tata Kelola Internet: Sebuah Pengantar, APJII, 2011

2.

Riant Nugroho, Public Policy: Dinamika Kebijakan, Analisis Kebijakan, Manajemen Kebijakan, Elex Media

3.

Komputindo, 2012

15

S1 TEKNIK KOMPUTER

Syllabus

Syllabus of courses in Computer Engineering according to the structure of the curriculum:

UIGE600002

MPKT B

6 CREDITS

See The Engineering Syllabus

ENGE600007

Physics (Electricity, MWO)

3 CREDITS

See The Engineering Syllabus

ENGE600008

PHYSICS (ELECTRICITY, MWO) LAB

1 CREDITS

See The Engineering Syllabus

ENGE600003

CALCULUS

4 CREDITS

See The Engineering Syllabus

ENCE601001

FUND. OF DIGITAL SYSTEM + LAB

3 CREDITS

Learning Outcomes: In this course, students will learn all design phases and implementations of a digital system.

At the end of the course, students will be able to analyze simple digital circuits, and able to design digital systems

using combinational and simple sequential building blocks. This lecture also involves several practical work in the

laboratory to design, implement and verify digital logic systems using digital circuit simulation software.

Topics: Boolean Algebra Principles and applications; Interface Logic Families; Number System & Data Encoding;

Basic Logic Circuits; Basic Modular Design of Combinational Circuits; Basic Modular Design of Sequential Circuits.

Practical work: Module 1-Introduction and introduction to Digital Circuit Basics, Module 2 - Boolean Algebra and

Elementary logic gates, Module 3 Karnaugh Map, Module 4 complex logic gate, Module 5 - Decoder and Encoder,

Module 6 - Multiplexer and De-multiplexer, Module 7- Digital Arithmetic Circuit, Module 8 - Flip-Flop and Latch,

Module 9-Registers and Counters, Module 10 Group Project

Prerequisite: none.

Textbook:

M. Morris Mano, r. Charles r. Kime, Tom Martin, Logic & Computer Design Fundamentals, 5th ed., Prentice Hall,

1.

2000

Ronald j. Tocci, Neal s. Widmer, and Gregory l. Moss, Digital Systems: Principles and Applications, 11th ed.,

2.

Prentice Hall, 2010

Basics of Digital System Lab. Practice Modules

3.

UIGE600003

ENGLISH

3 CREDITS

See The Engineering Syllabus

UIGE600001

MPKT A

6 CREDITS

See The Engineering Syllabus

UIGE600010 - UIGE600015

RELIGION

2 CREDITS

See The Engineering Syllabus

16

S1 TEKNIK KOMPUTER

UIGE600020 UIGE600048

SPORTS/ARTS

1 CREDITS

See The Engineering Syllabus

ENGE600002

LINEAR ALGEBRA

4 CREDITS

See The Engineering Syllabus

ENGE600005

PHYSICS (MECHANICS AND THERMAL)

3 CREDITS

See The Engineering Syllabus

ENGE600006

PHYSICS (MECHANICS AND THERMAL) LAB

1 CREDITS

See The Engineering Syllabus

ENCE602002

INTRO TO COMPUTER ENGINEERING + LAB

3 CREDITS

Learning Outcomes : This course is the introduction to the computer engineering world. This lecture discusses top-

ics that are the basics required in computer engineering. At the end of the course students will be able to explain

the components of a computer system both hardware and software, able to design simple algorithms in pseudocode

and able to implement them into programs by using a particular programming language.

Syllabus : The introduction of Computers, introduction to computer hardware, introduction to Computer Software,

algorithm, Pseudocode, introduction to C language, control structures in C language, structured Program in C lan-

guage.

Practical work: Module 1 Introduction, Module 2- computer hardware, Module 3- computer software, Module 4-

Flowchart, Module 5 Pseudocode, Module 6- Introduction to Programming in C language, Module 7- Branching in C

Language, Module 8- Looping in C language, Module 9-Project in C Language.

Prerequisite: Basic Digital System

Textbook:

Alan Evans, Kendall Martins, Mary Anne Poatsy, Technology in Action, Complete, 11th Edition, Pearson, 2015

1.

Deitel & Deitel, C How to Program, 5

2.

th Edition, Pearson Education, 2007.

ENCE603003

ENGINEERING MATHEMATICS

4 CREDITS

See Electrical Engineering Syllabus

ENCE603004

BASICS OF ELECTRONICS CIRCUITS

2 CREDITS

Learning Outcomes: In this course students will learn the basic electronics components as well as its circuitry. At

the end of this course, students will be able to describe the properties of materials and the operation of a basic

electronics component, such as a diode, transistors, op-amps, filters etc.

