

ELECTRICAL ENGINEERING (ELECTENG)

ELECTENG 7310 Control Systems Engineering I 3 Credits

Classical control systems, frequency domain. Laplace transformation and transfer functions of linear electrical, mechanical, and electromechanical systems. Time response and pole-zero analysis. Stability and error analysis of feedback systems. Control systems design via root locus techniques.

Components: Class

ELECTENG 7320 Control Systems Engineering II 3 Credits

Classical and modern control systems, frequency and time domain. Design via frequency response techniques. Modeling in state-space. Signal-flow graphs of state equations. Stability and errors in state space. Controllability and observability. Control systems design via state space.

Components: Class

Prereqs/Coreqs: P. ELECTENG 7310

ELECTENG 7340 Digital Control Systems 3 Credits

Digital Controller Design in time and frequency domain. State space modeling, controllability, observability, stability, minimal realization, pole placement and observer design. Students taking this course should have a B.S. in an Engineering discipline with some background in automatic controls (at minimum an undergraduate course in Automatic Controls).

Components: Class

Prereqs/Coreqs: P. ELECTENG 7310 and ELECTENG 7320 and undergraduate course in Automatic Controls (equivalent to ELECTENG 3320 or MECHENG 4330) or approval of the instructor

ELECTENG 7900 Thesis & Capstone Preparation 1 Credit

Prepares student for either the Thesis or Capstone experience. Focus is placed on the skills necessary to undertake the Thesis or Capstone work. This includes writing a project proposal that is supported by scholarly literature, preparing a project timeline, budgeting for the proposed project, recognizing project stakeholders, and identifying specific deliverables from the project. Course culminates in a written Thesis/Capstone proposal for committee approval. This course is a pre-requisite for ENGRG 7990 and ENGRG 7970.

Components: Research

Cross Offering: CIVILENG 7900, INDSTENG 7900, MECHENG 7900

Prereqs/Coreqs: P. Full admittance as a degree-seeking graduate student; C: MECHENG 5000

ELECTENG 7910 Thesis & Capstone Extension 1 Credit

Course is a 1-credit extension of a student's thesis research or capstone project design course. Cannot be taken until the maximum six credits of Thesis Research or Capstone Design Project have been completed. Will require approval of the Faculty Advisor and Program Coordinator before permission for this course will be granted and students allowed to register. Will not count toward degree requirements.

Components: Thesis Research

Cross Offering: CIVILENG 7910, INDSTENG 7910, MECHENG 7910

Prereqs/Coreqs: P. CIVILENG/ELECTENG/INDSTENG/MECHENG 7990 - Thesis Research OR CIVILENG/ELECTENG/INDSTENG/MECHENG 7970 - Capstone Design Project

ELECTENG 7970 Capstone Design Project 3 Credits

Students will draw upon and synthesize knowledge and skills learned throughout the program by applying it to an industry-sponsored project. Capstone work (minimum 150 hours) will be completed in partnership with industry and academic mentor/supervisors. A substantive work project deliverable demonstrating summative application of coursework taken in the program will be expected. The project is expected to be completed in the student's last semesters in residence. Three credits can be taken in a single semester. Can be repeated but only a total of six credits can be applied to degree completion. (Contact advisor for prior approval and registration instructions)

Components: Research

Cross Offering: CIVILENG 7970, INDSTENG 7970, MECHENG 7970

Prereqs/Coreqs: P. CIVILENG/ELECTENG/INDSTENG/MECHENG 7900 - Thesis/Capstone Preparation

ELECTENG 7990 Thesis Research 3 Credits

Completion and defense of a carefully delineated scholarly work advancing an original point of view as a result of research. The topic chosen must reflect the student's area of emphasis and must be approved by a thesis committee. Three credits taken in a single semester. Can be repeated but only a total of six credits can be applied to degree completion. Thesis work is expected to be completed in the student's last semesters in residence. (Contact advisor for prior approval and registration instructions)

Components: Thesis Research

Cross Offering: CIVILENG 7990, INDSTENG 7990, MECHENG 7990

Prereqs/Coreqs: P. CIVILENG/ELECTENG/INDSTENG/MECHENG 7900 - Thesis/Capstone Preparation