

EE 418 Automatic Control Systems

COURSE INFORMATION

Prerequisites	Academic Year & Level		Teaching Methods			Credit Hrs.
	Year	Semester	Lecture	Tutorial	Laboratory	
EE 218 -	4	7	2	2	2	3

COURSE AIM

- To study controller units, their type analysis and tuning.
- Modeling and analysis of simple physical system are investigated.
- Stability concept and time domain analysis using time and frequency respons.

COURSE WEEKLY CONTENTS

- 1 Introduction to control system
- 2 Differential equation of physical systems.
- 3 Block diagram models using MATLAB.
- 4 Signal flow graph models using MATLAB.
- 5 Test input signals.
- 6 Performance of 1st and 2nd order system.
- 7 Effect of 3rd pole and a zero on the 2nd order system. + Midterm Exam
- 8 Stability concept Routh- Hurwitz stability criterion.
- 9 Root locus techniques.
- 10 Approach to System Design – advantages of feedback
- 11 Analog PID Controller
- 12 Lead Compensator Design + 12Th week exam
- 13 Lag Compensator Design
- 14 Lead – Lag Compensator and PID Tuning
- 15 Case Study

STUDENT GRADING & ASSESSMENT

Weeks	Exams	Assign.	Quizzes	Reports	Present.	Lab.	Total
1 to 7	20 Midterm	←	10	MARKS		→	30
To be freely distributed among possible assessments							
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

REFERENCES

Textbook Ogata, "Modern control Engineering", Prentice – Hall , 2012, 5th edition
Other Y. El Gamal A.Amer, "Introduction to Control Engineering", AAST 1988
 Nagrath 80 Galal, "Control System Engineering", John Wiely & Son, NY 1982
 K.O.Gatw, "Modern Control Engineering", Prentice Hall New Delhi, 1984