

**ELN 247**  
**ELECTRONIC APPLICATIONS PROJECT**

**COURSE DESCRIPTION:**

Prerequisites: ELN 131

Corequisites: None

This course provides a structured approach to an application electronics project. Emphasis is on selecting, planning, implementing, testing, and presenting an application-oriented project. Upon completion, students should be able to present and demonstrate an electronics application-oriented project. Course Hours Per Week: Class, 1. Lab, 3. Semester Hours Credit, 2.

**COURSE OBJECTIVES:**

Upon completion of this course, the student will be able to:

- a. Understand how microcontrollers interface to other digital and analog circuits
- b. Use computer programs to write, edit, and compile microcontroller code.
- c. Interpret schematics to determine component connections.
- d. Interpret assembly drawings to determine component locations.
- e. Identify, select, and handle electronic components including active, passive, and digital devices.
- f. Apply soldering techniques for electronic assembly.
- g. Analyze voltage and current measurement to isolate faults.
- h. Inspect electrical connections.
- i. Demonstrate safe work practices.

**OUTLINE OF INSTRUCTION:**

- I. Display Control Project
  - A. Electronic Display components
  - B. Interfacing to the Microcontroller
  - C. Display system design
  - D. Display system construction
  - E. Troubleshooting the display
  
- II. Analog to Digital / Digital to Analog Control Project
  - A. A/D and D/A Conversion
  - B. Interface to the Microcontroller
  - C. A/D control system design
  - D. A/D system construction
  - E. Troubleshooting the mixed analog/digital circuit

- III. Temperature Control Project
  - A. Electronic temperature sensor
  - B. Interface to the Microcontroller
  - C. Temperature control system design
  - D. Temperature controller construction
  - E. Troubleshooting the temperature controller
  
- IV. Sensor control Project
  - A. Electronic sensors
  - B. Interface to the Microcontroller
  - C. Sensor system design
  - D. Sensor system construction
  - E. Troubleshooting the temperature controller
  
- V. Motor and Drive System Project
  - A. Motor operation and drive electronics
  - B. Interface to the Microcontroller
  - C. Motor and drive system design
  - D. Motor and drive system construction
  - E. Troubleshooting the drive system

**REQUIRED TEXTBOOKS AND MATERIALS:**

None

**STATEMENT FOR STUDENTS WITH DISABILITIES:**

Students who require academic accommodations due to any physical, psychological, or learning disability are encouraged to request assistance from a disability services counselor within the first two weeks of class. Likewise, students who potentially require emergency medical attention due to any chronic health condition are encouraged to disclose this information to a disability services counselor within the first two weeks of class. Counselors can be contacted by calling 686-3652 or by visiting the Student Development Office in the Phail Wynn Jr. Student Services Center, room 1309.