Topics: Electronics Materials, diodes, bipolar transistors and; MOS transistor circuit, timing, and power; Storage cell

Architecture; Operational Amplifiers

Prerequisite: Physics Electricity, Magnetism, Optics and waves

Textbook:

Robert Boylestad Louis Nashelsky, & Electronic Devices And Circuit Theory, Ninth Edition, Prentice Hall,

1.

Upper Saddle River, New Jersey, Columbus, Ohio, 2006.

17

S1 TEKNIK KOMPUTER

ENCE603005

ELECTRIC CIRCUIT

2 CREDITS

Learning Outcomes : In this course, students will learn the basic electrical circuits. At the end of this course, students will be able to analyze simple electronic and electrical circuits using appropriate techniques, analyze the

resistive circuits, their AC and DC properties as the basics of electrical engineering.

Topics: Introduction, resistive circuits, the dependent sources and op. amps, analysis methods, energy storage

elements, first order circuits, second order circuits, phasors, sources and sinusoidal AC steady state analysis, air

conditioning steady state power.

Prerequisites : Physics electricity, magnetism, Optics and waves

Textbook:

D . E. Johnson, J. R. Johnson, et.all. , Electric Circuit Analysis, 3rd Edition, Prentice Hall International, Inc.,

1.

1997, (Chapters 1-9).

J . D. Nilsson, S. A. Riedel, Electric Circuits, 10th Edition, Prentice Hall International, Inc., 2002.

2.

ENCE603006

ELECTRIC AND ELECTRONIC CIRCUITS LAB

1 CREDITS

Learning Outcomes: In this course students will learn the practical skills in handling components and basic

elec-

tronic and electric circuit. At the end of this lab practice, students will be able to analyze the operation of electric

and electronics circuit using simple techniques.

Topics: Module 1-Introduction; Module 2-Diode; Module 3-BJT Amplifiers; Module 4-FET Amplifier; Module 5-Op-

Amp Amplifier; Module 6-Filter; Module 7-basic Electricity; Module 8-Mesh and Node analysis of Linearity; Module

9-Thevenin and Norton Superposition Analysis;

Prerequisite: Physics electricity, magnetism, Optics and waves, Electrical Circuits, basic Electronics Circuits

Textbook:

Robert Boylestad Louis Nashelsky, & Electronic Devices And Circuit Theory, Ninth Edition, Prentice Hall,

1.

Upper Saddle River, New Jersey, Columbus, Ohio, 2006.

D . E. Johnson, J. R. Johnson, URet.all. , Electric Circuit Analysis, 3rd Edition, Prentice Hall International,

2.

Inc., 1997, (Chapters 1-9).

J . D. Nilsson, S. A. Riedel, Electric Circuits, 10th Edition, Prentice Hall International, Inc., 202.

3.

Module electrical and electronic Circuit Teaching

4.

ENCE603007

ALGORITHM

3 CREDITS

Learning Outcomes: In this course students learn how to evaluate the algorithm. After following this course, the

student will be able to explain the basis of the analysis of algorithms; able to explain classic algorithms; able

to

evaluate algorithm by its complexity

Topics: The basic of algorithms analysis; The algorithm strategy; Classical algorithms for common taCREDITS; Analy-

sis and design of algorithms for specific application; Parallel algorithms and multi-threading; Algorithm complexity

Prerequisite: Advanced Programming

Textbook:

Gilles Brassard, Paul Bratley, Algorithms: Theory and Practice, Prentice Hall Professional Technical Reference,

1.

1988

Thomas H. Cormen, Introduction to Algorithms, 3rd Edition, MIT Press, 2009

2.

Robert Sedgewick & Kevin Wayne, Algorithms, 4th ed., Addison-Wesley Professional, 2011

3.

ENCE600008

COMPUTER ORGANIZATION & ARCHITECTURE

3 CREDITS

Learning Outcomes: In this course, the architecture and the organization of computer system is discussed. After

following this course, the student will be able to distinguish the meanings of computer organization and archi-

tecture computer, capable of analyzing the computer architecture, particularly the design of instruction-set, the

correlation between clock-speed and CPU performance and the influence of the structure of the bus for computing

speed, was able to decipher the role of cache memory to improve memory access time, including its

organiza-

tion and updates mechanism. Student will also be able to develop small programs using the basic instruction set of

hypothetical processor. Students will also be able to elaborate on the influence of the programming techniques for

computational speed. Students will also be able to analyze advanced processor design in improving performance

computing like pipelining, parallel processors and multicore processors.

