4340. Classroom and Behavioral Management Strategies for Exceptional Learners. 3 hours. Approaches to behavioral management of exceptional learners across a variety of educational settings. Implementation of individualized techniques including applied behavioral analysis, as well as larger-group strategies, to foster positive behavioral, social and emotional growth. Special attention to the development of behavioral intervention plans and positive behavioral supports for students with challenging behaviors. Prerequisite(s): EDSP 3210 or equivalent and EDSP 3240.

4350. Strategies to Support Diverse Learners in General Education. 3 hours. Examination of the roles of various professionals in the successful inclusion of students with disabilities in the general education classroom. Focus on consultation models, practices and principles with an emphasis on collaboration, cooperative learning and inclusion. Provides and overview of assessment techniques applicable for all learners in the general education classroom. Prerequisite(s): EDSP 3210, or equivalent.

4360. Transition Education and Services for Exceptional Learners. 3 hours. Transition education and services for individuals with disabilities across the life span with emphasis on the post-secondary years. Examines the theory and practice of transition planning from school to community living, post-secondary education and employment. Legislative history and practical applications of skills such as transition assessment, job development and job placement are emphasized. Prerequisite(s): EDSP 3210, 3240 and 4320.

4900-4910. Special Problems. 1–3 hours each.

4951. Honors College Capstone Thesis. 3 hours. Major research project prepared by the student under the supervision of a faculty member and presented in standard thesis format. An oral defense is required of each student for successful completion of the thesis. Prerequisite(s): completion of at least 6 hours in honors courses; completion of at least 12 hours in the major department in which the thesis is prepared; approval of the department chair and the dean of the school or college in which the thesis is prepared; approval of the dean of the Honors College. May be substituted for HNRS 4000.

Electrical Engineering

Electrical Engineering, EENG

1910. Project I: Learning to Learn. 2 hours. Learning to Learn (L2L) is based on sound cognitive and pedagogical techniques that improve learning outcomes and make lifelong learning habitual. Students develop an understanding of how engineering and computer science are learned and how we can facilitate and encourage the lifelong learning process. Topics covered include consciousness and self-awareness, metacognition, learning styles, memory, language, reading, writing, problem solving, creativity and biology of learning.

1920. Project II: Introduction to Electrical Engineering. 2 hours. Engineering design project life cycle: requirements specification, architectural model/concept generation and evaluation, feasibility study, functional decomposition, design, testing, and maintenance. Principles for the design of a reliable, robust, maintainable and extendable system. Various levels of testing. Teams and team work, project management basics, tips for oral and written presentations, and an overview of ethical and legal issues. Introduction to Labview, MATLAB, VHDL and Spice. Implementation of small projects using these softwares. Project reports and oral presentations.

2610. Circuit Analysis. 3 hours. Introduction to electrical elements, sources and interconnects. Ohm's law, Kirchoff's law, superposition and Thevenin's theorems are introduced. The resistive circuit, OP Amp, RL, RC circuits, Sinusoidal analysis. Prerequisite(s): MATH 1720. Corequisite(s): PHYS 2220/2240.

2620. Signals and Systems. 3 hours. Elementary concepts of continuous-time and discrete-time signals and systems. Linear time-invariant (LTI) systems, impulse response, convolution, Fourier series, Fourier transforms and frequency-domain analysis of LTI systems. Laplace transforms, z-transforms and rational function descriptions of LTI systems. Prerequisite(s): EENG 2610; and MATH 3310 or MATH 2730. (Same as CSCE 3010.)

2710. Digital Logic Design. 3 hours. Digital computers and digital information processing systems; Boolean algebra, principles and methodology of logic design; machine language programming; register transfer logic; microprocessor hardware, software and interfacing; fundamentals of circuits and systems; computer organization and control; memory systems, arithmetic unit design. Prerequisite(s): MATH 1710.

2900. Special Problems. 1–3 hours. Individualized instruction in theoretical or experimental problems in electrical engineering. For elective credit only. Prerequisite(s): approval of supervisory faculty member. May be repeated for credit.

2910. Project III: Digital System Design. 2 hours. Digital system design projects that provide students substantial experience in logic analysis, design, logic synthesis in VHDL, and testing. Project documentation including all the phases of project cycle from requirement analysis to testing as well as a project presentation providing the students an opportunity to enhance their communication and presentation skills, are essential components of this course. Instructor may choose to include a mini-project for breadboard implementation with discrete components as a part of this course. Prerequisite(s): EENG 2710 (may be taken concurrently). May be repeated for credit with consent of instructor.

2920. Project IV: Analog Circuit Design. 2 hours. Students learn to use basic electrical engineering lab equipment, to build and test simple circuits in the lab and to design and analyze circuits using CAD software tools. Includes simulation and design experiments and a final comprehensive design project to complement the circuit analysis course. Prerequisite(s): EENG 2610. May be repeated for credit with consent of instructor.

3410. Engineering Electromagnetics. 3 hours. Electromagnetic theory as applied to electrical engineering: vector calculus; electrostatics and magnetostatics; Maxwell's equations, including Poynting's theorem and boundary conditions; uniform plane-wave propagation; transmission lines – TEM modes, including treatment of general, lossless line, and pulse propagation; introduction to guided waves; introduction to radiation and scattering concepts. Prerequisite(s): EENG 2610 and MATH 3310.

