COURSE	Name	: Electronic Control System
	Code	: EE184942
	Credits	: 3
	Semester	: Elective

Description of Course

Electronic control system discusses electronics control system design methods and their implementations both analog and digital. Control system design methods include classical and modern methods. The identification system to obtain the plant model to be used in control system design is also discussed in this course. The implementations of analog control system are done by using op-amp circuit. The implementations of digital control system are done by microcomputer (personal computer and microcontroller).

Learning Outcomes

Knowledge

(P03) Mastering the concepts and principles of design procedure in power systems, control systems, multimedia telecommunications, or electronics.

(P05) Mastering the factual knowledge about information and communication technology, and the latest technology and its applications in power systems, control systems, multimedia telecommunications, or electronics.

Specific Skill

(KK03) Able to describe system design for problem solving in power systems, control systems, multimedia telecommunications, or electronics by concerning technical standards, performace aspect, reliability, ease of application, and assurance of sustainability.

(KK05) Able to utilize analytical and engineering design tools based on appropriate information and computation technology to perform engineering activities in power systems, control systems, multimedia telecommunications, or electronics.

General Skill

(KU01) Able to apply logical, critical, systematic and innovative thinking in the context of development or implementation of science and technology that concerns and implements the value of humanities in accordance with their area of expertise.

Attitude

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

Course Learning Outcomes

Knowledge

Mastering the concept of design and implementation of electronic control systems either analog or digital.

Specific Skill

Able to design and implement analog electronic control system based on op-amp circuit and

digital control system based on microcomputer.

General Skill

Able to complete the design and implementation of electronic systems for specific applications.

Able to use ICT devices to design electronics systems and devices to implement the system.

Attitude

Demonstrating self-reliance, creative, and innovative in problem solving.

Main Subjects

1. Basic design of control system
2. Design of PID control system
3. Design of fuzzy logic control system
4. Implementation of identification system
5. Design of control system with linear algebra method
6. System design with interference observation method
7. Implementation of analog control system
8. Implementation of digital control system

Reference(s)

[1] Cheng Siong Chin, Computer-Aided Control Systems Design, CRC Press, 2013.
[2] Jan Jantzen, Foundations of Fuzzy Control: a Practical Approach (2nd Edition), John Wiley & Sons, 2013.
[3] Ioan D. Landau and Gianluca Zito, Digital Control Systems: Design, Identification and Implementation, Springer-Verlag, 2006.
[4] Dogan Ibrahim, Microcontroller-Based Applied Digital Control, John Wiley & Sons, 2006.
[5] Chi-Tsong Chen, Analog and Digital Control System Design, Saunders College Publishing, 2005.

Prerequisite(s)

EE184404 Introduction to Control Systems