Topics: The basic Instruction set architecture; Organization Of The Processor; Memory; Peripheral subsystems;

Multi-many core architectures; Pipelining

Prerequisite: Intro to Computer Engineering + Lab

Textbook:

W . Stallings, Computer Organization and Architecture, 9 th Edition, Pearson International , 2012

1.

Petterson and Hennesy, Computer Organization and Design 5

2.

th edition, Morgan Kaufman, 2013

ENCE603009

DISCRETE STRUCTURES

3 CREDITS

Learning Outcomes: In this course students will learn the basic principles of discrete mathematics and apply it to

examine and study the modern computing techniques and build a foundation for analyzing problems in

computer

engineering and developing solutions. After following this course, the student will be able to create sets and func-

tions, applying the techniques of proof, as well as being able to use the theory of graph, tree, iteration and recur-

sion in various cases of problems in the field of computer engineering

Topics: set; relation; function; Boolean algebra; proofing techniques; basic proof; graph; tree; iteration; recursion

Prerequisite: none

Textbook:

Kenneth h. Rosen, Discrete Mathematics and Its Applications, 7th Edition , McGraw-Hill Science/Engineering/

1.

Math; 2011

Richard Johnsonbaugh, Discrete Mathematics, 7th Edition, Pearson Intl. Edition, Prentice-Hall, NJ, 2009

2.

ENCE603010

COMPLEX VARIABLES AND VECTOR ANALYSIS

2 CREDITS

See Electrical Engineering Syllabus

ENCE604011

SIGNAL AND SYSTEMS

3 CREDITS

See Electrical Engineering Syllabus

ENCE604012

ADVANCED PROGRAMMING

3 CREDITS

Learning Outcomes : In this course will be on learn regarding programming using high-level languages. After

fol-

lowing this course the student is expected to able to implement modular programming in the form of a function (by

value and by reference); being able to implement recursion algorithm into the C language; capable of using arrays

in C program; able to make programs with data structures; able to make programs with dynamic data structures.

Topics: Programming constructs and paradigms: pointer, Array, linked list; Problem-solving strategies: searching,

sorting; Data structures; Recursion

Prerequisite: Introduction to computer engineering and Practical

Textbook:

Deitel & Deitel, C How to Program, 7 th Edition, Pearson International Edition 20 12.

1.

ENCE604013

DIGITAL SYSTEM DESIGN + LAB

3 CREDITS

Learning Outcomes: In this course, it will discussed the principles in designing digital systems. After following this

course, the student is expected to be able to design and analyze sequential and combinational circuit using a hard-

ware modeling language definition language (HDL) and able to do synthesis into the PLD, CPLD and FPGA-like.

Topics: Modular Design of Combinational Circuits; Modular Design of Sequential Circuits; Control and Data-path

design; design with programmable logic; system design constraints; fault models & testing

S1 TEKNIK KOMPUTER

Prerequisite: Fund. of Digital System + Lab

Textbook:

Charles h. Roth, Jr., Lizy K John, Digital Systems Design Using VHDL, 2007

1.

Bryan mealy, Fabrizio Tappero, Free Range VHDL, freerangefactory.org

2.

Digital System Design Lab Modules

3.

ENCE604014

COMPUTER BASED SYSTEMS

4 CREDITS

Learning Outcomes: In this course, it will be discussed about microprocessor and microcontroller technology. After

following this course, the student is expected to be able to do the process interface to the I/O equipments; able to

make simple programs in Assembly language for embedded systems; capable of designing embedded systems with a

simple microcontroller

Topics: Introduction to computer systems, addressing modes, data transfer, programming microprocessor with As-

sembly language, memory interface, introduction of computer-based systems, programming Input/Output, inter-

rupt handling, timer

Prerequisite: Computer Organization & Architecture

Textbook:

Brey, Barry B, The Intel 8086/8088 Microprocessors: 80186/80188, 80286, 80386, 80486, Pentium Pro, Pentium,

1.

Processor, Pentium II, Pentium III, Pentium 4, and Core2 with 64-bit Extensions, 8th ed., PHI Inc., USA, 2011.

The 8051 Microcontroller and Embedded Systems, Second Edition, Muhammad Ali Mazidi, Prentice Hall, 2006

2.

Joseph Yiu, The Definitive Guide to the ARM Cortex-M0, Academic Press, 2011

3.

