Diyala University College of Engineering Electronic Department Subject: Electronic I		Theoretical:2Hrs/Wk Tutorial:1Hrs/Wk Practical: 2Hrs/Wk Class: Second
<b>1. Diode Circuit Applications</b> Rectification, Clipping, Clamping, Diode Characteristics and Applicati	Voltage Multipliers, Diode Sv ions.	( <b>8hrs</b> ) vitching Circuits, Zener
<b>2. Bipolar Transistor Circuits</b> Construction, Operation, Configura Regions, Load–Lines, The Transist Stability, Power Dissipation, Switcl	tions and Characteristics, Ope or as an Amplifier, DC Biasin hing Transistors.	( <b>12hrs</b> ) g Circuits and
<b>3. BJT Small-Signal Analysis</b> Transistor Equivalent Circuits, Volt Impedance, analysis of CE, CB and	tage and Current Gain, Input a l CC configurations.	( <b>12hrs</b> ) and Output
<b>4. FET Transistor and Circuits</b> Construction and Characteristics of Characteristics, CMOS, DC Biasing	JFET, MOSFET Construction g Circuits.	( <b>8hrs</b> ) n and
<b>5. FET Small-Signal Analysis</b> Amplifier JFET / MOSFET, Small configurations.	Signal Model Analysis, analy	( <b>8hrs</b> ) sis of CS, CG and CD
<b>6. Multistage Amplifiers.</b> Analysis of Multistage Amplifiers ( amplifier, Cascade and cascode amp	(voltage gain, current gain, ect plifier's, Darlington amplifier.	( <b>4hrs</b> ) t), types of multistage
<b>7. Tuned Amplifiers</b> Transformer-coupled Amplifiers, s	single tuned amplifiers, tapped	( <b>4hrs</b> ) and double-tuned amplifiers.

8. Introduction to Four-Layer Devices (6 hrs) Description and operation of silicon controlled rectifier, DIAC, thyristor, GTO, and TRIAC.

#### **Recommended Textbook:**

 ${\bf 1}$  ) Boylested R.L. , Electronic Devices and Circuit Theory, Prentice – Hall Int Pub .

2) Bogart, Electronic Devices and Circuit, Mc Graw – Hill
3) Albert Malvino, David J Bates, Electronic Principles, McGraw Hill 7th Edition. 2012

Theoretical:2Hrs/Wk Tutorial:1Hrs/Wk Practical: 2Hrs/Wk Class: Second

## **First Course**

### **1. Diode Circuit Applications**

Rectification, Clipping, Clamping, Voltage Multipliers, Diode Switching Circuits, Zener Diode Characteristics and Applications.

### 2. Bipolar Transistor Circuits

Construction, Operation, Configurations and Characteristics, Operating Regions, Load-Lines, The Transistor as an Amplifier, DC Biasing Circuits and Stability, Power Dissipation, Switching Transistors.

### **3. BJT Small-Signal Analysis**

Transistor Equivalent Circuits, Voltage and Current Gain, Input and Output Impedance, analysis of CE, CB and CC configurations.

# **Second Course**

### **4. FET Transistor and Circuits**

Construction and Characteristics of JFET, MOSFET Construction and Characteristics, CMOS, DC Biasing Circuits.

### **5. FET Small-Signal Analysis**

Amplifier JFET / MOSFET, Small Signal Model Analysis, analysis of CS, CG and CD configurations.

### 6. Multistage Amplifiers.

Analysis of Multistage Amplifiers (voltage gain, current gain, ect...), types of multistage amplifier, Cascade and cascode amplifier's, Darlington amplifier.

### 7. Tuned Amplifiers

Transformer-coupled Amplifiers, single tuned amplifiers, tapped and double-tuned amplifiers.

### 8. Introduction to Four-Layer Devices

Description and operation of silicon controlled rectifier, DIAC, thyristor, GTO, and TRIAC.

### **Recommended Textbook:**

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# (12hrs)

(8hrs)

(12hrs)

(8hrs)

### (8hrs)

# (4hrs)

(4hrs)

#### (6hrs)