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VE051101	Programming			PENS Politeknik Elektronika Negeri Surabaya
Credit	2	Hours/week	2	
Semester	2			
Course Description	This course teachers advance material from programming such as pointer struct, etc and also some data structures which is used in programming, both static and dynamic and also algorithm in lining and searching process. This course is filled with theory, which will be given programming task and exam.			
Aim of the Course	After completion of the course, the student should be able to understand and implement the following competencies: 1. Solving the problem becomes a algorithm (steps) which will be run by computer, then implements it to a computer programming 2. Solving programming problem which has to be finished with the material that are in further programming such as pointer, struct, file operation, etc 3. Representing the data which is used in programming (both input and output data) with appropriate data structure 4. Knowing and comparing algorithm types in lining and searching process and hopes that the students can decide the used algorithm in programming problem which is finished .			
Prerequisite				
References	1. Esakov, Jeffrey, Tom Weiss, Data Structures An Advanced Approach Using C, Prentice-Hall, Inc. 1989 2. Hariyanto, Bambang, Struktur Data, Informatika Bandung, Pebruari 2000 3. http://cplus.about.com/library/blctut.htm, C Programming Tutorial 4. Kadir, Abdul, Pemrograman Dasar Turbo C, Andi Offset, Yogyakarta, 1991 5. Loudon, Kyle Mastering Algorithms with C, O'Reilly, 1999 6. Santosa, Insap, Struktur Data Menggunakan Turbo Pascal 6.0, ANDI OFFSET Yogyakarta, Cetakan Kelima, 2000			
Website Link	http://www.ocw.eepis-its.edu/vk051101/			

VE051102	Digital Electronic			PENS Politeknik Elektronika Negeri Surabaya
Credit	2	Hours/week	2	
Semester	1			
Course Description	This course discusses the Theory of Digital system, overview of digital system from combinational circuit to sequential circuit. Basic knowledge about digital to analog conversion or analog to digital conversion, intro to programmable device			
Aim of the Course	After completion of the course, the student should be able to understand and implement the following competencies: 1. Logical Function: Find the logical function and using boolean and K-Map method for simplification. 2. Designing circuit: design procedure of combinational circuit, and sequential circuit . 3. ADC - DAC: principes of conversion between analog and digital signal and vice versa. 4. Intro to Programmable device: Classification and function of programmable device.			
Prerequisite				
References	1. Balabanian Norman, Carlson Bradley, *Digital Logic Design Principles*, John Wiley & Sons, Inc, USA, 2001. 2. Kleitz William, *Digital Electronics: A Practical Approach*, Prentice-Hall Inc., New Jersey, 1987 3. Mano M. Morris, *Digital Design 3rd Edition*. Prentice-Hall Inc., Los Angeles, 2002. 4. Mano M. Moris, R. Kime Charles, *Logic and Computer Design Fundamentals*, Prentice-Hall Inc., Los Angeles, 1997			
Website Link	http://www.ocw.eepis-its.edu/ve051102/			

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VE051103	Signal Processing			PENS Politeknik Elektronika Negeri Surabaya
Credit	2	Hours/week	2	
Semester	1			
Course Description	Signal Processing learn about digital signal processing, convertion analog to digital signal, (conversely), concept of aliansing, representation of time-domain & frequency domain, convolution – correlation, Laplace transform, Z – Transform, and digital filter.			
Aim of the Course	After completion of the course, the student should be able to understand and implement the following competencies: 1. Introduction : Signal system, signal processing, signal classification, concept of frequency in continuou and descrete time signal, convertion analog to digital signal, and conversely. 2. Descrete- Time Signal and system : descrete time system, analysis of invariant system linear time-descrete time, correlation of descrete-time signal. 3. Z-transform and its application for LTI system analysis : Z - Transform, Invers Z transform, analysis of time invariant system-linear time in Z domain. 4. Analysis of frequency signal of system : analysis for continuou-time signal, frequency analysis of descrete time signal, Forier transform for descrete-time signal, characteristic of frequency-domain of invariant system-linear time, and its application. 5. A Digital Filter : concept of filter, FIR Digital filter, IIR Digital filter, and their applications.			
Prerequisite	Mathematics			
References	1. Mohammad Nuh, Titon Dutono, "*Dasar-Dasar Pengolahan Sinyal*", Politeknik Elektronika Negeri Surabaya, 2000 2. Alan Oppenheim, Alan S. Willsky, "*Sinyal & Sistem*", alih bahasa oleh Puspawati dan Agus Santoso, Erlanga, Jakarta, 1997. 3. John G. Proakis, Dimitris G. Manolakis, *"Digital Signal Processing"*, Prentice Hall, Inc. USA 1995 4. Gordon E. Carlson , "*Signal and Linear System Analysis, A Matlab Tutorial",* 2nd Edition, USA 2000 5. Edward W. Kamen, Bonnie S. Henk, "*Fundamentals of Signals and Systems Using Matlab*", Prentice Hall, USA 1997.			
Website Link	http://www.ocw.eepis-its.edu/ve051103/			

VE051104	Electronic Circuits			PENS Politeknik Elektronika Negeri Surabaya
Kredit	2	Hours/week	3	
Semester	2			
Silabus ringkas	Mata kuliah ini meninjau serta membahas kembali mengenai analisa dan desain rangkaian-rangkaian analog yang terdiri dari komponen-komponen pasif, komponen aktif baik dua lapis sampai dengan tiga lapis serta rangkaian analog terintegrasi. Pembahasan meliputi: rangkaian power supply, rangkaian switching BJT dan FET, rangkaian penguat sinyal kecil dan sinyal besar, rangkaian pembangkit sinyal (oscillator), serta aplikasi rangkaian op-amp.			
Tujuan Instruksional Umum	After completion of the course, the student should be able to understand and implement the following competencies: 1. Power supply : basic power supply circuit, switching, serta penguat arus. 2. Rangkaian switching: dengan menggunakan BJT, FET dan MOSFET, dll. 3. Rangkaian penguat: baik penguat sinyal kecil, besar, aplikasi rangkaian SCR, TRIAC, UJT, serta rangkaian dengan daya besar. 4. Rangkaian pembangkit sinyal: oscillator dengan komponen diskrit, oscillator crystall, IC555, dll. 5. Aplikasi rangkaian op-amp: konsep umpan-balik, buffer, adder, subtractor, comparator, amplifier, filter, dll.			
Prasyarat	-			
References	1. Thomas L. Floyd, "Electronic Devices", Macmillan, New York, 1993 2. Malvino, "Electronic Principles", McGrow Hill, New Delhi, 1993 3. Millman Jacob, Grabel Arvin, "Microelectronics", McGraw Hill, New York, 1993Goodwin, G. C., S. F. Graebe, and M. E. Salgado (2001): Control System Design. Prentice-Hall, Upper Saddle River, N.J. 4. Robert Boylestad, Louis Nashelsky, "Electronic Device and Circuit Theory", Prentice Hall, New Delhi, 1994 5. Gayawad, "Operasional- Amplifier Circuit and Apllication", McGrow Hill, New Delhi, 1990			
Website Link	http://www.ocw.eepis-its.edu/ve051104/			

