COURSE	Name	: Microelectronic Systems
	Code	: EE185142
	Credit(s)	: 3
	Semester	: I

Description of Course

This course studies the Microelectronic Systems consisting of a computer-based electronic systems, microprocessors, and microcontrollers. This course consists of the development of the microprocessor to the microcontroller, the types of microcontrollers, programming languages, and their implementation which includes MCS-51 microcontrollers, AVRs, 32-bit ARMs, and System on Chips. Applications that are often used are for electronic system controllers.

Learning Outcomes

Knowledge

(P02) Mastering engineering concepts and principles to develop the necessary procedures and strategies for systems analysis and design in the areas of power systems, control systems, multimedia telecommunications, electronics, intelligent multimedia network, or telematics.

(P03) Mastering the factual knowledge of information and communication technology as well as the latest technology and its utilization in the field of power systems, control systems, multimedia telecommunications, electronics, intelligent multimedia network, or telematics.

Specific Skill

(KK02) Being able to compose problem solving in engineering through depth and breadth of knowledge which adapts to changes in science and technology in power systems, control systems, multimedia telecommunications, electronics, intelligent multimedia network, or telematics.

(KK03) Being able to produce system design for problem solving by utilizing other fields of study and concerning technical standards, performance aspect, reliability, ease of application, and assurance of sustainability.

General Skill

(KU11) Being able to implement information and communication technology in the context of execution of his/her work.

Attitude

(S09) Demonstrating attitude of responsibility on work in his/her field of expertise independently.

(S10) Internalizing spirit of independence, struggle and entrepreneurship.

(S11) Trying his/her best to achieve perfect results.

(S12) Working together to be able to make the most of his/her potential.

Course Learning Outcomes

Knowledge

Mastering the basic concepts of microprocessors, microprocessor hardware design principles, programming languages on microprocessors and microprocessor system design stages.

Specific Skill

Able to use MCS51 microcontroller, AVR type, 32 bit ARM type and able to use embedded system board.

General Skill

Able to use ICT tools to design electronic systems using MCS51 microcontroller, AVR type, 32 bit ARM type and embedded system board.

Attitude

Able to internalize the spirit of independence, struggle, and entrepreneurship.

Main Subjects

1. MCS-51 Microcontroller
2. GPIO, Timer, Counter, Interupt, Serial Communication, I2C, CAN, Onewire
3. Assembly programming language for MCS 51
4. Basic Compiler and C++ for MCS 51
5. AVR Microcontroller
6. ARM 32bit Microcontroller
7. Raspberry Pi

Reference(s)

[1] Rachmad Setiawan, Mikrokontroler MCS51, Graha Ilmu 2006
[2] Matt Richardson, Shawn Wallace, Getting Started with Raspberry Pi, O'Reilly Media, 2012
[3] ARM Cortex M0 Nuvoton NuMicro, dalam bentuk CD
[4] Manual Book STM32
[5] Robert Love, Linux Kernel Development, Addison-Wesley, 2010

Prerequisite(s)

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