

<b>COURSE</b>	Name	: Discrete Event Control Systems
	Code	: EE185528
	Credit(s)	: 2
	Semester	: (Elective Course)

### Description of Course

The course of Discrete Event Control Systems refers to the topic of the system that is modeled as event transitions. The concept and modeling of discrete event systems is presented in the first part. There are several modeling approaches used, including the petri net. Furthermore, the method of analysis and design of the system based on representation of the model used is also conveyed. Modeling for a supervisory and decentralized system is also part of this course. Discrete event systems are widely applied to the queue with many real-world applications.

### 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.

#### 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.

#### General Skill

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

#### Attitude

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

### Course Learning Outcomes

#### Knowledge

Mastering the concept and theory of discrete event control systems.

#### Specific Skill

Able to analyze and design discrete event control systems.

#### General Skill

Able to use appropriate software to analyze and design discrete event control systems.

#### Attitude

Trying his/her best to achieve perfect results.

### Main Subjects

1. Discrete event system modeling with language and automata models, Petri Net models, and dioid algebra and logic models
2. Discrete event system analysis: stability, reachability, deadlocks
3. Discrete event system supervisory arrangements: controllers and supervisors
4. Regulating supervisory system of discrete events: controllability, observability, stability
5. Decentralized system

### Reference(s)

- [1] C. G. Cassandras and S. Lafortune, "Introduction to Discrete Event Systems", 2nd Edition, Springer, 2008
- [2] Kumar Ratnesh, Vijay K. Garg, "Modelling and Control of Logical Discrete Event Systems ", Kluwer Academic Publishers, 1995.

### Prerequisite(s)

Analysis and Design of Digital Control Systems