Elearning for Engineers

Linear Systems

This 8-hour self-paced seminar serves as a primer on topics related to linear dynamical systems and applied linear algebra on an advanced undergraduate level. Taught from a systems perspective, tools for analysis of linear systems lead to an introduction of concepts of feedback control and estimation using state-variable methods.

Seminar topics include:

- State Variables and Linear System Overview
- Applied Linear Algebra
- Fundamental Concepts of Linear Systems
- System Stability
- Controllibility and Observability
- State Feedback Control
- State Estimation and Observers
- Optimal State Feedback Control

Prerequisite: Undergraduate background in electrical and mechanical engineering, including knowledge of differential equations and elementary linear algebra. Familiarity with basics of matrix analysis is required, including elementary matrix operations, vector spaces and matrix operations.