

EE 704: LINEAR SYSTEM THEORY (3-0-0 : 3)

Preamble

The knowledge of system theory is the fundamental requirement for a post graduate student in control. This course is a building block for that. It is intended to focus on the essential mathematical formulations and design of a system in perspective of control.

Course Contents

Essentials of linear algebra: vector spaces, subspaces, singular value decomposition; state variable modeling of linear dynamical systems; transfer function matrices; Stability theory: Lyapunov theorems; controllability and observability; realization theory: balanced realization, Kalman canonical decomposition; linear state feedback and estimation. Introduction to linear robust control: model uncertainty, model reduction and co-prime factorization; robust stability and robust performance.

References:

1. S. Lang, Introduction to Linear Algebra, Springer-Verlag
2. L. A. Zadeh and C. A. Desoer, Linear System Theory: The State Space Approach, Springer- Verlag.
3. C.T. Chen, Linear System Theory and Design, Oxford University Press.
4. W. Rugh, Linear System Theory, Prentice Hall.