COURSE	Name	: Analysis and Design of Digital Control Systems
	Code	: EE185122
	Credit(s)	: 3
	Semester	: I

Description of Course

Analysis and Design of Digital Control Systems course discusses about stability analysis and discrete system design. The system model is represented by different equations obtained from the transformation of differential equations using z transformations. Controllability and observability are used as discrete time system analysis expressed in state equations. The design of the regulatory system using state feedback and observer and its implementation in control system using computer is also discussed in this course.

Learning Outcomes

Knowledge

(P01) Mastering the concepts and principles of science in a comprehensive manner, and to develop procedures and strategies needed for the analysis and design of systems related to the field of power systems, control systems, multimedia telecommunications, electronics, intelligent multimedia network, or telematics as a preparation for further education or professional career.

Specific Skill

(KK01) Being able to formulate engineering problems with new ideas for the development of technology in power systems, control systems, multimedia telecommunications, electronics, intelligent multimedia network, or telematics.

General Skill

(KU07) Being able to improve the capacity of learning independently.

(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.

Course Learning Outcomes

Knowledge

Mastering the concepts and principles of the digital regulatory system to develop design procedures needed for system analysis and design with the help of Matlab / Simulink.

Specific Skill

Able to formulate digital regulation system problems with new ideas for technology development in the field of Management System Engineering expertise.

General Skill

Able to increase learning capacity independently through designing nonlinear control systems and able to use Matlab / Simulink software to design digital control systems.

Attitude

Shows the attitude of being responsible for the assignments given in the lecture independently.

Main Subjects

1. Review of z-transform
2. State space analysis
3. Controllability and observability
4. Design of discrete time control systems
5. State feedback controllers and observers

Reference(s)

[1] Katsuhiko Ogata, Discrete-Time Control systems, 2nd Edition, Pearson Education/PHI, 1995.
[2] Benjamin C. Kuo, Digital Control Systems, 2nd Edition, Oxford University Press, 2003.

Prerequisite(s)

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