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| <b>Course Number and Name</b>   |  |
| BEE201 – BASIC ELECTRICAL AND ELECTRONICS ENGINEERING   |  |
| <b>Credits and Contact Hours</b>  |  |
| 2&30  |  |
| <b>Course Coordinator's Name</b>  |  |
| Mr. Vijayaraghavan  |  |
| <b>Text Books and References</b>  |  |
| <p><b>TEXT BOOKS:</b></p> <ol style="list-style-type: none"> <li>1. N.Mittal "Basic Electrical Engineering". Tata McGraw Hill Edition, New Delhi, 1990.</li> <li>2. A.K. Sawhney, 'A Course in Electrical &amp; Electronic Measurements &amp; Instrumentation' Dhanpat Rai and Co, 2004.</li> <li>3. Jacob Millman and Christos C-Halkias, "Electronic Devices and Circuits", Tata McGraw Hill</li> </ol> <p><b>REFERENCE BOOKS:</b></p> <ol style="list-style-type: none"> <li>1. Edminister J.A. "Theory and Problems of Electric Circuits" Schaum's Outline Series. McGrawHill Book Company, Edition, 1983.</li> <li>2. Hyatt W.H and Kemmerly J.E. "Engineering Circuit Analysis", McGraw Hill International Editions, 1993.</li> <li>3. <a href="#">D. P. Kothari</a> and <a href="#">I. J. Nagrath</a> "Electric Machines" Tata McGraw-Hill Education, 2004</li> <li>4. Millman and Halkias, "Integrated Electronics", Tata McGraw Hill Edition, 2004.</li> </ol> |  |
| <b>Course Description</b>   |  |
| To understand the laws of electrical engineering.   |  |
| <b>Prerequisites</b>  | <b>Co-requisites</b>   |
| Engineering Mathematics, Engineering Physics-I & II   | Nil  |
| required, elective, or selected elective (as per Table 5-1)   |  |
| Required  |  |
| <b>Course Outcomes (COs)</b>  |  |
| CO1   | Students will gain knowledge regarding the various laws and principles associated with electrical systems.           |
| CO2   | Students will gain knowledge regarding electrical machines and apply them for practical problems.                    |
| CO3   | Students will gain knowledge regarding various types of semiconductors.  |
| CO4   | Students will gain knowledge of digital electronics.   |
| CO5   | Students will gain knowledge on electronic systems.  |
| CO6   | Students will acquire knowledge in using the concepts in the field of electrical engineering, projects and research. |

| COs/SOs | a | b | c | d | e | f | g | h | i | j | k | l | Student Outcomes (SOs) from Criterion 3 covered by this Course |  |
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| CO1     | M | H | M |   |   | L |   | L | L |   |   |   |  |  |
| CO2     |   | H | M |   |   | L |   | L | L |   |   |   |  |  |
| CO3     |   | H | M |   |   | L |   | L |   |   |   |   |  |  |
| CO4     | M | H | M |   |   | L |   | L | L |   |   |   |  |  |
| CO5     | M | H | M |   |   | L |   | L |   |   |   |   |  |  |
| CO6     |   | H |   |   |   | L |   | L | H |   |   |   |  |  |

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**List of Topics Covered**

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| <b>UNIT I ELECTRIC CIRCUITS</b>   | <b>6</b> |
| Ohm's law – Kirchoff's Laws, V – I Relationship of Resistor (R) Inductor (L) and capacitor (C). Series parallel combination of R, L&C – Current and voltage source transformation – mesh current & node voltage method – superposition theorem – Thevenin's and Norton's Theorem -Problems. |          |
| <b>UNIT II ELECTRICAL MACHINES</b>  | <b>6</b> |
| Construction, principle of operation, Basic Equations and applications - D.C.Generators and D.C.Motors. -Single phase Induction Motor - Single Phase Transformer.   |          |
| <b>UNIT III BASIC MEASUREMENT SYSTEMS</b>   | <b>6</b> |
| Introduction to Measurement Systems, Construction and Operating principles of PMMC, Moving Iron, Dynamometer Wattmeter, power measurement by three-watt meter and two watt method – and Energy meter.   |          |
| <b>UNIT IV SEMICONDUCTOR DEVICES</b>  | <b>6</b> |
| Basic Concepts of semiconductor devices – PN Junction Diode Characteristics and its Applications – HWR, FWR –Zener Diode – BJT (CB, CE, CC) configuration & its Characteristics.  |          |
| <b>UNIT V DIGITAL ELECTRONICS</b>   | <b>6</b> |
| Number system – Logic Gates – Boolean Algebra– De-Morgan's Theorem – Half Adder & Full Adder – Flip Flops.  |          |