Course Outlines

PHY 325 (Electronics)

By

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Course Outlines

Semiconductor Basics:

Atomic structure, semiconductors, conductors and insulators, semiconductor materials, covalent bonds, conduction in semiconductors, N-Type and P-Type semiconductors, diode, biasing a diode, voltage-current characteristic of a Diode, ideal diode models.

Diode Applications:

Half-wave rectifier, full-wave rectifiers, power supply filters and regulators, troubleshooting of diodes and diode circuits.

Special-Purpose Diodes:

Zener diodes, zener diode applications, optical diodes, varactor diodes, light-emitting diode (LED), laser diode, and other basic knowledge of other important diodes, troubleshooting of special purpose diode.

Bipolar Junction Transistors (BJTs):

Transistor structure, basic transistor operation, transistor forward characteristics, transistor as an amplifier, transistor as a switch, transistor terminal identification, troubleshooting of transistor.

Transistor Bias Circuits:

The DC operating point, voltage-divider bias, basic knowledge of other biasing methods (feedback bias).

Bipolar Junction Transistor (BJT) Amplifiers:

Amplifier operation, transistor AC equivalent circuits, common-emitter amplifier, common-collector amplifier, common base amplifier, multistage amplifiers, applications of amplifier circuits.

Field-Effect Transistors (FETs):

Junction field effect transistor (JFET), JFET characteristics, JFET Biasing, metal oxide semiconductor field effect transistor (MOSFET), MOSFET Characteristics, MOSFET Biasing, some basic applications of field effect transistors.