

212305 –  
Electronic Circuits Simulation & Testing

Credit Points		Teaching Hrs/Week	Practical Hrs/Week
3		2	2
Objective		<ul style="list-style-type: none"> <li>• To study various software skills</li> <li>• To perform simulation of electronic circuits.</li> <li>• To interpret the output from the simulation.</li> </ul>	
Prerequisites		Basics of programming language.	
Unit	Topic Name	Details	Hrs
<b>1</b>	<b>Introduction to Software tool</b>	Introduction of (spice) s/w tool for design ,simulation .Analytical design of different circuits and simulation ,verification ,philosophy .	4
<b>2</b>	<b>Basic Wave shaping Circuits</b>	Design of wave shaping circuits using RC network and diodes e.g .Clipping , clamping ckt., level shifting , Integrator , Differentiator .	4
<b>3</b>	<b>Basic Transistor Circuits</b>	Design of biasing network for transistor as amplifier .	4
<b>4</b>	<b>Frequency response of circuits</b>	Frequency response characteristics of amplifier and its simulation	4
<b>5</b>	<b>Op-amp Circuits</b>	Basic Op-amp circuits like Inverting amplifier ,Non-Inverting amplifier	3
<b>6</b>	<b>Digital Circuits</b>	Implementation of MUX, DE- MUX, Counters.	4

Lab/ Term Work
<ol style="list-style-type: none"> <li>1. Introduction to circuit simulation software.</li> <li>2.Design and simulation of RC wave shaping circuits.</li> <li>3. Simulation of single stage transistor amplifier and frequency response .</li> <li>4. Simulation of OP-AMP inverting amplifier.</li> <li>5.Design and simulation of Op-amp based Integrator and differentiator Circuits.</li> <li>6. Simulation of 3-Bit synchronous counter.</li> <li>7.design and simulation of MUX and Demux circuits</li> <li>8. Design PCB for given circuit</li> </ol>

Text Books	<ol style="list-style-type: none"> <li>1.Digital Principles and Applications – Donald P Leach, Albert P Malvino, Goutam Saha, 6th Edition (TMGH)</li> <li>2.Millman Halkias - Integrated Electronics - Tata McGraw Hill</li> </ol>
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Reference Books	1 Users Manual for Spice 2. Digital Design - M. Morris Mano, 3 <sup>rd</sup> Edition (Pearson) 3. Thomas L. Floyd - Electronic Devices - Pearson Education
Related Websites	

Examination Scheme	Internal Assessment	20 marks
	Term Work	25 marks
	Final Theory Paper	30 marks