
Course Prefix/No.: EEM 201
Course Title: Electronic Devices I
Lecture Hours/Week: 2.0
Lab Hours/Week: 3.0
Credit Hours/Semester: 3.0

[Distance Learning Attendance/VA Statement](#)
[Textbook Information](#)

COURSE DESCRIPTION

This course is a study of the fundamental principles of common electronic devices and circuits. Emphasis is placed on solid-state principles and applications.

COURSE COMPETENCIES

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

Module 1 – Fundamentals

- Correctly use an oscilloscope while testing circuits.
- Demonstrate the proper use of a power supply.
- Interpret different types of waveforms.
- Discuss oscilloscope precautions.
- Define a semiconductor.
- Discuss the lattice structure of a semiconductor material.
- Describe the difference between an N-type material and a P-type material.
- Discuss power rating.
- Define heat sinking.
- Discuss the importance of heat sinking.

Module 2 – Diodes, Bridges, and Filters

- Discuss the operation of a diode by explaining forward and reverse bias.
- Draw the schematic symbol of a diode.
- Learn how to test a diode with an ohmmeter.
- Construct a half-wave rectifier.
- Discuss the operation of a light-emitting diode.
- Understand the purpose for a current limiter and properly connect an LED into a circuit.
- Construct a single-phase two-diode rectifier and a single-phase full-wave bridge rectifier.
- Construct a polyphase half-wave rectifier and a polyphase full-wave bridge rectifier.
- Compute the AVG DC voltage of a rectifier.
- Discuss the operation of filters and discuss the differences between the capacitive and inductive filters.
- Discuss the operation of a zener diode.

Module 3 – The Transistor

- Discuss the operation of a transistor.
- Name two different types of transistors.
- Identify the parameters of a transistor using a catalog registry system.
- Test a transistor with an ohmmeter.
- Properly connect a transistor into a circuit.
- Discuss the polarity connections for the different types of transistors.
- Draw the symbols for the NPN- and PNP-type transistors.
- Discuss the use of transistors in a switching application.
- Relate voltage drop to the state of the transistor.
- Discuss amplification.
- Bias a transistor for use as an amplifier.
- Construct a transistor amplifier.
- Discuss the operation of a Darlington transistor.
- Compute the gain of a Darlington transistor.

Module 4 – FET's, UJT's, and Current Generators

- Discuss the different types of field effect transistors.
- Discuss the difference between JFET's, DE-MOSFET's, and E-MOSFET's.
- Compare the operation of a junction transistor and a field effect transistor.
- Connect a field effect transistor circuit.
- Discuss the operation of a current generator.
- Construct two types of current generators using junction transistors and field effect transistors.
- Discuss the operation of a unijunction transistor.
- Describe the difference between a unijunction transistor and a junction transistor.
- Test a unijunction transistor with an ohmmeter.
- Connect a unijunction transistor in a circuit.

MINIMAL STANDARDS

Assignments and attendance must be completed as designated in "Evaluation Strategies/Grading." Criteria for minimal acceptable performance will be provided by the instructor.

REQUIREMENTS

Attendance Policy

The college attendance policy, stated in the college handbook, will be honored. The instructor will provide specific requirements for the course.

Academic Honesty

Students are expected to adhere to the college policy regarding student conduct as stated in the college handbook.

Assignments

Students are expected to complete all assignments and any supplementary exercises designated by the instructor.

EVALUATION STRATEGIES/GRADING

Students must complete all modules, including assignments, projects, labs, and tests. Students must earn at least a "C" in order for the course to serve as a prerequisite and for the course to apply towards a certificate.

Grading Scale

A = 90.0 – 100

B = 80.0 – 89.9

C = 70.0 – 79.9

D = 60.0 – 69.9

F = 00.0 – 59.9

Evaluation Method

Tests/Projects (minimum of four total) 50% of each module

Lab Work 25% of each module

Work Attitude 25% of each module

Each module counts 25% of final grade

Work Attitude is defined as:

- | | |
|--|--|
| <input type="checkbox"/> Participation | <input type="checkbox"/> Responsibility |
| <input type="checkbox"/> Cooperation | <input type="checkbox"/> Professionalism |
| <input type="checkbox"/> Appearance | <input type="checkbox"/> Attendance |
| <input type="checkbox"/> Effort | <input type="checkbox"/> Self Motivation |
| <input type="checkbox"/> Safety | <input type="checkbox"/> Works Independently |

ENTRY LEVEL SKILLS

The student must be able to read and solve basic mathematical equations.

PREREQUISITE: EEM 117

CO-REQUISITES: None

Disabilities Statement: Any student who feels s/he may need an accommodation based on the impact of a disability should contact the Special Resources Offices (SR) at 803-327-8007 in the 300 area of Student Services. The SRO coordinates reasonable accommodations for students with documented disabilities.

Effective: 2007FA