

## **INST-1740-BASIC INDUSTRIAL ELECTRONICS 4 CREDITS**

### **SYLLABUS**

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#### **CATALOG DESCRIPTION**

An introduction to semiconductor components and circuits, including different types of diodes, transistors, op-amps, SCRs, rectifiers, power supply, transistor switching circuit, amplifier circuits. An introduction to basic digital circuits including digital & analog quantities, number systems, logic gates, combination logic circuit analysis, Boolean theorems, SOP expression, digital and analog conversion.

Prerequisites: INST1550

Semester Offered: Spring, Fall

#### ***Common Student Learning Outcomes***

*Upon successful completion of San Juan College programs and degrees, the student will demonstrate competency in...*

##### **BROAD AND SPECIALIZED LEARNING**

Students will actively and independently acquire, apply, and adapt skills and knowledge with an awareness of global contexts.

##### **CRITICAL THINKING**

Students will think analytically and creatively to explore ideas, make connections, draw conclusions and solve problems.

##### **CULTURAL AND CIVIC ENGAGEMENT**

Students will act purposefully, reflectively, and ethically in diverse and complex environments.

##### **EFFECTIVE COMMUNICATION**

Students will exchange ideas and information with clarity in multiple contexts.

##### **INFORMATION LITERACY**

Students will be able to recognize when information is needed and have the ability to locate, evaluate, and use it effectively.

##### **INTEGRATING TECHNOLOGIES**

Students will demonstrate fluency in the application and use of technologies in multiple contexts.

*Student work from this class may be randomly selected and used anonymously for assessment of course, program, and/or institutional learning outcomes. For more information, please refer to the Dean of the appropriate School.*

#### **Course Learning Outcomes**

Upon successful completion of the course, the student will be able to...

1. Look up and understand datasheet of components
2. Test and troubleshoot components such as diodes, transistors, IC chips.

3. Construct and troubleshoot rectifier and power supply circuits
4. Demonstrate transistor switching circuit and amplifying circuit.
5. Identify digital quantities and analog quantities in nature.
6. Convert between decimal, binary and hexadecimal system.
7. Describe all logic basic gates;
8. Construct circuits with logic basic gate IC chips;
9. Derive between truth table, logic diagram and Boolean Expression.
10. Demonstrate the block diagram of control system including DAC and ADC