Electronic Devices and Circuits

Code	**Credit Hours**
EE- 215	3-1

Course Description

This course familiarizes the students with the principles of electronic devices and circuits. It includes lectures (audio/video aids), written assignments/quizzes, tutorials, case studies relevant to engineering disciplines, semester project, guest speaker, industrial/ field visits, group discussion, and report writing.

Text Book:

1. Electronic Devices and Circuits by Theodore F. Bogart, Jr.

Reference Book:

1. Electronic Devices and Circuit Theory, H. Boylestad and L. Nashelsky, ISBN- 10: 0135026490
2. Electronic Devices, Thomas L. Floyd, ISBN-10: 0132359235

Prerequisites

NIL

ASSESSMENT SYSTEM FOR THEORY

Quizzes	10%
Assignments	10%
Mid Terms	30%
ESE	50%

Teaching Plan

Week No	Topics	Learning Outcomes
2	Semiconductor Theory	Introduction to Semiconductors Intrinsic and Extrinsic Semiconductors Doping and energy levels
3-5	Diodes	PN junction/Biased PN junction. V-I Characteristics. Load Line and dynamic resistance Diode models Reverse recovery time and temperature effects Diode Equivalent Circuits Transitions, Recovery, Specification, Notations Testing of Diode Zener Diode, Light Emitting Diodes
6	**MID TERM IN WEEK 9**	
7-8	Diode Applications	Load Line Analysis Parallel and Series Configurations Zener Diodes Voltage-Multiplier Circuits Half wave and Full wave rectifiers Clippers and Clampers Logic gates
9	**MID TERM EXAM**	
10-16	Bipolar Junction Transistors	Construction, Limits of Operation, Specification and characteristics Testing, Casing and Terminal Identification of BJTS Amplifying action and variation in current gain Common Emitter, Common Collector and Common Base Configurations Power Ratings

17-18	BJT Biasing Circuits, BJT Small Signal Analysis, Field Effect Transistors, FET Biasing Circuits, FET Small Signal Analysis	Fixed Bias, Voltage Divider Bias and Emitter feedback Bias Circuits DC load line and operating point Biasing circuit design and stabilization Miscellaneous Configurations Transistor as a switch AC Domain and BJT Modeling Common Emitter Amplifier Common Base Amplifier Common Collector Amplifier Amplifier Design and Loading effects Two Port Systems and Cascaded Systems Darlington and Feedback Pair Hybrid Equivalent Model and Hybrid π Model JFET Construction and Operation Transfer characteristics and parameters Fixed Bias, Self-Bias and Voltage divider Bias Design of a bias circuit JFET/Depletion MOSFET small-signal model Common source, common drain and common gate amplifiers Loading effects and design of amplifier circuits
19		**End Semester Exams**