

### Course Syllabus

<b>Course Code and Name</b>	<b>EE 26231 – Fundamental of Electronic Devices</b>
<b>Credit and contact hours</b>	<b>3 (2, 1, 1) (Lecture, Tutorial, Lab)</b>
<b>Required or Elective</b>	<b>Required</b>
<b>Level / Year</b>	<b>Level (4) / Year (2)</b>
<b>Course Prerequisite</b>	<b>PHYS26211 Advanced Physics</b>
<b>Textbook</b>	Thomas L. Floyd Electronic Devices Conventional Current Version Tenth Edition 2018
<b>Course Description</b>	This course covers Semiconductor materials intrinsic – n and p types. Charge dynamics in semiconductors – drift and diffusion current. Ideal diodes – current and voltage characteristics. Terminal characteristics of junction diodes. Techniques of diode circuit analysis. The small signal model of the diodes-Zener diodes. Application of diodes in typical circuits – Rectifiers, regulated power supplies, logic gates, limiting circuits etc. Physical structure, NPN and PNP transistors. Graphical representation of BJT characteristics. Analysis of BJT circuits at DC: modes of operation, transistor as a switch, biasing the BJT. Transistor as an amplifier: graphical analysis, small signal equivalent circuit models, and analysis of basic BJT amplifier configurations. Current and Voltage characteristics of different types of FETs. Regions of operation. Analysis of FET circuits at DC, biasing the FET, FET as an amplifier.
<b>Brief List of Topics to be Covered</b>	<ol style="list-style-type: none"> <li>1- Semiconductor materials: Charge dynamics in semiconductors - drift and diffusion current.</li> <li>2- Ideal diodes and their current-voltage characteristic. Terminal characteristics of junction diodes.</li> <li>3- Techniques of the diode circuit analysis – The small signal model of the diodes – Zener diodes.</li> <li>4- Application of diodes in typical circuits: rectifiers, regulated power supplies, logic gates, limiting circuits etc.</li> <li>5- Physical structure, NPN and PNP transistors</li> <li>6- Analysis of BJT circuits at DC: modes of operation, transistor as a switch, biasing the BJT.</li> <li>7- Analysis of basic BJT amplifier configurations. Basic amplifiers.</li> <li>8- Current- Voltage characteristics of different types of FETs, regions of operation</li> <li>9- Analysis of FET circuits at DC, biasing the FET, FET as an amplifier.</li> </ol>
<b>Course is prerequisite for</b>	<ul style="list-style-type: none"> <li>• EE26332 Logic Circuits Design</li> <li>• EE26333 Analog and Digital Electronic Circuits</li> <li>• EE26434 Electrical and Electronic Measurements</li> <li>• EE26452 Power Electronics</li> </ul>