

<b>Subject</b>	Electronic Circuits I	<b>Course Code</b>	CT216	<b>Theoretical</b>	3 hrs / wk
<b>Semester</b>	3	<b>Prerequisite</b>	None	<b>Practical</b>	3 hrs / wk

### Program Learning Component

<b>1- Introduction to Semiconductors</b>			
	<b>Specific Learning Outcomes</b>	<b>Resources</b>	<b>Practical</b>
<b>Week 1-3</b>	<ul style="list-style-type: none"> <li>• Explain Semiconductors, Conductors and Insulators.</li> <li>• Discuss conduction in semiconductor.</li> <li>• Describe N-type and P-type semiconductor.</li> <li>• Analyze Current-Voltage Characteristics of PN junction.</li> <li>• Explain the PN junction and explain the three diode models.</li> </ul>	Projector. Simulation of hole & electron movement.	Identify diode packages. Test defective diodes using ohmmeter and DMM.
<b>2- Diode Applications</b>			
	<b>Specific Learning Outcomes</b>	<b>Resources</b>	<b>Practical</b>
<b>Week 4-5</b>	<ul style="list-style-type: none"> <li>• Explain the operation of a half wave rectifier.</li> <li>• Explain the operation of a full wave rectifier.</li> <li>• Analyze power supply filter</li> <li>• Analyze the role limiting and clamping circuits.</li> <li>• Analyze the operation of diode voltage multipliers.</li> <li>• First Mid-term Evaluation Test</li> </ul>	Projector. Simulation using Multisim software package.	Reading diode data sheet. Troubleshoot diode circuits.
<b>3- Special Diode and Two Terminal Devices</b>			
	<b>Specific Learning Outcomes</b>	<b>Resources</b>	<b>Practical</b>
<b>Week 6-7</b>	<ul style="list-style-type: none"> <li>• Describe the characteristics of Zener diode.</li> <li>• Zener diode application in limiting and regulation circuits.</li> <li>• Explain varactor diode circuits.</li> <li>• Discuss the operation of LEDs and</li> </ul>	Projector. Simulation using Multisim software package.	Reading different diodes data sheets. Experiment with Zener regulations with varying input voltage.

	Photodiodes. <ul style="list-style-type: none"> <li>Describe the characteristics of Solar Cells and Thermostors.</li> </ul>		
<b>Week 8-10</b>	<b>4- Introduction to Bipolar Junction Transistor</b>		
	<b>Specific Learning Outcomes</b>	<b>Resources</b>	<b>Practical</b>
	<ul style="list-style-type: none"> <li>Describe the basic structure of BJT.</li> <li>Explain Transistor operation</li> <li>Discuss transistor bias and current-voltage relations, transistor rating and DC load line.</li> <li>Explain how BJT is used as voltage amplifier.</li> <li>Explain how BJT is used as a switch.</li> <li>Second Mid-term Evaluation Test</li> </ul>	Projector. Multisim Simulation package.	Recognize different BJT packages. Identify NPN or PNP transistors using DMM. Troubleshoot faulty BJTs.
<b>Week 11-12</b>	<b>5- Bipolar Junction Transistor Bias Circuits</b>		
	<b>Specific Learning Outcomes</b>	<b>Resources</b>	<b>Practical</b>
	<ul style="list-style-type: none"> <li>Explain DC operating point.</li> <li>Explain Base bias, emitter bias, voltage divider bias and collector feedback bias.</li> </ul>	Projector. Multisim package.	Build and test real BJT circuits.
<b>Week 13-14</b>	<b>6- Field-Effect Transistors and Biasing</b>		
	<b>Specific Learning Outcomes</b>	<b>Resources</b>	<b>Practical</b>
	<ul style="list-style-type: none"> <li>Explain the operation of FETs.</li> <li>Define and discuss important FET parameters.</li> <li>Analyze FET biasing circuits.</li> </ul>	Projector. Multisim. Package.	JFET packages. Build and test real BJT circuits.

**Course Assessment:**

<b>Course Work</b>	<b>Mid-Term Test</b>	<b>Final Exam Practical</b>	<b>Final Examination</b>
<b>10</b>	<b>30</b>	<b>20</b>	<b>40</b>

**NOTE:** Course Work may include assignments, projects and practical activities.

**Textbooks:**

1. Electronic Devices, 4th Edition by FLOYD.
2. Electronic Fundamentals circuits, devices and Applications, 4th Edition by FLOYD.