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VE051105	Microcontroller			PENS Politeknik Elektronika Negeri Surabaya
Credit	2	Hours/week	2	
Semester	1			
Course Description	This course discusses the Introduction to Microcontroller Architecture, Basic Hardware foundation,Learning Instruction set, Using timer and counter in microcontroller, Using interrupt , Using serial interfacing , Multi state system and function sequences			
Aim of the Course	After completion of the course, the student should be able to understand and implement the following competencies: 1. Introduction to Microcontroller Architecture: Microcontroller vs Microprocessor, Havard and van neuman architecture, Central Processing unit, Busses, Description pin function , Description port function , Memory unit, Special function register in microcontroller 2. Basic Hardware Foundation: Oscillator Hardware, how to connect crystal to microcontroller, Oscillator frecuency and machine cycle, stability issues, improving stability of crystal oscillator, reset hardware,serial communication, Timer unit 3. Learning Instruction set: Addressing mode, immediate addressing mode, register addressing mode, direct addressing mode, indirect addressing mode, external data move, push and pop, data exchange, Logical operation, arithmetic operation, Jump and call and example program 4. Using timer and counter in microcontroller: timer vs counter, timer 13 bit in microcontroller, timer 16 bit in microcontroller, timer 8 bit auto reload in microcontroller, case studies: traffic light controller 5. Using interrupt : interrupt mode in microcontroller 6. Using serial interfacing: Serial mode in microcontroller			
Prerequisite	Digital electronic, Microprocessor and Interfacing, Program Language			
References	1. Myke Predko, Programming and customizing, 8051 microcontroller, mcgraw hill, 1999. 2. James W.stewart and Kai X. Miao. The 8051 Microcontroller, PrenticeHall, 1999 3. Kenneth J. Ayala The 8051 Microcontroller Architecture Programming and Applications,			
Website Link	http://www.ocw.eepis-its.edu/ve051105			

VE051106	Sensor and Actuator			PENS Politeknik Elektronika Negeri Surabaya
Credit	2	Hours/week	2	
Semester	1			
Course Description	This course discusses the kind of sensors and actuators technology, how to use and apply the sensors and actuators included signal conditioning of sensors and transducers			
Aim of the Course	After completion of the course, the student should be able to understand and implement the following competencies: 1. Resistive Sensors 2. Capacitive Sensors: 3. Inductive and Magnetic Sensors 4. Optic Sensors 5. Mechanic Actuators 6. Electric Actuators 7. Power Interfaces			
Prerequisite	Electronic Circuits, Digital Electronics, Microprocessor & Interfaces			
References	[1] _____, *Sensors and Actuators*, www.elseiver.com/locate/sensors [2] Petruzella, *Industrial Electronics*, Mc Graw Hill, Singapore, 1996 [3] Paul C Krause & Oleg Wasynczuk, *Electromechanical Motion Device*, Mc Graw Hill, Singapore, 1989. [4] Colin D, Simson, *Industrial Electronics*, Prentice Hall International Editioans, New Jersey, 1996. [5] John Web, *Industrial Control Electronics*, Merill Publishing Company, New York, 1992. [6] Mohan, Underland, Robbins, *Power Electronics*, John Wiley & Son Inc, Canada, 1995.			
Website Link	http://www.ocw.eepis-its.edu/VE051106			

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VE051107	Mikroprocessor & Interfacing			PENS Politeknik Elektronika Negeri Surabaya
Credit	2	Hours/week	2	
Semester	1			
Course Description	Microcontroller and interface 2 Explain about interface tecnique with external device of Z80 minimum system. Device used for interface such as: CTC, stepper motor,DC motor, keyboard, serial interface, ADC-DAC. This course also explain about real-time and multitasking system at FZRTM.			
Aim of the Course	After completion of the course, the student should be able to understand and implement the following competencies: 1. Explaning of page zero at microprocessor Z80 2. Use interface device 3. Explaning procedure from real time system 4. Explaining procedure from multitasking system			
Prerequisite	1. Electronic circuit 2. Digital electronic 3. Programming language			
References	1. Mikroprosesor dan Interface I, Endra Pitowarno-Tsutomu Matsumoto, PENS-ITS 2. Bahasa Assembly, Son Kuswandi, PENS-ITS. 3. The Z80 Microprocessor-Hardware, Software, Programming and Interface, Barry B. Brey, Prentice-Hall 4. Microcomputer and Microprocessor The 8080, 8085, and Z80 Programming, Interfacing, and Troubleshooting, John Uffenbeck, Prentice-Hall			
Website Link	http://www.ocw.eepis-its.edu/ve045103 /			

VE051108	Automatic Control			PENS Politeknik Elektronika Negeri Surabaya
Credit	2	Hours/week	2	
Semester	1			
Course Description	Kontrol automatic aplikasinya sangatlah beragam, mulai dari perancangan piranti control berpresisi tinggi, hingga peralatan berat atau system raksasa yang ada pada indstri proses atau rancang bangun Karena iu seluruh mahasiswa dalam bidang rekayasa, khusunya bidang mesin, listrik, elektronika dan komunikasi membutuhkan pengetahuan tersebut dengan diberikan dasar control automatic, baik analisis maupun perancangannya.			
Aim of the Course	Setelah menyelesaikan materi ini, mahasiswa seharusnya dapat mengerti dan mengimplementasikan kompetensi berikut ini : 1. Pendahuluan : Pengaturan Analog dan Digital, Sistem Kontinyu dan Sistem Sekuensial, Open Loop dan Close Loop 2. Kontrol Sekuensial : Analogi Sekuensial, Dasar Elemen Kontrol Sekuensial, Rangkaian Sekuensial 3. Pemodelan Sistem : Sistematika Pemodelan, Pemodelan Rangkaian Listrik, Pemodelan Mekanik, Pemodelan ElektroMekanik, Pemodelan Motor DC 4. Transformasi Laplace dan Fungsi Alih : Tranformasi Laplace, Inverse Laplace, Fungsi Alih Pemodelan Sistem dengan Laplace 5. Penyajian Sistem dan Komponen Dasar Sistem Kontrol : Blok Diagram, Penyederhanaan Blok Diagram, 6. Analisa Tanggapan Peralihan : Teknik menganalisa Tanggapan Peralihan, Analisa Sistem Orde 1, Analisa Sistem Orde 2			
Prerequisite	Rangkaian Elektronika, Elektronika Digital			
References	1. Åström, K. J. and B. Wittenmark (1997): Computer Controlled Systems, 3rd edition. Prentice Hall, Upper Saddle River, N.J. 2. Årzén, K.-E. (2001): Real-Time Control Systems. Department of Automatic Control, Lund Institute of Technology, Lund, Sweden. 3. Franklin, G. F., J. D. Powell, and M. L. Workman (1998): Digital Control of Dynamic Systems, 3rd edition. Prentice Hall, Upper Saddle River, N.J. 4. Goodwin, G. C., S. F. Graebe, and M. E. Salgado (2001): Control System Design. Prentice-Hall, Upper Saddle River, N.J.			
Website Link	http://www.ocw.eepis-its.edu/ve033105/			