ENCE604015

COMPUTER BASED SYSTEMS LABORATORY

1 CREDITS

Learning Outcomes: In this subject, students will conduct hands-on programming the microprocessor and micro-

controller-based embedded systems, as well as interfacing microcontroller. After following this lab course students

are expected to be able to conduct interfacing to the i/o tools, able to make simple programs in Assembly language

for embedded systems and capable of designing embedded systems with a simple microcontroller 8051 and ARM

Topics: Module 1-Introduction to Practical Microprocessors & microcontroller, module 2-Programming the micropro-

cessor with Assembly language, module 3 Program Control Instruction Modules, module 4-Procedure and Macro,

module 5-Project Microprocessor, Module-6 Microcontroller Programming with Assembly language, Module 7 Sub-

routines, Module 8- Input/Output, Module 9-Introduction to Microcontroller Programming with C language, Module

10 -Microcontroller Project

Prerequisite: Computer Based Systems

Textbook:

Lab Module System of Computer-Based Digital Laboratory, Department of Electrical Engineering

1.

Brey, Barry B, The Intel 8086/8088 Microprocessors: 80186/80188, 80286, 80386, 80486, Pentium Pro, Pentium,

2.

Processor, Pentium II, Pentium III, Pentium 4, and Core2 with 64-bit Extensions, 8th ed., PHI Inc., USA, 2011.

The 8051 Microcontroller and Embedded Systems, Second Edition, Muhammad Ali Mazidi, Prentice Hall, 2006

3.

Joseph Yiu, The Definitive Guide to the ARM Cortex-M0, Academic Press, 2011

4.

ENCE604016

COMPUTER NETWORKS AND LABORATORY

4 CREDITS

Learning Outcomes: In this course, students study the topics about computer networks comprehensively from layer 1 to layer 7. After following this course, the student will be able to implement the various Protocol TCP/IP

and Ethernet network technology as well as the right addressing in a simple network, able to implement simple

network-based VLAN and applying various routing protocols such as static routing, RIP, Single Area OSPF and make

use of Access Control lists, DHCP and NAT to support networking capabilities, and is able to implement basic access

control features in computer networks and are able to utilize the concept of dynamic addressing and implementing

network address translation in simple computer network

Topics: architecture and network topology, Protocol and communications networks; OSI and TCP/IP Layer; technol-

ogy access network on the LAN and WAN; Ethernet technology; network layer; IP Address & Subnetting; transport

network and application protocol; Basic switched networks; VLAN & InterVAN; The concept of routing static & dynamic; Routing Protocol RIP; Single Area OSPF; Access Control List Standard & Extended; DHCP Server & Client,

Relay, Static & Dynamic NAT

20

S1 TEKNIK KOMPUTER

Prerequisite: Intro to Computer Engineering + Lab

Textbook:

A. Tanenbaum, Computer Networks, Prentice Hall, 5th Eds, 2010

1.

CISCO Networking Academy Program: Network Fundamentals, CCNA Exploration 4 ver, http://cisco.netacad.net

2.

ENCE605017

PROBABILITY AND STOCHASTIC PROCESSES

3 CREDITS

See Electrical Engineering Syllabus

ENCE605018

SOFTWARE ENGINEERING

3 CREDITS

Learning Outcomes: In this course, students will learn how to design software with correct steps and able to docu-

ment them. After following this course, students will able to design software using the stage of the software life

cycle with the desired risk level, capable of making design software with the correct stages; capable of document-

ing the stages of design software

Topics: Hardware and software processes; Requirements analysis and elicitation; System specifications; System ar-

chitectural design and evaluation; Concurrent hardware and software design; System integration, Software testing

and validation; Maintainability, manufacturability, sustainability

Pr asyarat : Advanced Programming

Textbook:

Ian Sommerville, Software Engineering, 10th ed., Pearson, April 3, 2015

1.

Robert c. Martin, Agile Software Development, Principles, Patterns, and Practices, Pearson, 2002

2.

ENCE605019

EMBEDDED SYSTEMS 1

2 CREDITS

Learning Outcomes: In this course, students learn to make embedded systems design (hardware and software) for

specific applications. After following this course, students will be able to design embedded systems with

sensors

and actuators in synchronous and asynchronous system.

Topics: Characteristics of embedded systems; Asynchronous and synchronous serial communication; Data acquisi-

tion, control, sensors, actuators

Prerequisite: Computer-Based Systems, Electric Circuits, Basics of Electronics Circuits

Textbook:

Lee & Seshia , Introduction to Embedded Systems-A Cyber-Physical Systems Approach , 2

1.

nd edition, UC-

Berkeley , 2015

ENCE605020

OPERATING SYSTEM

3 CREDITS

Learning Outcomes: In this subject, it will be discussed the basic principles of early generation and up-to-date operating system. After following this course, the student will be able to explain the system resource management

of computer systems, able to explain the memory management techniques; able to explain the techniques of data

storage management; able to explain the techniques of management of computer resources; able to explain the

architecture of distributed systems

Topics: Operating Systems Structures; Process; Thread; CPU Scheduling; Concurency; Memory-system management,

storage management; distributed system architectures

Prerequisite: Computer Organization & Architecture

Textbook:

Abraham Silberschatz, Operating System Concepts , 9th ed., Dec. 21, 2012

1.

