ELECTRICAL ENGINEERING (EGEE)

EGEE 125 Digital Fundamentals 4 Credit Hours (3,2)
This course provides a study of numbering systems, Boolean algebra, optimization and reduction techniques, combinational logic, sequential digital logic, digital arithmetic, counters, multiplexers, demultiplexers, and microcomputer memory devices. Emphasis is placed on digital circuit design and contemporary programmable logic concepts.
Prerequisite(s): EGNR101 or EGNR103 and MATH111

EGEE 210 Circuit Analysis 4 Credit Hours (3,3) (3,3,1)
This course is an introduction to the analysis of linear circuits. Topics include: basic circuit elements and their terminal relations, kirchoff's laws, nodal analysis, mesh analysis, superposition theorem, Thevenin and Norton equivalent circuits, DC transient analysis of RC and RL circuits, phasors, sinusoidal steady-state response of RLC circuits and single-phase and three-phase AC power analysis.
Prerequisite(s): MATH152, and one of the following: EGNR101 or EGNR103

EGEE 250 Microcontroller Fundamentals 4 Credit Hours (3,2)
An introduction to micro-controller architecture, machine and assembly language program development, and computer system hardware and interfacing techniques.
Prerequisite(s): EGEE125 with a C or better grade

EGEE 280 Introduction Signal Processing 4 Credit Hours (4,0,0) (4,0,1)
The course introduces mathematical techniques used in the design and analysis of analog and digital signal processing systems. Topics include complex numbers, phasor representation of sinusoids, spectral representations, convolution, frequency response, sampling and reconstruction, Fourier series and Fourier transform, and the use of MATLAB as a signal processing tool.
Prerequisite(s): MATH152 and EGNR140

EGEE 310 Network Analysis 4 Credit Hours (4,0)
A continuation of EGEE210 with an emphasis on the systems approach to circuit analysis and design. Topics include the Laplace transform, transfer functions, frequency response, Fourier series, filter design, and op-amps.
Prerequisite(s): EGEE210, EGEE280 and MATH251
Pre or Corequisite(s): MATH310

EGEE 320 Digital Design 4 Credit Hours (3,3)
A study of logical and electronic circuit design techniques including combinational and sequential circuits, programmable logic devices, MSI and LSI devices. Synchronous state machine design using computer-based tools is emphasized for control applications.
Prerequisite(s): EGEE125 with a C or better grade and either EGNR265 or CSCI121

EGEE 330 Electro-Mechanical Systems 4 Credit Hours (3,3) (3,3,1)
A study of three phase circuits, electro-mechanical energy conversion, transformers, AC and DC machines, motor drives, and controlled converters. The laboratory activities include planning and conducting tests of electrical machines, and simulation with physical modeling software.
Prerequisite(s): EGEE210 with a C or better grade, EGNR140, and MATH152

EGEE 345 Fund of Engr Electromagnetics 3 Credit Hours (3,0) (3,0,1)
This course provides an in-depth knowledge of the fundamentals of electromagnetic theory. Topics include vector analysis, electrostatic fields and magnetostatic fields, while familiarizing students with the applications of such fields, Maxwell's equations, and an introduction to wave propagation and radiation.
Prerequisite(s): EGEE210 with a grade of C or better, MATH251 and PHYS232
Pre or Corequisite(s): MATH310

EGEE 355 Microcontroller Systems 4 Credit Hours (3,3)
A study of microcontroller systems design based on the 8/16/32-bit microcontroller. Assembly and C languages are used for program development in the design of embedded systems. Interfacing techniques, real-time control, and microcontroller emulator use are emphasized.
Prerequisite(s): EGEE250 and one of the following: EGNR265 or CSCI121

EGEE 370 Electronic Devices 4 Credit Hours (3,3) (3,3,1)
This course provides an in-depth study of the basic electronic devises. Topics include diodes, MOS field effect transistors, bipolar junction transistors as well as amplifier concepts such as gain, bandwidth, biasing and frequency response. Diode rectifiers, common amplifier configurations, digital CMOS logic circuits, latches, flip-flops and RAM cells are studied as applications of electronic devices.
Prerequisite(s): EGEE125 with a C or better grade, EGEE210 with a C or better grade, and MATH152

EGEE 411 Pwer Distribution/Transmission 3 Credit Hours (3,0)
This course provides an introduction to the analysis and design of systems that carry electrical power from the point of generation to the point of use. Topics include mathematics and techniques of power flow analysis, ground-fault analysis, transient stability analysis, analysis of large power system networks, and the use of power system simulation software.
Prerequisite(s): MATH152, EGEE210, and EGEE280

EGEE 425 Digital Signal Processing 3 Credit Hours (2,2) (2,2,1)
A study of the application of real-time digital signal processing in analog and digital control system design. The course emphasizes discrete Fourier transforms, design of digital filters, sampling theory, and process control using data acquisition equipment and computer simulation techniques. Additional emphasis is placed on communication theory in relation to its utilization of DSP technology.
Prerequisite(s): EGEE250, EGEE280 with a C or better grade, EGNR140 and either EGNR265 or CSCI121

EGEE 475 Power Electronics 4 Credit Hours (3,3)
This course provides an introduction to electrical power processing. The general topics include various electronic power switching circuits including: AC-DC rectifiers, DC-DC converters and DC-AC inverters. Additional topics include applications of power switching circuits as well as characterisics of power semiconductor devices.
Prerequisite(s): EGEE280, EGEE370, and MATH251