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VE051109	Computer Network			PENS Politeknik Elektronika Negeri Surabaya
Credit	2	Hours/week	2	
Semester	1			
Course Description	This course teach about sets of equipment connecting with computer so that can connect with another computer like: ethernet, serial port, paralel port, bluetoot and wi-fi, as well can plan and implementation with socket programming at TCP and UDP protocol for dayly activity or industrial and electronic necessity.			
Aim of the Course	After completion of the course, the student should be able to understand and implement the following competencies: 1. introduction : basic of Windows OS and Linux, data communication 2. concept of networking : OSI Model, Topologi, architecture, Media 3. TCP/IP and Addressing : Network Layer, Internet layer, Transport layer, application layer, IPv4 addressing, Subnetting 4. Networking equipment and cablling: Switch, Hub, Router, Straight Through, Cross Over 5. Routing : Static Routing and NAT. 6. Networking communication with TCP : Chatting, Transfer File 7. Networking communication with UDP : FTP, DNS			
Prerequisite	Programming			
References	1. Jaringan Komputer, Iwan Syarif, PENS-ITS, 2003 2. Network Programming with Windows Socket, Pretince Hall 3. TCP/IP, ElexMedia,			
Website Link	http://www.ocw.eepis-its.edu/ve045108/			

VE051110	Practice Of Microprocessor & Interfacing			PENS Politeknik Elektronika Negeri Surabaya
Credit	1	Hours/week	3	
Semester	1			
Course Description	Microprocessor and interface talk about FZ80CPU architecture FZ80 microcomputer, understanding of Singletasking and FZRTM operating system base on Multitasking, Z80 Assembly Language, Close Loop Control base simulation, analyze of procedure microprocessor system (Bus observation CPU TMPZ84C00, Reset system observation, NMI observation, Maskable Interupt observation, Phenomena of Stack Pointer observation, analyze Running Program of nested), Eprom Programming I, II and III			
Aim of the Course	After completion of the course, the student should be able to understand and implement the following competencies: 1).FZ80CPU architecture Microcomputer FZ80 for practice of microprocessor and interface , 2). Use operating system of FZRTM base on multitasking at FZ80 microcomputer 3). Close Loop Control base simulation(1and 2), 4). Close Loop Control base simulation (3), 5). Close Loop Control base application simulation, 6). analyze of procedure microprocessor system (1), 7). analyze of procedure microprocessor system (2) 8). observation of reset system at CPU TMPZ84C00, 9). observation NMI system (Non Maskable Interupt) at CPU TMPZ84C00, 10). observation MI system (Maskable Interupt) at CPU TMPZ84C00,. 11). observation Phenomenon of Stack Pointer CPU TMPZ84C00, 12). analysis Running Program of nested, 13). Design process of program till burning to EPROM for circuit system base on microprocessor Z80, 14). Trial data process at EPROM di rangkaian minimum system Z80 circuit, 15). Design, EPROM programming, simulation and analysis case of (Microprocessor Controlled Vehicle) Road Runner base on microprocessor Z80.			
Prerequisite	Electronic circuit , Digital electronic			
References	1. Endra Pitowarno (1998) : Diktat Kuliah Sistem Mikroprosesor dan Teknik Antarmuka 1, PENS, Surabaya. 2. Endra Pitowarno (1998) : Buku Praktikum Sistem Mikroprosesor dan Teknik Antarmuka 1, Politeknik Elektronika Negeri Surabaya, Surabaya 3. Lance A. Leventhal (1979), Z80 Assembly Language Subroutines 4. www.zilog.com (1988) CPU Technical Manual, Zilog, Inc. 5. www.zilog.com (1989) Z80 Application Note Book, Zilog, Inc.			
Website Link	http://www.ocw.eepis-its.edu/ve034109/			

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VE051110	Practice of Signal Processing			PENS Politeknik Elektronika Negeri Surabaya
Kredit	1	Jam/Minggu	3	
Semester	1			
Deskripsi	Praktikum Pengolahan Sinyal berisi tentang pengolahan sinyal digital meliputi konversi analog ke digital dan sebaliknya, konsep pencuplikan dan aliasing, representasi domain-waktu dan domain-frekuensi, filter digital, dan audio efek digital. Aplikasi pada praktikum ini diimplementasikan pada hardware dengan modul DSP Starter Kit TMS320C5402 dengan software Code Composer Studio 2 dalam bahasa-C dan dibantu dengan software Matlab.			
Tujuan	Setelah mengikuti perkuliahan, mahasiswa dapat mengerti dan menerapkan kompetensi berikut: 1. Code Composer Studio Basic: Software yang digunakan untuk menerapkan permasalahan-permasalahan pemrosesan sinyal digital dalam praktikum dengan board DSP Starter Kit TMS320VC5402. 2. Codec dan Sampling: Cara kerja ADC, Pengaruh pencuplikan, Fenomena Aliasing, Filter Anti-Aliasing. 3. ProbePoint: Mengamati sinyal pada domain waktu dan domain frekuensi, Mengamati bahwa sinyal sinusoida merupakan komponen dasar penyusun segala macam sinyal. 4. Generator Sinyal: Cara kerja DAC, Teknik pembangkitan sinyal dasar meliputi sinyal persegi, sinyal gigi-gergaji, sinyal segitiga, dan sinyal sinusoida, Membangkitkan sinyal dengan frekuensi dan amplitudo yang dikehendaki, Filter Rekonstruksi. 5. Real-Time Filter FIR: Perbedaan Filter Analog dan Filter Digital, Algoritma program untuk filter FIR, Menggunakan MATLAB untuk mencari koefesien filter, Konsep Real-Time, Pengaruh penulisan program pada prosesor tipe *fixed-point* dan *floating-point*. 6. Preset Equalizer Dengan Filter IIR: Konsep Equalizer, Aplikasi filter digital IIR sebagai preset equalizer. 7. Audio Efek Digital: Aplikasi DSP pada efek echo.			
Persyaratan	1. Dasar Pemrograman 2. Matematika 3. Rangkaian Digital			
Pustaka Acuan	1. http://www.ti.com atau software-help 2. Edward W. Kamen, Bonnie S. Henk, "*Fundamentals of Signals and Systems Using Matlab*", Prentice Hall, USA 1997. 3. Markus Robijanto Kusuma, *"Belajar Turbo C Dengan Cepat Dan Mudah"*, PT Elex Media Komputindo, 1991			
Website Link	http://www.ocw.eepis-its.edu/ve056110/			