Andrew s. Tanenbaum, Modern Operating Systems , Pearson, Mar. 20, 2014

2.

ENCE60 5021

DESIGN & MANAGEMENT COMPUTER NETWORKS + LAB

4 CREDITS

Learning Outcomes: On this subject it will be studied how to design a network with a larger scale taking into ac-

count aspects of scalability and reliability. After following this course the student will be able to implement the

various techniques of redundancy and LAN Link Aggregation to increase scalability and reliability of the network,

being able to use the Routing Protocol EIGRP and OSPF in the scale of a larger network, as well as capable of de-

signing a network WAN and Internet as well as applying the principles of network management and procedures

Topics: Network Scalability; LAN redundancy; Link Aggregation; Wireless LAN; Multi-area OSPF Multi-access and;

EIGRP. Hierarchical Network Design; WAN technologies; Point to Point connection and Frame Relay; Broadband Solu-

tions; Internet VPN; Network Monitoring; Troubleshooting the networks; Network performance evaluation. Project:

The design of computer network in an organization of a company.

Prerequisite: Computer Network + P

Textbook:

CISCO Networking Academy Program: Network Fundamentals, CCNA Exploration 4 ver,

1.

http://cisco.netacad.net

James d. McCabe, network analysis, architecture and design, 3 nd Edition, Morgan Kaufmann, 2007.

2.

ENCE60 5022

DATABASE SYSTEMS AND LABORATORY

3 CREDITS

Learning Outcomes: In this course, students will learn the concepts of database systems and applications. After

following this course, the student is able to design a structured database in the software design and implement it

into a SQL database system

Topics: Database systems; Event-driven and concurrent programming; Using application programming interfaces

Prerequisite: Discrete Structures

Textbook:

Ramez Elmasri, Shamkant b. Navathe, Fundamentals of Database Systems, 7th ed., Pearson, June 18, 2015

1.

Avi Silberschatz et al., Database System Concepts, 6th Edition, McGraw-Hill, 2009.

2.

ENCE607031

ACADEMIC WRITING

2 CREDITS

Learning Outcomes: In this course students will learn how to create a proposal and scientific papers for publica-

tion. After following this course the student will be able to write scientific papers with a good structure, able to use

the Bahasa Indonesia and English in scientific writing, and being able to use the software to write scientific papers

with a good format.

Topics: Systematics of scientific writing; experimental variables and sets up; statistical analysis tools; The use of

the Bahasa Indonesia in scientific works; The use of English languages in scientific works; Word processing software;

styling; referencing tools

Prerequisite: none

Textbook:

Ranjit Kumar,

1.

Research Methodology: A Step by Step Guide for Beginners, 3rd ed. Sage Publication, 2012

Robert a. Day and Barbara Gastel,

2.

How to Write and Publish a Scientific Paper, 6th ed. Greenwood Press,

London, 2006

ENEE606024

TELECOMMUNICATION NETWORKS

3 CREDITS

Learning Outcomes: This courses discusses the telecommunications network system. After following this course,

the students will able to explain the principles and basic methods of Telecommunication Engineering as well as the

use of telecommunication devices in the network system, capable of outlining the techniques of modulation

and

multiplexing; able to explain the functions of telecommunications devices in the network system

Topics: Introduction to Telecommunication Networks; Modulation (Amplitude and frequency); Digital Modulation;

Multiplexing Techniques; Coding; Telephony Systems; Technology of Telecommunications Devicec

Prerequisite: Signals and systems

Textbook:

S. Haykin, Communication Systems, 5

1.

th Edition, John Wiley & Sons, Inc., 2008.

R.L. Freeman, Telecommunication Systems Engineering, 4

2.

th Edition, John Wiley & Sons, Inc., 2004.

ENCE606025

COMPUTER NETWORKS SECURITY + LAB

3 CREDITS

Learning Outcomes: In this subject, student will study security techniques in computer networks. After following

this course, students are able to analyze and implement security aspects on the network computer, capable of ana-

lyzing the security and integrity of your data and perform protection, able to apply the techniques of cryptography

and authentication in network security and web.

Topics: Security and integrity of Data; Vulnerabilities; Resource Protection; Private & Public Key

Cryptography;

Authentication; Network and Web Security.

Prerequisite: Design and management of computer networks + Lab

Textbook:

W. Stallings, Network Security Essentials: Applications and Standards, 5/E, Prentice Hall, 1995.

1.

