SARVAJANIK UNIVERSITY

SARVAJANIK COLLEGE OF ENGINEERING AND TECHNOLOGY

BACHELOR OF TECHNOLOGY

B.Tech	1	Semester	1/2	Teaching Scheme				Evaluation Scheme	
Subject Name	Basic Electrical Engineering Lab			**L**	**T**	**P**	**Credits**	**CCE**	**SEE**
Subject Code	BTEL22102			-	-	**2**	**1**	25	25
Type of course	Engineering Science Course			CCE : Continuous and Comprehensive Evaluation SEE : Semester End Evaluation					
Prerequisite	NA								
Rationale	Electricity has been the main source of energy for the developing and developed countries. Per capita consumption of electricity of a country can be considered as an indicator of the development of the country. In view of this, it is essential for all engineering graduates to know the basic aspects of electrical engineering. This Laboratory course deals with the practical aspects of basic circuit solution methods, single-phase and three-phase AC circuits, transformers, electrical machines, electrical installation and electrical safety.								

Course Outcomes (COs): At the end of the course, students will be able to		Marks % Weightage
CO – 1	Apply fundamental electrical laws and circuit theorems in solving electrical circuits.	22
CO – 2	Analyze single-phase and three-phase AC circuits.	24
CO – 3	Comprehend magnetic circuit, describe construction, working principle and application of transformer.	20
CO – 4	Describe construction, operating principle and applications of DC machine, Induction motor and alternator.	22
CO – 5	Comprehend electrical installation components, importance of safety and the precautions to be taken while working with electrical equipments.	12

List of Laboratory Practical	
1	Introduction and use of measuring instruments – voltmeter, ammeter, wattmeter, multi-meter, oscilloscope, Resistors, Capacitors and Inductors, load trolley, basic safety precautions.
2	To verify Kirchoff's current and voltage laws.
3	To verify superposition theorem for DC circuit.
4	To verify Thevenin's theorem and Norton's theorem.
5	To measure power in single-phase R-L circuit.
6	To measure power in single-phase R-C circuit.
7	To verify the resonance in R-L-C circuits.
8	To measure the power in three-phase circuits using two-wattmeter method.

9	To verify the current and voltage relationships in three phase star and delta connections.
10	To verify the power factor improvement in single phase AC circuit.
11	To study B-H characteristic of magnetic circuit material.
12	To study the step-up and step-down operation of single-phase transformer.
13	To perform O.C./S.C. test and obtain efficiency of single-phase transformer.
14	To study the characteristics of D.C. motors.
15	To study speed control of D. C. shunt motor.
16	To obtain open circuit characteristics of separately excited d.c. generator.
17	To study the starting of Induction motor using auto-transformer and measure no load power.
18	To study various protection devices like MCB, MCCB and ELCB, and understand theirusage in electrical installations.
19	To study the need of earthing and demonstration of different types of earthing.

Recommended Reference Books

1 D. C. Kulshreshtha,Basic Electrical Engineering, McGraw Hill, 2009
2 B. L. Theraja and A. K. Theraja, "A text book of Electrical Technology: Volume I", S. Chand, 2005.
3 B. L. Theraja and A. K. Theraja, "AC and DC Machines: Volume 2", S. Chand, 2005.
4 I. J. Nagrath and D. P. Kothari,Basic Electrical Engineering, Tata McGraw Hill, 2010
5 I. J. Nagrath and D. P. Kothari, Electrical Machines, Tata McGraw Hill, 2010
6 V. D. Toro, Electrical Engineering Fundamentals, Prentice Hall India, 2016
7 V. N. Mittle,Basic Electrical Engineering, McGraw Hill, 1995

CO-PO-Mapping

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO – 1	3	2	-	3	2	-	-	-	-	-	-	3
CO – 2	3	2	2	3	2	-	2	-	-	-	-	3
CO – 3	3	2	-	3	2	-	-	-	-	-	-	3
CO – 4	3	2	-	3	2	-	-	-	-	-	-	3
CO – 5	3	2	3	3	2	3	-	3	-	-	-	3

List of Open Source/learning website/Other Details if any:

1. MIT OPEN COURSEWARE by Massachusetts Institute of Technology - website: ocw.mit.edu
2. Courses available through NPTEL. - website: nptel.ac.in
3. Open source software: Website: www.vlabs.co.in

Syllabus of Design Thinking

B.Tech	1	Semester	1/2	Teaching Scheme				Evaluation Scheme	
Subject Name	**Design Thinking**			**L**	**T**	**P**	**Credits**	**CCE**	**SEE**
Subject Code	**BTGN22101**			-	-	2	1	25	25
Type of course	Engineering Science Course			CCE : Continuous and Comprehensive Evaluation SEE : Semester End Evaluation					
Prerequisite	No prerequisite								
Rationale	This course is open to students from any discipline eager to learn design thinking principles for building brands, products, and services, empowering them with essential strategies for fostering innovation in business and society.								

GROUP	BRANCH
1	Computer Engineering (CO) Information and Technology Engineering (IT) Artificial Intelligence and Data Science Engineering (AIDS)
2	Electrical Engineering (EL) Electronics and Communication Engineering (EC) Instrumentation and Control Engineering (IC)
3	Chemical Engineering (CH) Civil Engineering (CL) Mechanical engineering (MECH)

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