

# Electrical and Computer Engineering Course Descriptions

## ELEC106—Fundamentals of Electrical Engineering

Three Credit Hours

Required of electrical engineering freshmen.

An introduction to the engineering profession, branches and functions of engineering, professional ethics, and the role of engineers in society. Fundamentals of engineering problem solving and the use of calculators. Includes subject areas common to most engineering disciplines such as the introduction to the engineering process and teamwork through a design project, engineering laboratory skills, report writing, and engineering economics, the use of electrical engineering exemplars.

Lecture: Three hours

## ELEC201—Electric Circuit Analysis I

Three Credit Hours

Required of electrical engineering sophomores. Circuit elements; Kirchhoff's and Ohm's Law and their application through a variety of circuit analysis techniques; operational amplifiers; and the transient response of simple circuits. The circuit analysis program SPICE is introduced.

Corequisites: ELEC202

## ELEC202—Electric Circuit Analysis II

Three Credit Hours

Required of electrical engineering sophomores. Sinusoidal analysis and phasors; AC power; three-phase circuits; frequency response of simple circuits; the use of SPICE.

ELEC 307—Nuclear Engineering

Three Credit Hours

An introduction to the theory and application of nuclear energy. Topics include fission and the chain reaction; nuclear fuels; nuclear reactor principles, concepts, examples, construction, operation, and ecological impact; radiation hazards and shielding



Advanced topics in electrical engineering. Offered occasionally when the special interests of students and faculty coincide. The syllabus must be approved by the Electrical Engineering Faculty. Since the content of the course may change, a student may repeat this course for credit with the permission of the department head.

Lecture: Three hours

#### ELEC414—System Simulation

Three Credit Hours

An introduction to system concepts, mathematical models of systems, and simulation methods applied to a broad range of systems. Design project required.

Lecture: Three hours

Prerequisite: Systems (ELEG312).

#### ELEC416—Communications Engineering

Three Credit Hours

Principles of amplitude, frequency, and pulse modulation; signal flow and processing in communications systems; and analog and digital communication systems.

Lecture: Three hours

Prerequisites: Signals and Systems (ELEG309) and Digital Logic and Circuits (ELEG311), Corequisite: Electronics 1 (ELEG306)

#### ELEC418—Advanced Digital Systems

Three Credit Hours

Experience in advanced digital design techniques and exposure to the development tools used in the design of advanced digital systems. Topics include the design of digital systems using VHDL, industry standard FPGA devices and software and microprocessor hardware components.

Lecture: Three hours

Prerequisite or corequisite: Digital Systems Engineering (ELEG330) or Computer Organization and Programming (CSC305).

#### ELEC419—Computer Network Architecture

Three Credit Hours

This course will cover network architecture and protocols. Included are transmission technologies, encoding/decoding schemes,

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Three Credit Hours

Introduction to the characteristics, design, and applications of discrete time systems using digital signal processors. Discrete time Fourier Transforms, FIR and IIR systems, and the design of FIR and IIR filters.

LEARNING OBJECTIVES (L.O.)

required to consult the faculty advisor at least once per week. The study will culminate in a formal written report, formatted in the style of a published conference proceedings paper.  
Prerequisite: Senior or senior standing, and department head approval.

ELEC450–Electrical Engineering Internship

Three Credit Hours

The student on an individual basis