

GUJARAT TECHNOLOGICAL UNIVERSITY
POWER ELECTRONICS
M.E. Semester: I

Subject Name: **Advanced Control Theory (Major Elective-I)**

Sr. No.	Course Content
1.	Review of Linear Control System: Modelling through differential equations and difference equations, state space analysis, discretization of continuous-time state space model, Controllability and observability, Bode & Nyquist analysis, Root loci, Effect of load disturbance upon control actions.
2.	Discrete time systems and Z-transformation, Pulse transfer function, stability analysis in Z-plane.
3.	Development of feedback control laws through state space technique, Pole Placement design and state observers.
4.	Variable Structure Control and its applications, Examples on variable structure control.
5.	Lyapunov based Stability Analysis, Phase plane technique.
6.	Optimal and Adaptive Control System, Euler-Langrange equations, Boundary condition, Bolza problem.

Reference Books:

1. Automatic Control System by B.C.Kuo, PHI.
2. Modern Control Engineering by K.Ogata, PHI.
3. Digital Control & State Variable Methods by M.Gopal, TMH.
4. Modern Control Design by Ashish Tewari, John Wiley.