3510. Electronics I (Devices and Materials). 3 hours. Introduction to contemporary electronic devices, terminal characteristics of active semiconductor devices, and models of the BJT and MOSFET in cutoff and saturation region are introduced. Incremental and DC models of junction diodes, bipolar transistors (BJTs), and metal-oxide semiconductor field effect transistors (MOSFETs) are studied to design single and multistage amplifiers. Prerequisite(s): EENG 2910.

3520. Electronics II. 3 hours. Concepts, analysis and design of electronic circuits and systems are introduced. Topics include principle of DC biasing, small signal analysis, frequency response, feedback amplifiers, active filters, non-linear op-amp applications and oscillators. Prerequisite(s): EENG 3510.

3710. Computer Organization. 3 hours. Principles of computer system organization, instruction sets, computer arithmetic, data and control paths, memory hierarchies. Prerequisite(s): CSCE 1020 and EENG 2710.

3810. Communications Systems. 3 hours. Introduction to the concepts of transmission of information via communication channels. Amplitude and angle modulation for the transmission of continuous-time signals. Analog-to-digital conversion and pulse code modulation. Transmission of digital data. Introduction to random signals and noise and their effects on communication. Optimum detection systems in the presence of noise. Prerequisite(s): EENG 2620; EENG 3510; and MATH 1780 or 3680. (Same as CSCE 3020.)

3910. Project V: DSP System Design. 2 hours. To study basic theory and applications of modern digital signal processing, to learn basic theory of real-time digital signal processing, and to develop ability to implement and simulate digital signal processing algorithms using MATLAB and on real-time DSP platform. Prerequisite(s): EENG 2620.

3920. Project VI: Modern Communication System Design. 2 hours. Students are required to design electronic communication systems with electronic devices such as MOS transistors, capacitors and resistors. Topics include LC circuits and oscillators, AM modulation, SSB communications and FM modulation. Prerequisite(s): EENG 3520 (may be taken concurrently).

4010. Topics in Electrical Engineering. 3 hours. Technical elective specifically designed by the instructor each term/semester to cover topics in the latest state-of-the-art technology advancements in electrical engineering. Prerequisite(s): consent of the instructor. May be repeated for credit. Maximum total number of repeat hours allowed is 6 hours.

4710. VLSI Design. 3 hours. Introduction to VLSI design using CAD tools, CMOS logic, switch level modeling, circuit characterization, logic design in CMOS, systems design methods, test subsystem design, design examples, student design project. Prerequisite(s): EENG 2710 and 3510. (Same as CSCE 4730.)

4810. Computer Networks. 3 hours. Introduction to data communication; asynchronous, synchronous, networks, TCP/IP and current technology. Prerequisite(s): EENG 3810 and MATH 3680.

4900. Special Problems in Electrical Engineering. 1–3 hours. Individualized instruction in theoretical or experimental problems in electrical engineering. For elective credit only. Prerequisite(s): approval of supervisory faculty member. May be repeated for credit.

4910. Project VII: Senior Design I. 3 hours. (0;0;3) Designing a wireless communication system or another electrical engineering system based on CADENCE or other software. This project aims to solve a practical engineering problem that meets ABET design criteria. Prerequisite(s): EENG 3810, 3910 and 3920; consent of instructor.

4920. Cooperative Education in Electrical Engineering. 1–3 hours. Supervised field work in a job directly related to the student's major field of study or career objective. Prerequisite(s): junior- or senior-level standing in electrical engineering. May be repeated for credit.

4951. Honors College Capstone Thesis. 3 hours. Major research project prepared by the student under the supervision of a faculty member and presented in standard thesis format. An oral defense is required of each student for successful completion of the thesis. Prerequisite(s): completion of at least 6 hours in honors courses; completion of at least 12 hours in the major department in which the thesis is prepared; approval of the department chair and the dean of the school or college in which the thesis is prepared; approval of the dean of the Honors College. May be substituted for HNRS 4000.

4990. Project VIII: Senior Design II. 3 hours. The capstone senior design course is a comprehensive electrical engineering design course. Students may choose a design topic in VLSI, communications, signal processing or any other relevant electrical engineering area. Substantial design work is required for passing this course. Prerequisite(s): EENG 4910.

Electrical Engineering Technology
see Engineering Technology

Elementary Education
see Teacher Education and Administration

Emergency Administration and Planning
see Public Administration

Engineering Technology

Construction Engineering Technology, CNET
1160. Construction Methods and Materials. 3 hours. (2;3) Introduction to the materials, systems, methods and procedures of building construction.

2180. Construction Methods and Surveying. 4 hours. (3;3) Contemporary methods and materials used in the construction industry; nature, use and characteristics of materials; construction methodology, application and sequencing in the building process. Surveying principles, instruments, measurements and calculations fundamentals of surveying for building construction; survey drawings and mapping. Prerequisite(s): CNET 1160.

2300. Architectural Drawing. 2 hours. (1;3) Emphasizes architectural details; home planning. Prerequisite(s): CNET 1160.