


# 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:** EE 320 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 with a minimum grade of D.  
**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

<p><b>EE 412 Computer Engineering Design</b> <b>3 Credit hours</b> 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. <b>Grade Mode:</b> Normal Grading Mode</p>	<p><b>EE 480 Special Topics</b> <b>1-4 Credit hours</b> Special Topics <b>Grade Mode:</b> Normal Grading Mode</p>
<p><b>EE 415 Intro VHDL Design &amp; HW Systems</b> <b>3 Credit hours</b> 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. <b>Pre-req:</b> EE 380 with a minimum grade of D. <b>Grade Mode:</b> Normal Grading Mode</p>	<p><b>EE 481 Special Topics</b> <b>1-4 Credit hours</b> Special Topics <b>Grade Mode:</b> Normal Grading Mode</p>
<p><b>EE 419 Intr Digital Signal Processing</b> <b>3 Credit hours</b> 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. <b>Pre-req:</b> EE 350. <b>Grade Mode:</b> Normal Grading Mode</p>	<p><b>EE 482 Special Topics</b> <b>1-4 Credit hours</b> Special Topics <b>Grade Mode:</b> Normal Grading Mode</p>
<p><b>EE 420  Capstone Design</b> <b>3 Credit hours</b> 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. <b>Pre-req:</b> EE 410 with a minimum grade of D or EE 412 with a minimum grade of D. <b>Attributes:</b> Capstone Course, No Textbook Required <b>Grade Mode:</b> Normal Grading Mode</p>	<p><b>EE 483 Special Topics</b> <b>1-4 Credit hours</b> Special Topics <b>Grade Mode:</b> Normal Grading Mode</p>
<p><b>EE 425 Electric Power Systems</b> <b>3 Credit hours</b> The course emphasizes power engineering area that includes power generation, transmission, and distribution. <b>Pre-req:</b> EE 370 with a minimum grade of D. <b>Grade Mode:</b> Normal Grading Mode</p>	<p><b>EE 485 Independent Study</b> <b>1-4 Credit hours</b> Independent Study <b>Grade Mode:</b> Normal Grading Mode</p>
<p><b>EE 440 Digital Control Systems</b> <b>3 Credit hours</b> 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. <b>Pre-req:</b> EE 360. <b>Grade Mode:</b> Normal Grading Mode</p>	<p><b>EE 486 Independent Study</b> <b>1-4 Credit hours</b> Independent Study <b>Grade Mode:</b> Normal Grading Mode</p>
<p><b>EE 445 Radio Freq &amp; Microwave Engr</b> <b>3 Credit hours</b> 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. <b>Pre-req:</b> EE 320. <b>Grade Mode:</b> Normal Grading Mode</p>	<p><b>EE 487 Independent Study</b> <b>1-4 Credit hours</b> Independent Study <b>Grade Mode:</b> Normal Grading Mode</p>
<p><b>EE 447 Real-Time Digital Processing</b> <b>3 Credit hours</b> This course provides an introduction to the principles of real-time digital signal processing and hands-on development of real-time signal processing algorithms. <b>Pre-req:</b> EE 320. <b>Grade Mode:</b> Normal Grading Mode</p>	<p><b>EE 488 Independent Study</b> <b>1-4 Credit hours</b> Independent Study <b>Grade Mode:</b> Normal Grading Mode</p>
<p><b>EE 448 Power Electronics</b> <b>3 Credit hours</b> 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. <b>Pre-req:</b> (ENGR 202 with a minimum grade of D or EE 202 with a minimum grade of D) and EE 310 with a minimum grade of D. <b>Grade Mode:</b> Normal Grading Mode</p>	