

SVKM's NMIMS  
Mukesh Patel School of Technology Management & Engineering

<b>Program: B Tech (All Program except CSBS, CSE(DS) 311(VT)/MBA Tech (All Program)</b>				<b>Semester: I/ II</b>	
<b>Course: Basic Electrical and Electronics Engineering</b>				<b>Code : 702EX0C001</b>	
<b>Teaching Scheme</b>			<b>Evaluation Scheme</b>		
<b>Lecture (Hours per week)</b>	<b>Practical (Hours per week)</b>	<b>Tutorial (Hours per week)</b>	<b>Credit</b>	<b>Internal Continuous Assessment (ICA) (Marks-50)</b>	<b>Term End Examinations (TEE) (Marks -100)</b>
2	2	0	3	Marks Scaled to 50	Marks Scaled to 50
<b>Pre-requisite: NIL</b>					
<b>Course Objective</b> The main objective of this course is to equip the students with the ability to solve, assemble and test simple AC and DC electrical circuits. Further, the course also enables the student to obtain a basic understanding of the working principle and applications of electronics devices.					
<b>Course Outcomes</b> After completion of the course, students will be able to - <ol style="list-style-type: none"> <li>1. Interpret DC circuits, theorems and time domain analysis of first order RL circuit</li> <li>2. Analyse series and parallel AC circuits and summarize star/delta configurations</li> <li>3. Comprehend the principles of transformer and electrical machines</li> <li>4. Review the construction, working principle and applications of electronics devices and logic circuits</li> </ol>					
<b>Detailed Syllabus</b>					
<b>Unit</b>	<b>Description</b>				<b>Duration</b>
<b>1</b>	<b>DC Circuits</b> Electrical circuit elements (R, L and C), voltage and current sources, Kirchhoff's current law, Kirchhoff's voltage laws, Analysis of simple circuits with dc excitation, Superposition Theorem, Thevenin's Theorems, Norton's Theorems. Time-domain analysis of first-order RL circuits.				<b>6</b>
<b>2</b>	<b>AC Circuits</b> Generation of alternating emf, instantaneous, rms, peak, average values and related other terms, vector representation of AC quantities, Steady state analysis of R, L, C series and parallel circuits, resonance. Generation of three-phase emf, star connection, delta connection, relationship between line and phase quantities.				<b>8</b>
<b>3</b>	<b>Transformers and Electrical Machines</b> Construction and working of single-phase transformer Ideal and practical transformer, equivalent circuit, Losses in transformers,				

	Generation of rotating magnetic fields, Construction and working of a three-phase induction motor, Single-phase induction motor, construction and working, DC motor construction, working and types.	<b>6</b>
<b>5</b>	<b>Analog Electronics</b> (no mathematical treatment and design) Half and full wave rectifiers, special purpose diodes -zener regulator, BJT and its applications, amplifier, oscillator, overview of opto-electronics devices, opto-couplers, concepts of transducer, Operational amplifier (IC-741), Inverting and Non-Inverting, Comparator, Timer (IC-555) and multivibrators.	<b>5</b>
<b>6</b>	<b>Digital Electronics</b> Logic gates, concept of universal logic; implementation of Boolean expressions using logic gates, application of digital circuits: e.g., adder, subtractor, multiplexer, de-multiplexer, Analog to Digital Converter, Digital to Analog Converter.	<b>5</b>
	<b>Total</b>	<b>30</b>

**Text Books**

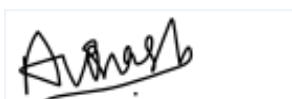
1. D. C. Kulshreshtha, Basic Electrical Engineering, 1st Edition, McGraw Hill Education, 2017.
2. E. Hughes, Electrical and Electronics Technology, 10th Edition, Pearson Education, 2013.
3. Boylstad R.L., Nashelsky L., Electronic Devices and Circuit Theory, 12th Edition, Pearson, 2012
4. M. Morris Mano, Digital Logic and Computer Design, 10th Edition, PHI, 2008.

**Reference Books**

1. V. D. Toro, *Electrical Engineering Fundamentals*, 2<sup>nd</sup> Edition, Pearson Education India, PHI, 2015.
2. B. L. Theraja, *Fundamentals of Electrical Engineering and Electronics*, 24<sup>th</sup> Edition, S. Chand & Co, 2012
3. Jacob Millman & Halkias, *Electronic Devices & Circuits*, 2<sup>nd</sup> Edition, Tata McGraw Hill, 2013.

**Laboratory Work**

8 to 10 practical exercises (and a practicum) based on the syllabus.



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Signature  
(Head of the Department)