VE051111	Practice of Computer Network			PENS Politeknik Elektronika Negeri Surabaya
Credit	1	Hours/week	3	
Semester	1			
Course Description	Kuliah ini mengajarakan tentang perangkat-perangkat yang bisa terhubung dengan komputer agar bisa berhubungan dengan komputer lainnya seperti : ethernet, serial port, paralel port, bluetoot dan wi-fi, serta bisa merancang dan mengimplementasikannya dengan pemrograman jaringan soket pada protokol TCP dan UDP un sehari-hari atau keperluan industri dan elektronika.			
Aim of the Course	Setelah menyelesaikan materi ini, mahasiswa seharusnya dapat mengerti dan mengimplementasikan kompetensi berikut ini : 1. Instalasi Perangkat Jaringan Kabel dan Pengabelan : Ethernet, RJ-45, StraighThrough, CrossOver 2. Instalasi Perangkat Jaringan Tanpa Kabel : Bluetooth, Irda, Wi-Fi 3. Pengalamatan IPv4 : Subnetting, Satu Network, Beda Network 4. Konfigurasi Static Routing : Tabel Routing, Static Routing di Windows 5. Konfigurasi Network address Translation 6. Konfigurasi Firewall : Windows Firewall, Linux Firwall 7. Pemrograman Soket TCP : Chatting, Chat dan Bots, 8. Pemrograman Soket UDP :			
Prerequisite	Pemrograman			
References	1. Åström, K. J. and B. Wittenmark (1997): Computer Controlled Systems, 3rd edition. Prentice Hall, Upper Saddle River, N.J. 2. Årzén, K.-E. (2001): Real-Time Control Systems. Department of Automatic Control, Lund Institute of Technology, Lund, Sweden. 3. Franklin, G. F., J. D. Powell, and M. L. Workman (1998): Digital Control of Dynamic Systems, 3rd edition. Prentice Hall, Upper Saddle River, N.J. 4. Goodwin, G. C., S. F. Graebe, and M. E. Salgado (2001): Control System Design. Prentice-Hall, Upper Saddle River, N.J.			
Website Link	http://www.ocw.eepis-its.edu/ve035111/			

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VE051111	Practice of Microcontroller			PENS Politeknik Elektronika Negeri Surabaya
Credit	1	Hours/week	3	
Semester	1			
Course Description	This course discusses the Introduction to Programming assembler, build simple program, PPI interfacing, programming timer and counter, Using serial interfacing, Interfacing to LCD, PWM, Implementation multi state system and project			
Aim of the Course	After completion of the course, the student should be able to understand and implement the following competencies: Introduction to Programming assembler: introduction to create simple application with microcontroller using editor, asem51 compiler and downloader, Introduction to addressing mode include Addressing mode, immediate addressing mode, register addressing mode, direct addressing mode, indirect addressing mode, external data move, push and pop, data exchange, Logical operation, arithmetic operation, Jump and call and example program 2. PPI interfacing.: interfacing microcontroller to PPI 8255, case studies: line following robot. 3. Using timer and counter in microcontroller: create delay hardware with microcontroller, case studies: traffic light controller 4. Using serial interfacing: Simple serial communication, advance serial communication using array buffer 5. Interfacing to LCD: initialize and using LCD 6. PWM: PWM software using pooling, PWM software using interrupt, case studies: adjust contrast of LED and adjust speed of DC motor. 7. Multi state system and function sequences: implementing a multi state system, Case studies: Vending machine 8. Project			
Prerequisite	Digital electronic, Microprocessor and Interfacing, Program Language			
References	1. Myke Predko, Programming and customizing, 8051 microcontroller, mcgraw hill, 1999. 2. James W.stewart and Kai X. Miao. The 8051 Microcontroller, PrenticeHall, 1999 3. Kenneth J. Ayala The 8051 Microcontroller Architecture Programming and Applications,			
Website Link	http://www.ocw.eepis-its.edu/ve035111/			

VE051111	Practice of Sensor and Actuator			PENS Politeknik Elektronika Negeri Surabaya
Credit	1	Hours/week	3	
Semester	1			
Course Description	This course discusses the kind of sensors and actuators application.			
Aim of the Course	After completion of the course, the student should be able to understand and implement the following competencies: 1. Sensors 2. Pneumatic, manual control 3. Pneumatic, Controlled by PLC 4. Hydraulic, manual control 5. Hydraulic, Controlled by PLC 6. New FA (Factory Automation) Model, controlled by PLC 7. Sensor and Actuator on application in Lift Control			
Prerequisite	Electronic Circuits , Digital Electronics, Microprocessor & Interfaces			
References	[1] _____, *Sensors and Actuators*, www.elseiver.com/locate/sensors [2] Petruzella, *Industrial Electronics*, Mc Graw Hill, Singapore, 1996 [3] Paul C Krause & Oleg Wasynczuk, *Electromechanical Motion Device*, Mc Graw Hill, Singapore, 1989. [4] Colin D, Simson, *Industrial Electronics*, Prentice Hall International Editioans, New Jersey, 1996. [5] John Web, *Industrial Control Electronics*, Merill Publishing Company, New York, 1992. [6] Mohan, Underland, Robbins, *Power Electronics*, John Wiley & Son Inc, Canada, 1995.			
Website Link	http://www.ocw.eepis-its.edu/ve051110/			

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VE052101	Medical Electronics			PENS Politeknik Elektronika Negeri Surabaya
Kredit	2	Jam/Minggu	2	
Semester	2			
Silabus Matakuliah	Mata kuliah ini memperkenalkan dan mempelajari tentang sistem pengukuran dan instrumentasi medika yang digunakan untuk diagnosa (ECG, EEG, EMG, EOG, respirasi dan blood pressure).			
Tujuan Matakuliah	Setelah mengikuti mata kuliah ini, mahasiswa akan dapat memahami, menganalisa, dan dapat merancang instrumentasi medika, karena memiliki kemampuan sebagai berikut : 1. Pendahuluan & Sistem Instrumentasi Manusia: Arti dan tujuan elektronika medika, Sejarah dan Ruang lingkup elektronika medika, Macam dan bentuk industri instrumentasi medika di Indonesia. Sistem Instrumentasi Manusia dan komponen Pengukuran pada Manusia, Persoalan dalam sistem Pengukuran Manusia. 2. Sistem Fisiologi Manusia: Sistem Sirkulasi darah, Sistem Cardiovascular (Jantung), Sistem Respiratory (Pernapasan), Sistem Pulmanory (Paru-paru), Sistem Ekskresi, Sistem Nervous (Syaraf), dan Sistem Indera. 3. Sumber-sumber Potensial Biolistrik & Elektroda: Pengertian Potensial Biolistrik, Potensial aksi dan Potensial istirahat, Jenis-jenis Elektroda. 4. Transducer, Amplifier & Filter: Transducer pada Sistem Medika, Transducer aktif dan pasif. Jenis Amplifier dan Biomedikal Amplifier. Filter pada instrument medika, Menentukan Orde Filter, dan Perancangan Filter pada Sistem Medika. 5. Electrocardiograph (ECG): Prinsip kerja Jantung dan aktifitas listrik otot jantung, Sinyal ECG, Lead pada ECG, Blok Diagram instrument ECG, Preamplifier dan Common Mode Voltage reduction, Power supply pada ECG. 6. Electroencephalograph (EEG) dan Electromyograph (EMG): Penempatan elektroda EEG dan EMG, Analisa gelombang EEG dan EMG. 7. Respirasi: Menghitung Kapasitas dan Volume Paru-paru, Blok diagram respirometer, Instrument untuk mengukur fungsi paru-paru berdasarkan distribusi dan pertukaran gas. 8. Sphygmanometer: Pengukuran Tekanan darah, Blok diagram sphygmanometer, Transducer dan Teknik pengukuran.			
Prerequisite	Biomedical Physic (VE-AABCxx), Rangkaian Elektronika (VE-AABCxx)			
References	1. Leslie C, Fred J.W, Erich A.P (1996): Biomedical Instrument. and Measurements. Prentice Hall of India, New Delhi. 2. Welkowitz W, S.Deutsch (1976): Biomedical Instrumentation, Theory and Design. Academic Press, New York 3. John D.E, Susan M.B, Joseph D.B (2000): Introduction to Biomedical Engineering. Academic Press, California, USA. 4. Richard A (1991): Principle of Biomedical Instrumentation and Measurement. Macmillan Publishing Company, NY.			
Website Link	http://www.ocw.eepis-its.edu/ve052101/			

