

EGR 131
INTRODUCTION TO ELECTRONICS TECHNOLOGY

COURSE DESCRIPTION:

Prerequisites: None

Corequisites: None

This course introduces the basic skills required for electrical/electronics technicians. Topics include soldering/desoldering, safety practices, test equipment, scientific calculators, AWG wire table, the resistor color code, electronic devices, problem solving, and use of hand tools. Upon completion, students should be able to solder/desolder, operate test equipment, apply problem-solving techniques, and use a scientific calculator. Course Hours Per Week: Class, 1. Lab, 2. Semester Hours Credit, 2.

COURSE OBJECTIVES:

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

- a. Identify electronic components.
- b. Identify and select wire.
- c. Identify, select, handle, and store cleaning materials.
- d. Apply soldering techniques for electronic assembly.
- e. Select, care for, and operate hand tools.
- f. Maintain a clean and organized work environment.
- g. Interpret and apply safety codes and procedures.
- h. Solve basic math problems
- i. Evaluate environment to detect hazardous conditions.
- j. Convert between English and metric measurement systems.
- k. Apply and use number representations: scientific, engineering, and power of ten.
- l. Use basic electronic formulas.
- m. Follow lab and shop safety rules.
- n. Calculate area and volume.
- o. Apply basic trigonometric functions for solving problems.
- p. Follow standard lab procedures for data collection and presentation.

OUTLINE OF INSTRUCTION:

- I. Introduction to Engineering Technology
 - A. Engineering fields
 - B. Role of the technician
 - C. Career expectations
 - D. Modern engineering technologies

- II. Engineering Technician Preparation
 - A. Required training
 - B. Survival skills for learning
 - C. Problem solving approaches
 - D. Employer expectations for technicians

- III. Technical Math Overview Part I
 - A. Basic math
 - B. Powers and roots
 - C. Number representation
 - D. Logarithms
 - E. Equations/Formulas
 - F. Graphs
 - G. Calculator

- IV. Technical Math Overview Part II
 - A. Geometric shapes
 - B. Geometric formulas
 - C. Geometric problems

- V. Technical Math Overview Part III
 - A. Right triangles
 - B. Pythagorean theorem
 - C. Right triangle angular relationships
 - D. Trigonometric functions
 - E. Trigonometry problems

- VI. Measurement Systems and Conversions
 - A. English measurement system
 - B. Metric measurement system
 - C. Units of measure
 - D. Conversions between English and metric systems

- VII. The Laboratory
 - A. Lab use and function
 - B. Performance of lab activities
 - C. Lab errors
 - D. Lab activity reporting

- VIII. Introduction to Shop
 - A. Importance of shop safety
 - B. Shop safety
 - C. Shop work habits
 - D. Shop first aid

- IX. Hand tools

- A. Types of hand tools
 - B. Use of hand tools
 - C. Diagonal pliers
 - D. Long nose pliers
 - E. Screwdriver
- X. Soldering and Desoldering
- A. Care and use of soldering irons
 - B. Preparing a soldering iron for use
 - C. Soldering
 - D. Desoldering
- XI. Packaging of Electronic Equipment
- A. Closed
 - B. Open
- XII. Wire
- A. Types
 - B. AWG table
- XIII. Printed Circuit Boards
- A. Types
 - B. Manufacturing and assembly process

REQUIRED TEXTBOOKS AND MATERIALS:

Hand tools

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.