

**University of Engineering and Management**  
**Institute of Engineering & Management, Salt Lake Campus**  
**Institute of Engineering & Management, New Town Campus**  
**University of Engineering & Management, Jaipur**

**Syllabus for B.Tech. Admission Batch 2024**

<b>Course Name: Basic Electrical Engineering Laboratory</b>	
<b>Course Code: ESCEE-191</b>	
<b>Course Code: ESCEE-191</b>	<b>Category: Basic Science Courses</b>
<b>Course Title: Basic Electrical Engineering Laboratory</b>	<b>Semester: First</b>
<b>L-T-P: 0-0-3</b>	<b>Credit: 1</b>
<b>Pre-Requisites: High School Mathematics &amp; Physics</b>	
<b>Course Outcomes</b>  <b>CO1: Get an exposure to common electrical components and their ratings and make electrical connections by wires of appropriate ratings</b>  <b>CO2: Understand the usage of common electrical measuring instruments.</b>  <b>CO3: Understand and verify different networking theorems.</b>  <b>CO4: Understand the basic characteristics of transformers and electrical machines.</b>	

<b>List of Hands on experiment to be conducted in the laboratory</b>				
<b>Sl No.</b>	<b>Name of Experiments</b>	<b>Digital Twin link</b>	<b>Mapping with MIT &amp; Stanford</b>	<b>Use of Software</b>
1	<b>1. (a) Basic safety precautions mentioning do's and don'ts.</b>  <b>(b) Introduction and uses of electrical instrument :-</b> <b>Ammeter, Voltmeter, Wattmeter, Variac , Autotransformer and colour codes of resistors.</b>	<a href="https://www.amrita.edu/course/basic-electrical-and-electronics-engineering-lab/">https://www.amrita.edu/course/basic-electrical-and-electronics-engineering-lab/</a>	<a href="#">NA</a>	MATLAB, Simulink toolbox
2	<b>Demonstration about the cut section of a.c &amp; d.c. machines.</b>	<a href="#">NA</a>	NA	NA
3	<b>Demonstration about the LT switch gears and electrical components.</b>	<a href="#">NA</a>	NA	NA
4	<b>Verification of Super position theorem with theoretical calculations</b>	<a href="https://www.amrita.edu/course/basic-electrical-and-electronics-engineering-lab/">https://www.amrita.edu/course/basic-electrical-and-electronics-engineering-lab/</a>	NA	MATLAB, Simulink toolbox
5	<b>Verification of Thevenin theorem with theoretical calculations</b>	<a href="https://www.amrita.edu/course/basic-electrical-and-electronics-engineering-lab/">https://www.amrita.edu/course/basic-electrical-and-electronics-engineering-lab/</a>	NA	MATLAB, Simulink toolbox
6	<b>Verification of Maximum power theorem with theoretical calculations</b>	<a href="https://www.amrita.edu/course/basic-electrical-and-electronics-engineering-lab/">https://www.amrita.edu/course/basic-electrical-and-electronics-engineering-lab/</a>	NA	MATLAB, Simulink toolbox
7	<b>Calibration of wattmeter. Draw the curve between percentage error vs test meter reading</b>	<a href="https://www.amrita.edu/course/basic-electrical-and-electronics-engineering-lab/">https://www.amrita.edu/course/basic-electrical-and-electronics-engineering-lab/</a>	NA	MATLAB, Simulink toolbox

8	Verification of Norton's theorem with theoretical calculations	<a href="https://www.amrita.edu/course/basic-electrical-and-electronics-engineering-lab/">https://www.amrita.edu/course/basic-electrical-and-electronics-engineering-lab/</a>	NA	MATLAB, Simulink toolbox
9	Determination of steady state response of R-L, R-C, R-L-C Series circuit and calculation of Impedance, power factor., power losses and draw the vector diagram	<a href="https://www.amrita.edu/course/basic-electrical-and-electronics-engineering-lab/">https://www.amrita.edu/course/basic-electrical-and-electronics-engineering-lab/</a>	NA	MATLAB, Simulink toolbox
10	Calibration of ammeter, voltmeter . Draw the curve between percentage error vs test meter reading	<a href="https://www.amrita.edu/course/basic-electrical-and-electronics-engineering-lab/">https://www.amrita.edu/course/basic-electrical-and-electronics-engineering-lab/</a>	NA	MATLAB, Simulink toolbox
11	Open circuit and short circuit test of 1ph transformer and determination of efficiency on Full load, Half of full load, $\frac{3}{4}$ of full load, $\frac{1}{4}$ of full load and draw the efficiency curve.	<a href="https://em-coep.vlabs.ac.in/List%20of%20experiments.html">https://em-coep.vlabs.ac.in/List%20of%20experiments.html</a>	NA	MATLAB, Simscape toolbox
12	Determination of steady state response of R-L, R-C, R-L-C parallel circuit and Calculation of impedance and power factor.	<a href="https://www.amrita.edu/course/basic-electrical-and-electronics-engineering-lab/">https://www.amrita.edu/course/basic-electrical-and-electronics-engineering-lab/</a>	NA	MATLAB
13	Determination of torque speed characteristic of separately excited D.C Shunt Motor.	<a href="https://em-coep.vlabs.ac.in/List%20of%20experiments.html">https://em-coep.vlabs.ac.in/List%20of%20experiments.html</a>	NA	MATLAB, Simscape toolbox
14	No load characteristics of separately D.C. Shunt generator. Draw the characteristics Curve.	<a href="https://em-coep.vlabs.ac.in/List%20of%20experiments.html">https://em-coep.vlabs.ac.in/List%20of%20experiments.html</a>	NA	MATLAB, Simscape toolbox

15	<b>Speed control of D.C shunt motor (Armature volt. and field current control method. Draw the characteristics.</b>	<a href="https://em-coep.vlabs.ac.in/List%20of%20experiments.html">https://em-coep.vlabs.ac.in/List%20of%20experiments.html</a>	NA	MATLAB, Simscape toolbox
16	<b>Measurement of 3ph power by two wattmeter method.</b>	<a href="https://em-coep.vlabs.ac.in/List%20of%20experiments.html">https://em-coep.vlabs.ac.in/List%20of%20experiments.html</a>	NA	MATLAB, Simscape toolbox
<b>List of Innovative Experiments in Laboratory</b>				
1	<b>To study and run the 1ph a.c. motor and change the D.O.R.</b>	NA	NA	MATLAB, Simscape toolbox
2	<b>Using FLUX.AI creat a complex circuit and solve load current and voltage using KVL and KCL</b>	NA	NA	<a href="https://www.flux.ai/p">https://www.flux.ai/p</a>