GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Semester: 2

Electrical Engineering

Subject Name : DIGITAL CONTROL SYSTEMS (Control Group)

Sr. No.	Course Content
1	Introduction;
2	The Z-Transformation; Properties of Z-Transform; Solving Differential Equation by the Z-Transform Method; The Inverse Z-Transformation
3	Sampling Theorem Frequency Response Characteristics of Zero-order Holding Devices; Pulse transfer Function; Pulse Transfer Functions of Closed-Loop system;
4	Stability Analysis in the Z-plane; Bilinear transformation, Jury's Stability test;
5	Root Locus technique;
6	Steady state error and error constants; Frequency response and Nyquist Stability criteria in the Z-plane;
7	Time Domain and Frequency Domain Technique for Designing Compensators in the Z-plane;
8	State space Representation of Discrete time System; Decomposition of Discrete Transfer Functions-Direct, Cascade and Parallel Decomposition Solution of Discrete time state equations; Evaluation of state transition Matrix, Discretisation of Continuous Time-state Equations.

Reference Books:

1. Katsuhiko Ogata, Discrete-time Control Systems, Second Edition, Pearson Education, 1995.
2. M. Gopal, Digital control and state variable methods: conventional and neural-fuzzy control systems, Second Edition, Tata-McGraw-Hill, 2003