

## **211 Phys – Electronics Course Contents**

### **1. Introduction to electronics**

- Energy bands (Floyd Sec. 1.1, 1.2)
- Carriers in intrinsic and extrinsic semiconductors (Floyd Sec. 1.3, 1.4)
- Temperature dependence (Floyd Sec. 1.5)
- Drift and diffusion currents (Floyd Sec. 1.6)

### **2. The P–N Junction**

- Forward and reverse biasing of a P–N junction (Floyd Sec. 2.1)
- I–V characteristics of a P–N junction (Floyd Sec. 2.2)
- Half-wave rectifiers (Floyd Sec. 2.4)
- Full-wave bridge rectifiers (Floyd Sec. 2.5) (Midterm 1)
- Effects of temperature on diode characteristics (Floyd Sec. 2.9)
- P–N diode circuit analysis: load-line method and approximate method (Floyd Sec. 2.9)

### **3. Zener Diode & Rectifiers**

- Zener breakdown, Zener I–V characteristics (Floyd Sec. 3.1)
- Zener diode as a voltage regulator (Floyd Sec. 3.2)
- Power supply filters and regulators (Floyd Sec. 3.2)

### **4. Bipolar Junction Transistor (BJT)**

- Structure and operation (Floyd Sec. 4.1, 4.2)
- Characteristics and parameters (Floyd Sec. 4.3)
- The BJT as an amplifier (Floyd Sec. 4.4)
- The BJT as a switch (Floyd Sec. 4.5)
- The DC operating point (Floyd Sec. 5.1)
- Voltage-divider bias (Floyd Sec. 5.2)

### **5. Field-Effect Transistors (FETs)**

- JFET characteristics and parameters (Floyd Sec. 8.1, 8.2)
- JFET self-bias (Floyd Sec. 8.3)
- MOSFET structure and operation (Floyd Sec. 8.5)
- DC operating point of MOSFET circuits (Floyd Sec. 8.6)

Text book:

**Electronic Devices: Conventional Current Version** by Thomas L. Floyd, **9th Edition**.