VE052102	Intelligent Control			PENS Politeknik Elektronika Negeri Surabaya
Credit	2	Hours/week	2	
Semester	2			
Course Description	Introduction to intelligent control : background, why intelligent control, intelligence and intelligent control, basic of intelligent control, approach to intelligent control; Fuzzy logic control : Intelligent system, Fuzzy sets, structure of Fuzzy logic controller, program example			
Aim of the Course	To provide firm understanding of intelligent control with special emphasize on fuzzy logic controller.			
Prerequisite	Automatic Control			
References	1. Son Kuswadi, Kendali Cerdas, Andi Offset, Yogyakarta, 2007. 2. CJ. Harris, CG Moore, M Brown, "Intelligent Control : Aspect of Fuzzy logic and Neural Nets", World Scientific, Singapore, 1993. 3. J. S.R. Jang, C.T Sun, E. Mizutani, Neuro-Fuzzy and Soft Computing, Prentice Hall, New Jersey, 1997. 4. Jun Yan, M. Ryan, J. Power, Using Fuzzy Logic, Prentice Hall, New York, 1994. 5. Mohammad Jamshidi, N. Vadiee, T.J Ross, Fuzzy Logic and Control, Prentice Hall, New Jersey, 1993.			
Website Link	http://www.ocw.eepis-its.edu/ve051108/			

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VE052103	Embedded System		
Kredit	2	Jam/Minggu	2
Semester	2		

PENS
Politeknik Elektronika Negeri Surabaya

Deskripsi	Sistem embedded merupakan sebuah sistem komputer yang dibenamkan didalam sebuah peralatan, gabungan antara hardware, software dan mungkin mekanik yang bekerja secara re-aktif dan real-time untuk keperluan khusus. Software yang terdapat didalam sebuah sistem embedded sangat spesifik dan apabila tugas yang harus dikerjakan cukup rumit maka diperlukan adanya real-time operating system (RTOS). Mendisain sebuah sistem embedded memerlukan beberapa pertimbangan disain metrik.
Tujuan	Setelah mengikuti perkuliahan, mahasiswa dapat mengerti dan menerapkan kompetensi berikut: 1. Pendahuluan: Definisi Sistem Embeded. Disain Metriks yang harus diperhatikan dalam mendisain Sistem embeded,. Teknologi-Teknologi yang menunjang Sistem Embeded meliputi teknologi prosesor, teknologi IC, dan teknologi desain. 2. Prosesor: Konsep prosesor *custom single-purpose*, prosesor *general-purpose*, dan prosesor *standard single-purpose*. Desain logika. Teknik mendisain prosesor menggunakan FPGA. Teknik meningkatkan performa prosesor. Konsep CISC, RISC, Superscalar, VLIW, dan Multithreading. Konsep Pipeline. Peripheral. 3. Teknologi Memori: Konsep dasar memori. Tipe-tipe memori yang umum. Menyusun Memori. Hirarki Memori Dan Cache. Advanced RAM. 4. Teknik Antarmuka: Dasar Antarmuka. Pengalamatan I/O, Interrupt, dan Direct Memory Access. Perwasitan. Hirarki Bus. Protokol serial, paralel, dan nirkabel. Konsep pemrograman single-task dan multi-task untuk kasus Real-Time Operating System.
Persyaratan	Elektronika Digital (VE051102), Mikrokontroler (VE051105), Pengolahan Sinyal (VE051103) Jaringan Sensor (VE051107), Sensor & Aktuator (VE051106)
Pustaka Acuan	1. Frank Vahid, Tony Givargis, Embedded System Design : A Unified Hardware/Software Introduction, John Wiley & Sons, 2002. 2. Michael J. Pont, Embedded C, Addison-Wesley Professional, 2002 3. Michael J. Pont, Patterns for Time-Triggered Embedded Systems: Building Reliable Applications with the 8051 Family of Microcontrollers, Addison-Wesley Professional, 2001
Website Link	http://www.ocw.eepis-its.edu/ve052103/

VE052104	Sensor Network		
Kredit	2	Jam / Minggu	2
Semester	2		

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Deskripsi Mata Kuliah	Matakuliah ini mengajarkan penerapan sistem terbenam dalam bentuk jaringan sensor. Jaringan sensor merupakan suatu sistem yang terdiri dari elemen-elemen yang masing-masingnya merupakan sistem sensor yang bersifat swatantra dengan kemampuan akuisisi data, komunikasi dan koordinasi yang saling berhubungan dan bekerjasama untuk membaca informasi dari suatu daerah pengukuran yang luas dengan titik-titik pengukuran yang tersebar. Materi yang dipelajari meliputi sistem sensor terbenam, teknik komunikasi agen banyak,kanal banyak dan nirkabel beserta aspek-aspek penunjangnya
Tujuan Mata Kuliah	Setelah menyelesaikan kuliah ini, maka diharapkan mahasiswa dapat mengerti dan memiliki kompetensi untuk : 1. menguasai bagian-bagian dasar jaringan sensor dan mampu mendisain sistem sensor tebenam yang memiliki kemampuan akuisisi data kanal-banyak dan komunikasi agen-banyak 2. mampu mendisain dan menganalisa protokol komunikasi agen-banyak beserta teknik-teknik penunjangnya seperti deteksi, koreksi error, sekuriti data. 3. mampu menerapkan beberapa algoritma komunikasi agen-banyak yang umum digunakan dalam jaringan sensor seperti ALOHA, RTS/CTS dll.
Persyaratan	1. Sensor dan Aktuator 2. Pemroses Embedded 3. Pemrograman 4. Mikrokontroler
Referensi	1. Thomas Haenselmann, "Sensor Networks", University of Mannheim, Denmark, 2006 2. Mohammad Ilyas, Imad Mahgoub, "Handbook of Sensor Networks: Compact Wired and Wireless System ", CRC-Press, 2005 3. Holger Karl, Andreas Willig," Protocols And Architectures for Wireless Sensor Networks ", John Willey & Sons, 2005 4. Feng Zhao, Leonidas Guibas, " Wireless Sensor Networks: An Information Processing Approach ", Morgan Kaufmann, 2004
Website Link	http://www.ocw.eepis-its.edu/ve051107 /

