Common Course Numbering System

Your current Institution is CCCS

Searching Current Courses For Spring 2015

Course:	**ELT 107**
Title:	**Industrial Electronics**
Long Title:	**Fundamentals of Industrial Electronics**
Course Description:	**Provides a basic knowledge of generators , motors, and the solid state devices and digital techniques used for industrial control applications.**
Min Credit:	**3**
Max Credit:	

Origin Notes: **AIMS**

STANDARD COMPETENCIES:

I. Discuss the generation, application, and advantages of 3-phase alternating current.

II. Describe the construction and operation of DC motors.

III. Describe the construction and operation of single and 3-phase ac motors.

IV. Discuss the different atomic structures of conductors, insulators, and semiconductors.

V. Explain how p-type and n-type crystals are made.

VI. Describe the operation of the PN junction.

VII. Demonstrate how to forward and reverse bias a PN junction diode.

VIII. Test a diode with an ohmmeter.

IX. Draw a full-wave rectifier circuit and explain its operation.

X Discuss the operation of filters in an electronic circuit.

XI. Discuss the operation of a bipolar transistor.

XII. Test a bipolar transistor with an ohmmeter.

XIII. Describe how a transistor can be used as a switching device or as an amplifier.

XIV. Discuss the construction and operation of field effect transistors.

XV. Discuss the construction and operation of the SCR, Diac, and Triac.

XVI. Demonstrate how thyristors can control AC electrical power.

XVII. Discuss the difference between on-delay and off-delay timers.

XVIII. Demonstrate how the 555 timer can be used in timer and oscillator circuits.

XIX. Describe the operational modes of the popular 741 Operational Amplifiers.

XX Discuss the operation of AND, OR NAND, NOR, and INVERTER digital logic gates.

XXI. Construct a basic digital logic control circuit and explain how it operates.

TOPICAL OUTLINE:

I. Survey of Basic Electrical Devices and Concepts
   A. DC and AC motor basics
   B. Three-phase circuits
   C. Filters
   D. Introduction to semiconductors

II. Power Generation and Control ¿ Part 1
   A. Three-phase transformers
   B. DC generators
   C. Bipolar transistors
   D. FET transistors

III. Power Generation and Control ¿ Part 2
   A. DC motor control
   B. Three-phase alternators
   C. Solid state power devices

IV. AC Motors, Integrated Circuits, and Sensors
   A. Single-phase and three-phase motor operation and control
   B. The 555 timer IC
   C. Operational amplifiers
   D. Sensors

V. Digital Electronics
   A. The binary number system
   B. Basic digital logic gates
   C. Applications of digital circuits
   D. Introduction to the PLC

Course Offered At:

Front Range Community College FRCC
Northeastern Junior College NJC
Pikes Peak Community College PPCC

RELEASE: 8.5.3