EEE.2.2 Electronics I

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The module is divided into four sections:

Section 1: Introduction on Electronics. Semiconductors as parts of Amplifier circuits. Characteristics and performance of amplifiers. Gain, input and output impedance. Saturation of amplifiers. Tuned and Wideband amplifiers. Multistage Amplifiers.

Section 2: Diode, AC and DC models and simple circuits. I-V curves. P-N Diodes: Diode with forward and reverse bias. Characteristic curve of P-N junction, Load line. Diode applications: Diode as switch, half-wave and full-wave rectifier, rectifying filters, waveform shape circuits, Zener diode: voltage regulation applications, limiting and clamping. Modeling. AC and DC Power supply design, 78xx series IC

Section 3: Linear Amplifier models. Introduction to simple amplifier circuits. Bipolar Junction Transistor. Structure, operation on NPN and PNP transistors. Bias circuits for CC, CE and CB. Thermal Stability. AC analysis of BJT. Small signal modeling. Low frequency analysis. The impact of Load impedance on Amplifiers.

Section 4: Field Effect Transistor : Junction Field Effect Transistor. Structure, operation, bias circuits for CS, CD & CG. Applications. MOSFET: Structure, operation, bias circuits CS, CD & CG and transfer characteristic. Low frequency analysis of MOSFET amplifier circuits.