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VE052105	Industrial Electronic			PENS Politeknik Elektronika Negeri Surabaya
Credit	2	Hours/week	2	
Semester	2			
Course Description	Comprehension about motor controll, servo system, phneumatic, Programmable logic controller, standart communication, Industrial application.			
Aim of the Course	After completion of the course, the student should be able to understand and implement the following competencies: 1. Introduction: general study in this course such as: AC and DC motor controller, servo system, pneumatic and hydraulic, PLC, standart communication, plan of industrial application. 2. AC motor Controller : procedure of AC motor, kind and type of rotor, velocity controller method, brake method and configuration of velocity programmable controller. 3. DC motor Controller : procedure of DC motor, kind and type of rotor, velocity controller method, brake method and configuration of velocity programmable controller. 4. Servo system: Potensiometer and encoder, servomotor, mechanics components, syncro and resolver, amplifier and feedback. 5. Pneumatic and hydraulic: pneumatic system, compression system, movementer and it's calculation, valve controller, aplikasi application of pneumatic and hydraulic system 6. Programable Controller : basic concept, different between relay panel and PLC, PLC fasility, basic instruction, spceial function, making of ladder plan 7. Standart communication : RS-232, RS-422, RS-485 and HPIB 8. Industrial application : plan of industrial automation system.			
Prerequisite	1. Microprocessor and interface, digital electronic			
References	1. Petruzella, Industrial Electronic, McGraw Hill, Singapura, 1996 2. Shuller, Mc Namee, Industrial Electronics and Robotics, Mc Graw Hill, United States of America, 1986 3. Dedid CH, elektronika Industri, PEDC, Bandung, 1995 4. Colin D, Simson, Industrial Electronics, Prentice Hall International Editioans, New Jersey, 1996 5. John Web, Industrial Control Electronics, Merill Publishing Company, New York, 1992 6. Mohan, Underland, Robbins, Power Electronics, John Wiley & Son Inc, Canada, 1995			
Website Link	http://www.ocw.eepis-its.edu/ve045104/			

VE052106	VLSI and Logic Design			PENS Politeknik Elektronika Negeri Surabaya
Credit	2	Hours/week	2	
Semester	2			
Course Description	This course discuss about Silicon Semiconductor Technology, VLSI Design Methodologies, Basic CMOS Technology, CMOS logic structures, High-level Digital Design			
Aim of the Course	Upon successful completion of the course, students should be able to understand and implement the following competencies: 1. Silicon Semiconductor Technology: Wafer processing, Oxidation, Epitaxy, Deposition, Ion-Implantation and Diffusion Silicon gate process. 2. VLSI Design Methodologies: VLSI Design Flow, Design analysis, Simulation: Circuit, Timing, Switch–level, Gate–level (or logic), functional by using VHDL 3. Basic CMOS Technology: A Basic n-well and p-well CMOS process, Silicon on Insulator, CMOS Layout Layer and Design Rules (Full–Custom Mask layout Designs), Stick Diagrams, layout editors using VLSI CAD Tool Electric™ and circuit extraction. 4. CMOS Logic Structures: CMOS complementary Logic, BiCMOS logic, Pseudo-nMOS Logic and Dynamic CMOS Logic, CMOS Domino Logic. Design and analysis CMOS Logic using Electric™ 5. High-level Digital Design: Design complex digital system using VHDL and Implementation and Verification of logic system using FPGA/CPLD.			
Prerequisite	Digital Electronics			
References	1. David Harris and Michael Bushnell, "Concept in VLSI design", Harvey Mudd College and Rutgers University. 2. J.Uyemura, "Introduction to VLSI Circuits and Systems", Wiley. 3. Kevin Skahill, "VHDL for Programmable Logic", Addison Wesley. 4. Neil H.E. Weste, David Harris, CMOS VLSI Design: A Circuit and Systems Perspective, Pearson Education, 2005			
Website Link	http://www.ocw.eepis-its.edu/VE052106/			

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VE052107	Image Processing			PENS Politeknik Elektronika Negeri Surabaya
Credit	2	Hours/week	2	
Semester	2			
Course Description	This course discusses the Introduction to how to manipulate or proccess an image to get desired result of image. There are two mayor process will be introduced in this course, image enhancement and image restoration. Also some simple topics such as image transformation and detection.			
Aim of the Course	After completion of the course, the student should be able to understand and implement the following competencies: 1. Introduction: Basic image representation, image format (deep of color), image compression 2. Format Conversion : Basic method used for converting deep of color or format of pixels, thresholding 3. Intensity and contrast compensation: Basic method to compensate ambient lightening to meet desired light condition. 4. Color Compensation : Basic method to compensate impurity of color caused by not proper color lightening (white balancing) 5. Filtering: By using proper filter to minimize undesired some parts of image or noise. 6. Image Feature: Some basic methods to describe the quality or property of an image. 7. Image Operator: Arithmetic operator, logical operation, merging, cropping, transparency, segmentation. 8. Transformation: Domain transformation, geometri transformation (scaling, rotating, shifting), projection.			
Prerequisite	Programming Language, Digital Signal Processing			
References	1. Gonzalez, Rafel C., Woods, Richard C., *"Digital Image Processing"*, Prentice Hall, 2nd edition,2002 2. G.J. Awcock and R.Thomas, *"Applied Image Processing"*, MacGraw-Hill 1996 3. Mark Nixon, Alberto Aguado, *"Feature Extraction & Image Processing"*, Newnes 1st edition,2002			
Website Link	http://www.ocw.eepis-its.edu/ve052107/			

VE052109	Practice Of Embedded System			PENS Politeknik Elektronika Negeri Surabaya
Credit	1	Hours/week	3	
Semester	2			
Course Description	This practice talk about how to making a digital system with fast plan better than of previous course like logic circuit with simple prototype as base from giant system use device base on CPLD technology, FPGA and embedded microcontroller AVR.			
Aim of the Course	After completion of the course, the student should be able to understand and implement the following competencies: 1. Making of processor system *custom single-purpose* use FPGA device. 2. Hardware/Software Co-Design use FPGA device with hidden processor system 3. Making of standart processor system single-purpose use microcontroller with AVR type.			
Prerequisite	1. Digital electronic , electronic circuit, microcontroller, microprocessor and intreface, signal processing			
References	1. Frank Vahid, Tony Givargis, Embedded System Design : A Unified Hardware/Software Introduction, John Wiley & Sons, 2002. 2. Hary Oktavianto, Akhmad Hendriawan, Modul Praktikum Embedded Sistem, PENS-ITS, 2003			
Website Link	http://www.ocw.eepis-its.edu/ve052109/			

