

CONTROL SYSTEMS

Control systems are the critical center of any vehicle system. Examples of control systems are numerous and multifaceted: climate control for passenger comfort in an automobile, automatic cruise control, engine control and pollution control are some typical illustrations. Design of control systems for practical applications requires a thorough understanding of physical models of the process, mathematical modeling techniques, transient behavior of systems and dynamic characteristics of a physical system.

The Control Systems certificate program will introduce the participants to mathematical techniques of system analysis, use of software, such as Matlab, to enhance the student's experience, system modeling, continuous and discrete time control techniques, including analog and digital PID controllers, digital control, fuzzy logic control, neural network controller, etc. At the next level, participants will be introduced to multivariable control (control of several interacting variables of a physical process) and design strategies for multivariable processes. Finally, the program will introduce some basic concepts in nonlinear control and simple design techniques. Several case studies will be presented to enhance the learning experience. Group design projects will be assigned to ensure that the participants understand the design process. (12 credit hours)

Coursework Requirements

Code	Title	Credit Hours
Please choose four courses to complete the required 12 credit hours.		
ECE 512	Analog Filter Design	3
ECE 552	Fuzzy Systems	3
ECE 560	Modern Control Theory	3
ECE 565	Digital Control Systems	3
ECE 567	Nonlinear Control Systems	3
ECE 5831	Pat Rec & Neural Netwks	3