L   T   P   Cr
3   1   0   3.5

Course Objectives: To review the discrete control system and their mathematical modeling and impart learning about s-plane and z-plane transformat nderstand the state diagrams and their analysis, To know about the stability criteria in control systems

oduction: Review of discrete data control system, Signal conversion and processing, mathematical modeling of convolution integral pling process, S-plane properties

ransform: Definition, relation between Laplace and z-transform, s-plane and z-plane, inverse z-transform, z-transform theorems, differ tion solutions, delayed and modified z-transform.

Analysis of Digital Control Systems: Transfer functions, block diagrams and signal flow graph, closed loop system characteristic equa i-rate discrete data system, state equations and state transition equations, Eigen values and eigen-vector, state diagram and decompositi ete data transfer functions, controllability and observability.

tability Analysis: Steady state error analysis of digital control systems, Root locus for digital control systems, effect of addition of poles os, polar plot of GH(z), Jury's stability test, Nyquist stability criteria, Lyapunov stability criteria, concept of relative stability

sign of discrete data control system: Digital PID controller, design in z-plane using Root-locus, Design of robust control systems, mal control with energy constraints. Principle of optimality and dynamic programming, adaptive control systems.

ourse Learning Outcome: On the completion of the course, the student will be able

To learn about the discrete digital control system
To perform the stability analysis using various techniques,
To design and develop of PID controller

ommended Books
Kuo B.C., Digital Control Systems, Oxford univ. press, 2nd ed., (2009)
Ogatta, K., Discrete time control systems, Prentice Hall, Int. ed., (1987)

Franklin G.F., Powell J.D., & Workman M.L., Digital Control of Dynamic Systems, 2nd ed., Addison-Wesley, Reading, (1990)
Gopal M., Modern Control System Theory, Wiley Eastern 2nd ed., (1993)

uation Scheme:

S. No.	Evaluation Elements	Weightage (%)
1.	MST	30
2.	EST	45
3.	Sessionals (May include Assignments/Projects/Tutorials/Quizes etc.)	25