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VE052109	Practice of VLSI and Logic Design			PENS Politeknik Elektronika Negeri Surabaya
Credit	1	Hours/week	3	
Semester	2			
Course Description	The course provides laboratory experience for student with A state-of-the-art Computer-Aided Design for VLSI Circuit Design using Electric™ for Designing and verification CMOS Logic in Switch-Level, and Xilinx ISE for Designing, Verification, Debugging A Complex Digital System which implemented in The Xilinx FPGA/CPLD device.			
Aim of the Course	Upon successful completion of the Laboratory Project, students should be able to understand and implement the following competencies: • Electric™ based Practices 1. CMOS Logic Gate (Schematic Entry) : Draw schematic for CMOS Inverting Gates: Inverter, NAND, NOR and CMOS Non-Inverting Gates: AND, OR. Perform Simulation in switch-level. 2. CMOS Logic Function (Schematic Entry): Draw schematic for useful Digital Circuits: Tristate-Inverter, Multiplex, D-Latch and Other Logic Function. Perform Simulation in switch-level 3. CMOS Logic Gate (Layout Entry) : Draw Layout for CMOS Inverting Gates: Inverter, NAND, NOR and CMOS Non-Inverting Gates: AND, OR. Perform design rule check and Simulate that they work correctly. 4. CMOS Logic Function (Layout Entry): Draw Layout for useful Digital Circuits: Tristate-Inverter, Multiplex, D-Latch and Other Logic Function. Perform design rule check and Simulate that they work correctly • Xilinx ISE based Practices 1. Logic Function: Developing VHDL model of useful Logic Function in Structural and RTL Model 2. Hierarchical Design : Hierarchical Design Approach of Logic System in VHDL model 3. Moore and Mealy FSM: Developing VHDL model of FSM 4. Vending Machine: Design and Implementation of Vending Machine			
Prerequisite	Digital Electronics			
References	1. David Harris and Michael Bushnell, "Concept in VLSI design", Harvey Mudd College and Rutgers University. 2. J.Uyemura, "Introduction to VLSI Circuits and Systems", Wiley. 3. Kevin Skahill, "VHDL for Programmable Logic", Addison Wesley. 4. Neil H.E. Weste, David Harris, CMOS VLSI Design: A Circuit and Systems Perspective, Pearson Education, 2005			
Website Link	http://www.ocw.eepis-its.edu/VK052109/			

VE052110	Practice of Intelligent Control			PENS Politeknik Elektronika Negeri Surabaya
Credit	1	Jam / Minggu	3	
Semester	2			
Course Description	- PID control of DC motor speed control - PID control of line-follower robot - Fuzzy control of DC motor - Fuzzy control of line-folower robot			
Aim of the Course	To acquire practical ability of PID-control for real system and compared its performance with fuzzy control method			
Prerequisite	Automatic Control			
References (Note: min. 3 ref.)	1. Son Kuswadi, Kendali Cerdas, Andi Offset, Yogyakarta, 2007. 2. CJ. Harris, CG Moore, M Brown, "Intelligent Control : Aspect of Fuzzy logic and Neural Nets", World Scientific, Singapore, 1993. 3. J. S.R. Jang, C.T Sun, E. Mizutani, Neuro-Fuzzy and Soft Computing, Prentice Hall, New Jersey, 1997. 4. Jun Yan, M. Ryan, J. Power, Using Fuzzy Logic, Prentice Hall, New York, 1994. 5. Mohammad Jamshidi, N. Vadiee, T.J Ross, Fuzzy Logic and Control, Prentice Hall, New Jersey, 1993.			
Website Link	http://www.ocw.eepis-its.edu/ve05111/			

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VE052110	Practice of Medical Electronics			PENS Politeknik Elektronika Negeri Surabaya
Credit	1	Hours/week	3	
Semester	2			
Course Description	This course discusses science of biomedical engineering. Content of human being of anatomy and structure, bio signal and how to get it, work principle of heart, lung, brain, bone, and so fort.			
Aim of the practice	After completion of the practice, the student should be able to understand and implement the following competencies: 1. Respiratory circle : Respiratory rate, relative depths of breathing, regulation of ventilations 2. Galvanic Skin Response and Polygraph 3. Electro Oculo Gram (EOG): Eye movement, saccades dan fixations during reading 4. Reaction time: Reaction time and learning with fixed interval and pseudo-random presentations trials 5. Biofeedback : Relaxation and arousal 6. Blood pressure : Indirect BP measurement, ventricular systole and diastole, Korotkoff sounds, Mean Arterial pressure. 7. Heart sound : Cardiac valve functions, electrical and mechanical events. 8. Signal processing and image proceesing: processing of signal and image what ready to used for it.			
Prerequisite	Electronics Circuits, Medical Electronics			
References	1. -----, Biopac Student Lab, manual revision PL3.6.7ML3.0.7/061903, Biopac Systems, Inc, 42 Aero Camino, CA 2. Webster John G, Medical Instrumentation Application and Design, Houghton Mislin Co. Boston, 1978. 3. Northrop Robert B, Non Invasive Instrumentation and Measurement in Medical Diagnosis, CRC Press, 2002. 4. Joseph J. Carr, John M. Brown, Introduction to Biomedical Equipment Technology, Prentice Hall,New Delhi, 2001 5. Leslie, Cromwell, Biomedical Instrumentation and Measurement, Prentice Hall, India, 1996			
Website Link	1. http://www.ocw.eepis-its.edu/ve052110/			

VE052110	Practice of Image Processing			PENS Politeknik Elektronika Negeri Surabaya
Credit	1	Hours/week	3	
Semester	2			
Course Description	This course practices the Introduction to how to manipulate or proccess an image to get desired result of image. There are two mayor process will be introduced in this course, image enhancement and image restoration. Also some simple topics such as image transformation and detection.			
Aim of the Course	After completion of the course, the student should be able to understand and implement the following competencies: 1. Introduction : Basic method to read image from file and how to display it in some ways 2. Format Conversion : Basic method used for converting deep of color or format of pixels, thresholding 3. Intensity and contrast compensation: Basic method to compensate ambient lightening to meet desired light condition. 4. Color Compensation : Basic method to compensate impurity of color caused by not proper color lightening (white balancing) 5. Filtering: By using proper filter to minimize undesired some parts of image or noise. 6. Image Feature: Some basic methods to describe the quality or property of image. 7. Image Operator: Arithmetic operator, logical operation, merging, cropping, transparency, segmentation. 8. Transformation: Domain transformation, geometri transformation (scaling, rotating, shifting), projection.			
Prerequisite	1. Mathematics 2. Programming Language 3. Digital Signal Processing			
References	1. Gonzalez, Rafel C., Woods, Richard C., *"Digital Image Processing"*, Prentice Hall, 2nd edition,2002 2. G.J. Awcock and R.Thomas, *"Applied Image Processing"*, MacGraw-Hill 1996 3. Mark Nixon, Alberto Aguado, *"Feature Extraction & Image Processing"*, Newnes 1st edition,2002			
Website Link	http://www.ocw.eepis-its.edu/ve052110/			