R.R. Panko, Corporate Computer and Network Security, Prentice-Hall, 2004

2.

M.E. Whitman and Henry Julian Mattord, Principles of Information Security, Thomson Course, 2003

3.

ENCE606026

EMBEDDED SYSTEMS 2 + LAB

3 CREDITS

Learning Outcomes: In this course, students learn to optimize resources in embedded systems that include the

CPU, memory and other resources. After following this course, the student will be able to make advanced embed-

ded systems design with attention to efficient power, and for mobile and networking purposes

Topics: Periodic interrupts, waveform generation, time measurement; Implementation strategies for complex em-

bedded systems; Techniques for low-power operation; Mobile and networked embedded systems.

Prerequisite: Embedded Systems 1, Operating Systems, Digital System Design + Lab

Textbook:

Sam Siewer & John Pratt, real-time Embedded Components and Systems with Linux and RTOS, 2nd ed., Mercury

1.

Learning, 2015

ENCE606027

PROFESSIONALISM AND ETHICS IN IT

2 CREDITS

Learning Outcomes: In this course, students will learn the concept of professionalism and ethics in the field of information technology. After following this course, the student is able to describe the current issues in the code

of conduct IT; able to elaborate on professional ethics, the role of professional organizations against its members;

able to explain the current job classification in the field of IT and professional certification IT field; capable of outlining the importance of the code of ethics of the profession and its impact on the wider community; able to explain the social responsibility in the field of IT; able to apply the concepts of professionalism and ethics in certain

cases

Topics: Ethics; Job, profession and professional; Profession in information technology; Organization and code of

Ethics of IT experts; cyber ethics; intellectual copyright; Internet crime

Prerequisite: none

Book Reference:

ACM Code of Ethics and Professional Conduct, https://www.acm.org/about-acm/acm-code-of-ethics-and-

1.

professional-conduct

Tavani, Herman t., Ethics & Technology: Ethical Issues in an Age of Information and Communication

2.

Technology, John Wiley & Sons, 2004

ENCE606028

OBJECT ORIENTED PROGRAMMING + LAB

3 CREDITS

Learning Outcomes: In this lecture, students will study how to create program with object-oriented concepts.

After following this course, students are able to implement a software design into object-oriented programming

language; able to establish the concept of object-oriented programming (class, constructor, scope of variables);

able to outline the Basic objects (arrays, array list, object collection, iterator); able to describe the concept of design class (coupling, cohesion, refactoring, inheritance, polymorph, substitution); able to implement a GUI-based

programming, exception handling and multithreading.

Topics: Java Language Elements; Java Language Operation; Defining and Using Class; System, Strings, String Buffer,

Math & Wrapper Classes; Array; Classes & Inheritance; Design Graphical User Interface & Event Driven; Exceptions;

Collections; Threads and Javadoc

Prerequisite: Advanced Programming

23

S1 TEKNIK KOMPUTER

Textbook:

David j. Barnes, Objects First with Java: A Practical Introduction Using BlueJ, 5th ed., Pearson, 2011

1.

Bart Baesens URet.al., Beginning Java Programming: The Object-Oriented Approach, Wrox, 2015

2.

ENCE606029

WIRELESS TECHNOLOGY

3 CREDITS

Learning Outcomes: In this course, students learn the basics of wireless technologies including how it works,

techniques, and standardizing on wireless network and mobile. After following this course, the participant is able

to explain the basics of wireless technology, techniques in wireless network technology, the standard IEEE 802.11,

802.15 and capable of analyzing projections of future wireless technologies.

Topics: The technology 802.11 (Wireless LAN); Technology 802.15 (Bluetooth, Zigbee, WPAN)

Prerequisite: Computer Networks + Lab

Textbook:

Eldad Perahia, Next Generation Wireless LANs: 802 .11n and 802.11 air conditioning, 2nd Edition, Cambridge

1.

University Press; 2nd edition, June 24, 2013

Al Petrick, IEEE 802.11 Handbook: A designers Companion, 2nd Edition, IEEE Standards Information Network,

2.

2005

ENCE607030

SEMINAR

2 CREDITS

Learning Outcomes: In this subject, students learn how to make bachelor thesis proposal to design system, compo-

nent, and process in the field of embedded systems or computer networks within the research framework

Topics: Introduction and research background; literature studies; research design

Prerequisite: already passed 120 CREDITS

Textbook:

-

ENEE606023

INTERNSHIP

2 CREDITS

Learning Outcomes : In this subject, students will learn how to work in a company. After following this subject, the student will be able to participate significantly in the team to complete the work related to the field of ICT. In

this course, the student is required to be able to be active for working with the team. Students will also be able to

deliver the results of his/her work in the internship report seminar.

