AUTOMATIC CONTROL

PROF. ANIL KUMAR

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IIT Roorkee

PRE-REQUISITES : Completed first year of BE/BTech

INTENDED AUDIENCE : UG students of Mechanical, Electrical, Automobile, Production, Aerospace, Civil Engineering and equivalent

COURSE OUTLINE :

Automatic Control is the theory used in various applications, for example, manufacturing of a product, refrigeration and air conditioners, aircraft, missile, satellite launching, etc. The study of a dedicated course is required to understand the fundamental and advance concepts of automatic controls for engineers and designers. This course is of basic level. It introduces design and modelling of a control system, theory of transfer functions, poles, zeros, block diagram algebra, transient response analysis of first and second order systems, stability and Routh's criteria, error analysis, PID control, root locus techniques, compensation techniques, introduction to the state space method and application of MATLAB in automatic control.

ABOUT INSTRUCTOR :

Prof. Anil Kumar works as an Assistant Professor faculty in the Department of Mechanical and Industrial Engineering at IIT Roorkee for more than four years. He teaches subjects like, Automatic Control, Machine Design, Vibrations and Noise, etc. to UG students.His research area belongs to semi-active rail suspension, modal identification of structures, testing of piping joints, pedestrian-structure interaction modelling.

COURSE PLAN :

Week 1**:** Automatic Control System

Week 2**:** Mathematical Modelling

Week 3**:** Transient Response Analysis

Week 4**:** Stability and Steady State Error

Week 5**:** Root Locus Technique

Week 6**:** Design via Root Locus and Compensation Techniques

Week 7**:** State Space Method

Week 8**:** Application of MATLAB in Automatic Control