

## ESE 500: Linear Systems Theory

Prerequisite(s): Open to graduates and undergraduates who have taken undergraduate courses in linear algebra and differential equations.

This graduate level course focuses on linear system theory in time domain based on linear operators. The course introduces the fundamental mathematics of linear spaces, linear operator theory, and then proceeds with existence and uniqueness of solutions of differential equations, the fundamental matrix solution and state transition matrix for time-varying linear systems. It then focuses on the fundamental concepts of stability, controllability, and observability, feedback, pole placement, observers, output feedback, kalman filtering, linear quadratic regulator. Special topics such as optimal control, robust, geometric linear control will be considered as time permits.