Topics: Practical work in the company

Prerequisite: already passed 90 CREDITS

Textbook:

-

ENCE607032

ENTREPRENEURSHIP IN INFORMATION TECHNOLOGY

2 CREDITS

Learning Outcomes: In this course students learn the basic concepts of project management and marketing spe-

cialized in the field of information technology. After following this course the students are able to implement the

concepts and skills of entrepreneurship in innovation of information technology in the form of a business plan ex-

pertise in innovation/product which corresponds to the development of information technology.

Topics: Charging for Expertise, Think, Plan, Act Like an Entrepreneur, Making a Business Successful, Taking the Ini-

tiative, Enabling an E-Business, Providing Outsourced Services & Building a Contracting Business, guest lectures

Prerequisite: Computer-Based Systems

Textbook:

Bill Aulet, Disciplined Entrepreneurship: 24 Steps to a Successful Startup, Wiley, Aug 12.2013

1.

ENCE607033

CAPITA SELECTA IN COMPUTER ENGINEERING

2 CREDITS

Learning Outcomes: In this course, students will learn about the current topics in computer engineering industry.

24

S1 TEKNIK KOMPUTER

After following this course the students are able to analyze the development of the industry in the field of com-

puter engineering and the problems faced in General.

Topics: The concept of the latest computer technology; Latest computer technology applications; Tradeoff in the

new technology of computer science; The latest issues in computer engineering

Prerequisite: none

Textbook: to be determined later

ENCE607034

TELECOMMUNICATION NETWORKS LAB

1 CREDITS

Learning Outcomes : This course aims to provide experience to students in doing experiments that analyze and

demonstrate the concepts of Telecommunication Engineering. After completing this course, students are able to

explain the techniques of modulation and multiplexing; able to describe the workings of all components of

telecom-

munications devices in the network system

Topics: Introduction to telecommunication networks, Amplitude Modulation, frequency modulation, Telephony Sys-

tems, PCM and TDM, Digital Modulation, Line Coding, Digital Filters FIR

Prerequisite: Telecommunications Network

Textbook:

Telecommunications Engineering Teaching Modules Laboratory of Telecommunications.

1.

S. Haykin, Communication Systems, 5

2.

th Edition, John Wiley & Sons, Inc., 2008.

R.L. Freeman, Telecommunication Systems Engineering, 4

3.

th Edition, John Wiley & Sons, Inc., 2004.

ENCE607035

HUMAN COMPUTER INTERACTION

2 CREDITS

Learning Outcomes: In this course, students learn and apply HCI theory and analytical approach in producing a pro-

totype of human and computer interaction that is high quality, effective, and efficient. After following this course,

the student will be able to design and analyse an interface of computer-based systems.

Topics: factors in HCI; input and output devices; interaction; interaction design; HCI in software process; design

rules; implementation support; evaluation techniques; universal design

Prerequisite: none

Textbook:

A.J. Dix, J.E. Finlay, G.D. Abowd and Beale, r. Human-Computer Interaction, Third Edition, Prentice Hall,

1.

USA, 2003.

B. Shneiderman and Plaisant, C. Designing The User Interface: Strategies for Effective Human Interaction,

2.

Fifth Edition, Pearson Addison-Weasley, 2010.

ENCE608036

BACHELOR THESIS

3 CREDITS

Learning Outcomes: In this special course, students will learn to examine and engage in a research team. After

following this course, students will be able to design systems, components, and processes in the field of embedded

systems or computer networks within the framework of research. Students will be able to carry out the planned

research, be able to analyze the results of the study, able to convey the results of the research in thesis defense.

Topics: Design and implementation of experimental research; Data analysis; Conclusion

Prerequisite: Seminar

Textbook:

-

ENCE608037

PROJECT MANAGEMENT IN IT

3 CREDITS

Learning Outcomes: In this subject, students will discuss the managerial principle in IT projects. After following

this course, students are expected to be able to apply project management, including team management, schedul-

ing, project management, information management, and design of the project plan

Topics: Project management principles; Risk, safety, dependability and fault tolerance; IT Project Collaboration

strategies; Relevant tools, standards and/or engineering constraints

25

S1 TEKNIK KOMPUTER

Prerequisite: Software Engineering

Textbook:

K. Schwalbe, Information Technology Project Management, 7th Edition, Course Technology, 2013.

1.

W. S Humphrey, Introduction to the Team Software Process, Addison Wesley, 2000.

2.