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VE052111	Practice of Sensor Network			PENS Politeknik Elektronika Negeri Surabaya
Kredit	1	Jam / Minggu	3	
Semester	2			
Deskripsi Mata Kuliah	Praktikum ini mengajarkan kemampuan *hands-on* bagi mahasiswa dalam menerapkan jaringan sensor. Jaringan sensor merupakan suatu sistem yang terdiri dari elemen-elemen yang masing-masingnya merupakan sistem sensor yang bersifat swatantra dengan kemampuan akuisisi data, komunikasi dan koordinasi yang saling berhubungan dan bekerjasama untuk membaca informasi dari suatu daerah pengukuran yang luas dengan titik-titik pengukuran yang tersebar. Materi yang dipraktekkan meliputi teknik dasar konstruksi *node* dan bagian-bagiannya, sistem akuisisi data sensor-banyak pada sistem terbenam, pemrograman node, teknik komunikasi agen banyak, kanal banyak dan nirkabel beserta aspek-aspek penunjangnya			
Tujuan Mata Kuliah	Setelah mengikuti keseluruhan praktikum ini diharapkan mahasiswa memiliki kompetensi untuk : 1. mendisain node pada jaringan sensor yang terdiri dari prosesor, tranceiver, rangkaian akuisisi data dan sensor-sensor sampai dengan tahap pengujian fungsi-fungsi dasar dari *medium access control* (MAC) seperti komunikasi RS-485 frekuensi radio (RF) dan ethernet terbenam 2. memprogram jaringan node untuk kumunikasi dalam berbagai mode baik titik ke titik, agen-banuak maupun kanal-banyak. 3. menerapkan teknik-teknik penunjang komunikasi seperti deteksi dan oreksi error dan sekuriti jaringan sensor. 4. menerapkan beberapa algoritma komunikasi *multiagent* yang umum digunakan dalam jaringan sensor seperti ALOHA dan RTS/CTS.			
Persyaratan	Prak. Sensor dan Aktuator, Prak. Pemroses Embedded, Prak. Mikrokontroler			
Referensi	1. Thomas Haenselmann, "Sensor Networks", University of Mannheim, Denmark, 2006 2. Mohammad Ilyas, Imad Mahgoub, "Handbook of Sensor Networks: Compact Wired and Wireless System ", CRC-Press, 2005 3. Holger Karl, Andreas Willig," Protocols And Architectures for Wireless Sensor Networks ", John Willey & Sons, 2005 4. Feng Zhao, Leonidas Guibas, " Wireless Sensor Networks: An Information Processing Approach ", Morgan Kaufmann, 2004			
Website Link	http://www.ocw.eepis-its.edu/ve051111 /			

VE052111	Practice of Industrial Electronic			PENS Politeknik Elektronika Negeri Surabaya
Credit	1	Hours/week	3	
Semester	2			
Course Description	Pada praktikum ini diajarkan tentang cara mengontrol motor, penggunakan divais kontroler seperti PLC serta cara kerja dari inverter yang banyak digunakan di industri.			
Aim of the Course	Sesudah mengikuti praktikum ini, diharapkan mahasiswa mengerti dan mampu mengaplikasikan materi berikut: 1. Introduction: Penjelasan silabus dan aturan praktikum. 2. Kontrol kecepatan motor : Kontrol motor DC, Kontrol Motor Stepper. 3. Inveter : Phasa Tunggal, Tiga Phasa. 4. PLC (1) : Pemrograman PLC Omron. 5. PLC (2) : Pemrograman PLC Siemen. 6. Sistem Pneumatik : Sistem Pneumatik. 7. Sistem Hidrolis : Sistem Hidrolis 8. Sistem kontrol Industri : Sistem kontrol P, PI, PD dan PID.			
Prerequisite	Mikroprosesor dan Antar Muka , Elektronika Industri , Elektronika Digital			
References	1. Petruzella, Industrial Electronic, McGraw Hill, Singapura, 1996 2. Shuller, Mc Namee, Industrial Electronics and Robotics, Mc Graw Hill, United States of America, 1986 3. Dedid CH, elektronika Industri, PEDC, Bandung, 1995 4. Colin D, Simson, Industrial Electronics, Prentice Hall International Editioans, New Jersey, 1996 5. John Web, Industrial Control Electronics, Merill Publishing Company, New York, 1992 6. Mohan, Underland, Robbins, Power Electronics, John Wiley & Son Inc, Canada, 1995			
Website Link	http://www.ocw.eepis-its.edu/ve0035112/			

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VE053201	International Standart and Safety			PENS Politeknik Elektronika Negeri Surabaya
Credit	2	Hours/week	2	
Semester	3			
Course Description	Mata kuliah ini menjelaskan tentang konsep keselamatan kerja dalam menunjang pelaksanaan total quality management serta sistem standarisasi yang berlaku secara internasional (ISO) dan nasional (SNI) untuk mencapai produk yang berkualitas			
Aim of the Course	Untuk mencapai tujuan tersebut, maka diharapkan mahasiswa dapat memiliki kompetensi dalam hal : 1. Manajemen keselamatan kerja : Fungsi Manajemen, Keselamatan Kerja, Manajemen K3 dan Langkah Pencegahan 2. Ketentuan Hukum Keselamatan Dan Kesehatan Kerja : UNDANG-UNDANG REPUBLIK INDONESIA NOMOR 1 TAHUN 1970 TENTANG KESELAMATAN KERJA 3. Ergonomi : Fokus Perhatian, Resiko karena Kesalahan Ergonomi, Mengevaluasi Pekerjaan, Pengendalian Ergonomi 4. Faktor Peralatan dan Perlengkapan : Pertimbangan Keselamatan dan kesehatan Kerja, Mengenal Sumber-sumber Bahaya dalam Industri, Penerangan yang Cukup, Pengendalian Kebisingan dan Getaran, Pengendali Suhu, Sarana 5. Peralatan Perlindungan Pribadi : 6. Kebisingan : efek kebisingan, mengukur tingkat kebisingan dan cara pengendalian. 7. Kebijakan Keselamatan Kerja : maksud dan tujuan, susunan organisasi dan tanggung jawab keberhasilan program K3 8. Standar Internasional : Pengantar Standar Internasional, Keuntungan penerapan standarisasi, SNI 9000, Pengguna SNI 9000, Langkah penerapan SNI 9000			
Prerequisite	--			
References	1. Brian Rothery, Analisis ISO 9000, PPM (seri manajemen no. 144), Pustaka Binaman Pressindo, Jakarta, 1996 2. Bennett N.B. Silalahi & Rumondang B. Silalahi, Manajemen Keselamatan dan Kesehatan Kerja, PPM (seri manajemen no. 112), Pustaka Binaman Pressindo, Jakarta, 1995 3. Undang-Undang Republik Indonesia Nomor 1 tahun 1970 tentang Keselamatan Kerja. 4. www.bsn.or.id, homepage dari Badan Standardisasi Nasional. 5. http://www.bpsi-safetytraining.org			
Website Link	http://www.ocw.eepis-its.edu/ve053201/			

VE053202	Ethics and Professionalism			PENS Politeknik Elektronika Negeri Surabaya
Credit	2	Hours/week	2	
Semester	3			
Course Description	This course discusses about Professionalism Ethics in the Electronics, Electrical and IT Engineering.			
Aim of the Course	After completion of the course, the student should be able to understand the following competencies: 1. Description of Professionalism Ethics 2. Academic Honor Code 3. Academic Misconduct 4. Violations and Sanctions 5. Cyber crime 6. Cyber law 7. Standard of Professionalism in the Electronics, Electrical and IT Engineering			
Prerequisite	-			
References	[1] [2] [3]			
Website Link	http://www.ocw.eepis-its.edu/VE053202/			