

ELECTRICAL ENGINEERING (EE)

 - General Education Course

- EE 202 Circuits II** **3 Credit hours**
The transient response of first and second order systems. Balanced three-phase systems. Mutual inductance, transformers, resonance, and two-port networks.
Pre-req: ENGR 201 with a minimum grade of D and MTH 230 with a minimum grade of D.
Grade Mode: Normal Grading Mode
- EE 204 Intro to Digital Systems** **3 Credit hours**
Number systems, digital components and systems, Boolean switching algebra; the analysis and design of combinational and sequential circuits; introduction to computer architecture.
Pre-req: MTH 220 with a minimum grade of D.
Grade Mode: Normal Grading Mode
- EE 210 Programming Lab** **3 Credit hours**
This course introduces students to the fundamental principles of programming for solving engineering programs. It familiarizes students with the process of translating real-life engineering problems to computation problems.
Pre-req: CS 110.
Grade Mode: Normal Grading Mode
- EE 211 Intro to Computer Engineering** **3 Credit hours**
Provide a study of Data Structure, operating systems' concepts, HW designed methods and relationship between hardware and software.
Pre-req: EE 210 with a minimum grade of D.
Grade Mode: Normal Grading Mode
- EE 310 Electromagnetic Fields** **3 Credit hours**
This course provides in depth coverage of all aspects electromagnetics, with a focus on field and wave generation and propagation. The course will focus on more practical aspects of E-M theory.
Pre-req: EE 202 with a minimum grade of D and MTH 335 with a minimum grade of D.
Grade Mode: Normal Grading Mode
- EE 320 Analysis of Signals & Systems** **3 Credit hours**
This class introduces students to concepts of probability and random variables necessary for study of signals and systems involving uncertainty; applications to elementary problems in detection, signal processing and communication.
Pre-req: MTH 335.
Grade Mode: Normal Grading Mode
- EE 330 Random Signals and Systems** **3 Credit hours**
This course will introduce the students to the fundamental concepts of probability theory applied to engineering problems, including elementary set operations, sample spaces and probability laws, conditional probability and independence.
Pre-req: MTH 231 with a minimum grade of D.
Grade Mode: Normal Grading Mode
- EE 340 Computer Architecture & Design** **4 Credit hours**
This course is a study of the factors influencing the design of hardware and software elements of computer systems. Topics include: instruction set design; cache and virtual memory organizations.
Pre-req: EE 211 with a minimum grade of D.
Grade Mode: Normal Grading Mode
- EE 350 Elect Properties of Materials** **3 Credit hours**
Introduction to basic physical properties of solid materials; some solid state physics employed, but major emphasis is on engineering applications based on semiconducting, magnetic, dielectric and superconducting phenomena.
Pre-req: EE 202 with a minimum grade of D.
Grade Mode: Normal Grading Mode
- EE 360 Control Systems** **3 Credit hours**
Application of state variable and frequency domain techniques to modeling, analysis and synthesis of single input, single output linear control systems.
Pre-req: EE 202.
Grade Mode: Normal Grading Mode
- EE 370 Electric Machinery** **3 Credit hours**
Fundamentals of energy-handling electric circuits, analysis of power electric circuits, elements of linear and rotating electric machinery, induction, and DC machinery.
Pre-req: EE 310 with a minimum grade of D.
Grade Mode: Normal Grading Mode
- EE 375 Communication Systems I** **3 Credit hours**
Introduction to the fundamental concepts of computer communication networks. Topics include the OSI reference model, the physical data link, network, and transport layers, TCP/IP, LANs, ALOHA, routing and flow controls.
Pre-req: EE 310 with a minimum grade of D and EE 320 (may be taken concurrently) with a minimum grade of D.
Concurrent PR: EE 320
Grade Mode: Normal Grading Mode
- EE 380 Microprocessor Design** **3 Credit hours**
Hardware and software for real-time microprocessor-based digital systems. Basic concepts of on-chip components related to digital system functionality. Introduction to 32-bit machines with treatment of 16- and 8-bit machines.
Pre-req: EE 204 with a minimum grade of D and EE 340 with a minimum grade of D.
Grade Mode: Normal Grading Mode
- EE 401 Communication Systems II** **3 Credit hours**
This course will cover topics in the field of RF/microwave engineering, such as transmission lines, waveguides, impedance matching, microwave resonators, RF filters, RF amplifiers and an introduction to antenna design.
Pre-req: EE 375 with a minimum grade of D.
Grade Mode: Normal Grading Mode
- EE 410 Electrical Engineering Design** **3 Credit hours**
Application of design process and project engineering as practiced in industry; team approach to the design process; development of a project proposal; proposed project implemented in EE 420.
Grade Mode: Normal Grading Mode
- EE 411 Intro to Digital IC Design** **3 Credit hours**
This course covers the analysis and design of digital integrated circuits using CMOS technology. The course emphasizes design of circuit layout, and HSPICE and IRSIM for simulations, lab included.
Pre-req: ENGR 204.
Grade Mode: Normal Grading Mode

EE 412 Computer Engineering Design 3 Credit hours

Introduction to the design process and project engineering as practiced in industry; student teams apply the design process by developing a project from proposal; proposed project implemented in EE 420.

Grade Mode: Normal Grading Mode

EE 415 Intro VHDL Design & HW Systems 3 Credit hours

This course provides fundamental of hardware design methodologies and modeling. It covers the essentials of HDL, embedded C and hardware-embedded systems using VHDL language, Lab included.

Pre-req: EE 380 with a minimum grade of D.

Grade Mode: Normal Grading Mode

EE 419 Intr Digital Signal Processing 3 Credit hours

This course covers the transformation, manipulation of signals. It introduces the concepts of discrete-time, discrete frequency domains, representations and analyses of systems, and filter designs, lab is included.

Pre-req: EE 350.

Grade Mode: Normal Grading Mode

EE 420 🏠 Capstone Design 3 Credit hours

Application of the design process and project engineering as practiced in industry; team approach to the design process; completion of project based on proposal from EE 410 or EE 412.

Pre-req: EE 410 with a minimum grade of D or EE 412 with a minimum grade of D.

Attributes: Capstone Course, No Textbook Required

Grade Mode: Normal Grading Mode

EE 425 Electric Power Systems 3 Credit hours

The course emphasizes power engineering area that includes power generation, transmission, and distribution.

Pre-req: EE 202 with a minimum grade of D.

Grade Mode: Normal Grading Mode

EE 440 Digital Control Systems 3 Credit hours

Feedback systems in which a digital computer is used to implement the control law; Z-transform and time domain methods serve as a basis for control systems design.

Pre-req: EE 360.

Grade Mode: Normal Grading Mode

EE 445 Radio Freq & Microwave Engr 3 Credit hours

Fundamental Radio Frequency (RF) and microwave circuit analysis; return loss, insertion loss; transmission lines, lumped elements, impedance matching; theory, analysis and design of basic RF and microwave passive circuits.

Pre-req: EE 320.

Grade Mode: Normal Grading Mode

EE 447 Real-Time Digital Processing 3 Credit hours

This course provides an introduction to the principles of real-time digital signal processing and hands-on development of real-time signal processing algorithms.

Pre-req: EE 320.

Grade Mode: Normal Grading Mode

EE 448 Power Electronics 3 Credit hours

Principles of power electronics. Including understanding of power semiconductor devices, passive components, basic switching circuits, AC/DC, DC/DC, DC/AC converters and their applications.

Pre-req: ENGR 202 and EE 310.

Grade Mode: Normal Grading Mode