829. Linear Multivariable Control Systems  
Winter, 4(4-0) SYS 826, STT 441, SYS 413. Linear continuous time and discrete time multi-variable control systems; state and output feedback observers; eigenstructure placement; asymptotic tracking; optimal linear control; stochastic processes; Kalman filter; LQG optimal control.

835. Static Optimization Methods  
Summer, 4(4-0) MTH 454. Linear and nonlinear optimization examples and application of Oprther theories and methods. Numerical results and problem solving. Introduction to search methods.

841. Optimization of Urban Traffic Flow  
Fall of even-numbered years, 3(3-0) C E 346, STT 351 or approval of department. Interdepartmental with and administered by Civil Engineering. Traffic flow models used in design of computerized traffic control systems. Optimal freeway ramp metering algorithms. Offline and online optimization of traffic signal time.

843. Ecosystem Analysis, Design and Management  
Spring, 3(3-0) SYS 442 or ZOL 404. Interdepartmental with the Department of Zoology. Groups of students from various biological and nonbiological disciplines will synthesize and analyze models of selected biological systems. Project should yield information relevant to solution of contemporary ecological problems.

847. Communication Engineering  

848. Communication Theory  
Spring, 3(3-0) SYS 360. Interdepartmental with and administered by Electrical Engineering. Hypothesis testing, decision theory and parameter estimation in communications and signal processing. Optimal filtering techniques. Communication in non-white noise. Quantum detection theory.

851. Modeling of Engineering Systems I  
Fall, 3(3-0) M E 455 or E E 415. Interdepartmental with and administered by the Department of Mechanical Engineering. Modeling of engineering components and dynamic systems; mechanical, electrical, fluid, thermal, and transducer effects. Linear state-space responses, impedance methods. Simulation of linear models. Design project.

852. Modeling of Engineering Systems II  

863. Analysis of Stochastic Systems  
Winter, 3(3-0) SYS 826, STT 441, MTH 424. Interdepartmental with Electrical Engineering. Analysis and modeling of stochastic signals and systems. Topics include stochastic models, description of processes, stationarity, ergodicity, correlation and power spectrum, linear stochastic systems, harmonic analysis, Markov processes, Poisson processes.

865. Adaptive Control  
Spring, 3(3-0) SYS 483, SYS 866. Modeling reference adaptive control in continuous time and discrete time; Lyapunov and hyperstability approaches; adaptive observers; self tuning regulators; design using pole-zero assignment, minimum variance control and LQG control.

999. Doctoral Dissertation Research  
Fall, Winter, Spring, Summer. Variable credit. Approval of department.