EE341-3: Automatic Control

Course code and name	EE341-3: Automatic Control
Credits units	3 Credit units
Contact hours	5 Contact hours: 2 lecture, 1 tutorial and 2 practical
Instructor name	Dr. Ehab Salim
Textbook	Handbook: Modern_Control_Engineering_4th_Ed_Ogata., 2002
Other supplemental materials	Automatic Control Systems,9th ed, 2009, Farid Golnaraghi & Benjamin C. Kuo
	Specific course information
a. Course description	This course is designed to teach students the importance of automatic control and their designs. The main objective of this course is to present the mathematical background (Laplace, differential equations); system representation (block diagram, transfer functions, signal flow graph), Modeling of electric and mechanical systems; state variable analysis; stability using Routh Hurwitz method; time domain analysis; root locus; frequency domain analysis; PID controller
b. Prerequisite	EE213-2
c. Required / Elective	Required
	Course Learning Outcomes

CLO of the Lecture Activities:

CLO1: Define Laplace transformation, the transfer function of system using the block diagram and signal flow graph.

CLO2: Illustrate State Space Equations and Determine the controllability and observability.

CLO3: Examine the parameters of controller according to time analysis.

CLO4: Analyze different types of Controllers and compensators.

CLO5: Illustrate stability using Routh and Nyquist Criterion.

CLO of the Laboratory Activities:

CLO1: Verify theory and to improve knowledge learned in class.

CLO2: Formulate and solve problems related to theory.

CLO3: Design and safety conducts an experimental procedure.

CLO4: Independently perform accurate quantitative measurements, interpret experimental results, perform calculations on these results and draw a reasonable, accurate conclusion.

CLO5: Communicate critical analysis of scientific information through written reports.

CLO6: Be integrated inside a group of work and respect the team working.

Brief list of topics to be covered

- Define Laplace transformation, the transfer function of system using the block diagram and signal flow graph.

- Illustrate State Space Equations and Determine the controllability and observability.

- Examine the parameters of controller according to time analysis.

- Analyze different types of Controllers and compensators.

- Illustrate stability using Routh and Nyquist Criterion.

Mapping Course Learning Outcomes to Student Outcomes

	Lecture Activities						
	SO1	SO2	SO3	SO4	SO5	SO6	SO7
CLO1							
CLO2							
CLO3							
CLO4							
CLO5							
	Laboratory Activities						
	SO1	SO2	SO3	SO4	SO5	SO6	SO7
CLO1							

CLO2							
CLO3							
CLO4							
CLO5							
CLO6							