ENCE608036

MULTIMEDIA SIGNAL PROCESSING

3 SKS

Learning Outcomes: In this course students will learn multimedia signal processing technology to support the de-

livery of multimedia information through the Internet. At the end of this course, the student will be able to per-

form analysis of multimedia signals in the network using appropriate techniques. Students will be able to describe

components in multimedia files, multimedia compression techniques, are able to perform analysis and processing

of multimedia data such as image, sound and video. Students will also be able to apply a digital image processing

algorithms to analyze the information in it.

Topic: Introduction to Multimedia network, Coding and compression of Multimedia Signals (images, sounds, video),

improvement the quality of an image, image processing, image Segmentation, representation and description,

object recognition

Prerequisite: Advanced Programming

Textbook:

J.N. Hwang, Multimedia Networking: From Theory to Practice, Cambridge University Press, 2009.

1.

R.C. Gonzalez and R.E. Woods, Digital Image Processing, 3rd Edition, Prentice-Hall, 2007.

2.

R.C. Gonzalez, R.E. Woods,

3.

and S. L. Eddins, Digital Image Processing Using MATLAB, 2nd Edition, Gatesmark

Publishing, 2009.

ELECTIVES OFFERED IN COMPUTER ENGINEERING STUDY PROGRAM:

ENCE607101

VLSI DESIGN

2 SKS

Learning Outcomes: At the end of this course, student will be able to describe the stages of the CMOS design proc-

ess, implement the Scale of Lambda design, evaluate the characteristics and performance of the power transistor

circuit and CMOS digital , as well as the explain the optimization of high level design techniques.

Topics: Mixed-signal circuits; Design parameters issues; Circuit modelling & Simulation methods

Prerequisite: Fund. of Digital System + P

Textbook:

N.E. Weste and k. Eslughian, Principle of CMOS VLSI Design, Addison-Wesley, 1985.

1.

F.M. Berti, Analog Design for CMOS VLSI System, Kluwer Academic Publishers, 2006.

2.

ENCE60 71 0 2

DATA ANALYSIS ENGINEERING

3 CREDITS

Learning Outcomes: In this course the student is directed to implement the data analysis algorithm into the pro-

gram. At the end of this course the student will be able to use mathematical and statistical techniques commonly

used in basic pattern recognition. Students will be able to use some of the techniques common learning algorithm

either supervised or unsupervised in conducting pattern recognition, classification and clustering.

Topics: An introduction to pattern recognition, artificial neural networks, the back-propagation algorithm, unsu-

pervised learning, Principal Component Analysis

Prerequisite: Complex Variables and Vector Analysis, probability & process Stochastic Programming, Advanced

Textbook:

Christopher M. Bishop,

1.

Pattern Recognition and Machine Learning

ENCE608103

BIG DATA TECHNOLOGY

3 CREDITS

Learning Outcomes: In this course students will learn the technology that can be used in utilizing big data to solve

different fields (for example: internet, telecommunications, retail). At the end of this course, students will be able

to manage (collection, preparation, processing, validation, interpretation) and analyze large amounts of structured

and random data.

Topics: Introduction to Data Engineering, Hadoop Architecture, The Hadoop Distributed File system, Setting Up

Hadoop clusters, administering Hadoop, Map Reduce Framework, developing a Database Application, Hive Map Re-

duce, Spark Processing, Big Data Analytic Project

Prerequisite: Data Base System

Textbook:

Jure Leskovec, Anand Rajaraman, Jeff Ullman, Mining of Massive Datasets, Cambridge University Press, 2001

1.

Tom White, Hadoop: The Definition Guide, Third Edition, the ORelly, 2012

2.

ENCE60 81 0 4

REGULATION & PUBLIC POLICY on ICT SECTOR

3 CREDITS

Learning Outcomes: In this course students will be exposed on the basics of drafting process and the development

of regulatory and public policies, especially in the era of vast development in information and communication technology (ICT). At the end of this course, the student will be able to explain the basics of public policy, law and

regulation in telecommunication industry, and Internet governance. This course will also provide examples of ap-

plicable regulation and policy in the field of telecommunications and the Internet, to anticipate the pace of change

and the community dynamics implied by the development of ICT.

Topics: Public administration, public policy significance, range of research methods and policy research, compara-

tive studies, introduction to law and policy regulation in telecommunications, economic analysis of telecommuni-

cations regulation, key issues of telecommunication regulation, understanding internet governance, the internet

governance stakeholder, the internet governance process

Prerequisite: -

Textbook:

Ian Walden, Telecommunications Law and Regulation, Oxford University Press, 2011

1.

Jovan Kurbalija, about Internet governance: an introduction, JIHAD, 2011

2.

Riant Nugroho, Public Policy: the dynamics of policy, Policy Analysis, policy management, Elex Media

3.

Komputindo, 2012