EE 411 Control Systems (1)

C O U R S E I N F O R M A T I O N

Prerequisites	Academic Year &Level		Teaching Methods			Credit Hrs.
	Year	Semester	Lecture	Tutorial	Lab.	
EE 311	4	7	2	2	2	3

C O U R S E A I M

Mathematical modeling of physical systems
Frequency response analysis and Stability study
Design of compensators for SISO control systems

C O U R S E W E E K L Y C O N T E N T S

1 Root Locus Revision and Concept of Compensation in Time Domain
2 Lead Compensation in Time Domain(Applied on Applicable Case Study e.g DC motor position control)
3 Lag Compensation and lead-lag Compensator in Time Domain(Applied on Applicable Case Study e.g DC motor position control)
4 Theory of P-I-D Controllers
5 Tuning of P-I-D Controllers(Applied on Applicable Case Study e.g DC motor position control)
6 Frequency response analysis & Bode diagrams
7 Concept of Nyquist Stability Criterion + Midterm Exam
8 Polar plots
9 Relative Stability in Nyquist plot (Applied on Applicable Case Study e.g DC motor position control)
10 Lead Compensation using Frequency Domain(Applied on Applicable Case Study e.g DC motor position control)
11 Lag Compensation using Frequency Domain (Applied on Applicable Case Study e.g DC motor position control)
12 12th week Assesment + Modeling of linear systems
13 Phase variable and State Space Representation for Continuous Systems
14 State space using canonical
15 Presentation of projects

S T U D E N T G R A D I N G & A S S E S S M E N T

Weeks	Exams	Assign.	Quizzes	Reports	Present.	Lab.	Total
1 to 7	20 Midterm	← 10 MARKS To be freely distributed among possible assessments →					30
8 to 12	← 20 MARKS →						20
13 to 15	← 10 MARKS →						10
16 or 17	40 Final						40
Total	Exams	Assign.	Quizzes	Reports	Present.	Lab.	100

R E F E R E N C E S

Textbook	I.J.Nagrath, M.Gopal ” Control System Engineering”
Other	K. Ogata , “ Modern control Engineering “ , Prentice – Hall, 2012 .