GANPAT UNIVERSITY

FACULTY OF DIPLOMA ENGINEERING

Programme	Diploma in Electrical Engineering			
Semester	II	Version	1.0.0.0	
Effective from Academic Year	2025-26	Effective for the batch Admitted in		JULY 2025
Course code	1EE2103	Course Name	Electrical Engineering Software Skills	

I. TEACHING-LEARNING AND ASSESSMENT SCHEME

Course Type	Course Code	Learning Scheme						Assessment Scheme											
		Actual Contact Hrs./Week			SLH	NLH	Credits	Theory				Practical				Based on SL		Total Marks
		CL	TL	LL				FA-TH	SA-TH	TOTAL		FA-PR	SA-PR	TOTAL		SLA		
								MAX	MAX	MAX	MIN	MAX	MAX	MAX	MIN	MAX	MIN	
SEC	1EE2103	-	-	4	4	8	4	-	-	-	-	60	40	100	40	20	8	120

Abbreviation:	CL- Classroom Learning	TL - Tutorial Learning	LL - Laboratory Learning
	SLH - Self Learning Hours	NLH - Notional Learning Hours	SLA - Self Learning Assessment
	FA - Formative Assessment (Term work +Mid Sem Exam +Attendance)		SA - Summative Assessment

II. PRE-REQUISITES

   Basic knowledge of computer.

III. INDUSTRY / EMPLOYER EXPECTED OUTCOMES

The aim of this course is to enable students to achieve the following industry-identified outcomes through diverse teaching and learning experiences:
   - Demonstrate the application of simulation software and analysis of different circuits in electrical engineering.

IV. COURSE LEARNING OUTCOMES

At the end of the course, students will be able to achieve the following course learning outcomes:

CO1. Use computer systems and their peripherals.
CO2. Verify fundamental laws of electrical engineering circuit using simulation software.
CO3. Simulate different types of DC electrical circuits using simulation software.
CO4. Simulate different types of AC electrical circuits using simulation software.
CO5. Apply AI in different electrical engineering applications.

V. LABORATORY LEARNING OUTCOME AND ALIGNED PRACTICAL

Sr. No.	Practical/Laboratory Learning Outcome (LLO)	Practical Titles	Relevant COs
1	**LLO 1.1** Identify various parts of computer systems and peripherals.	**Basics of Computer Systems** Work with Computer System, Input/output devices, and peripherals.	CO1
2	**LLO 2.1** Introduction to PSIM Software.	**Introduction to PSIM** Understand the use of PSIM software.	CO2
3	**LLO 3.1** Draw electrical symbols using PSIM Software.	**Electrical Symbols in PSIM** Draw electrical symbols in PSIM.	CO2
4	**LLO 4.1** Verification of Ohm's law using PSIM Software.	**Ohm's Law** Verify Ohm's law using PSIM Software.	CO2
5	**LLO 5.1** Verification of Kirchhoff's Current Law using PSIM Software.	**Kirchhoff's Current Law** Verify Kirchhoff's Current Law using PSIM Software.	CO2
6	**LLO 6.1** Verification of Kirchhoff's Voltage Law using PSIM Software.	**Kirchhoff's Voltage Law** Verify Kirchhoff's Voltage Law using PSIM Software.	CO2

7	**LLO 7.1** Circuit Simulation of series circuit using PSIM Software.	**Series Circuit** Simulate series circuit using PSIM Software.	CO3
8	**LLO 8.1** Circuit Simulation of parallel circuit using PSIM Software.	**Parallel Circuit** Simulate parallel circuit using PSIM Software.	CO3
9	**LLO 9.1** Circuit Simulation of of RL circuit using PSIM Software.	**RL circuit** Simulate RL circuit using PSIM Software.	CO4
10	**LLO 10.1** Circuit Simulation of of RC circuit using PSIM Software.	**RC Circuit** Simulate RC circuit using PSIM Software.	CO4
11	**LLO 11.1** Circuit Simulation of of RLC circuit using PSIM Software.	**RLC Circuit** Simulate RLC circuit using PSIM Software.	CO4
12	**LLO 12.1** Circuit Simulation of of Mesh Analysis using PSIM Software.	**Mesh Analysis** Simulate Mesh analysis using PSIM Software.	CO3
13	**LLO 13.1** Circuit Simulation of of Node Analysis using PSIM Software.	**Node Analysis** Simulate Node analysis using PSIM Software.	CO3
14	**LLO 14.1** Circuit Simulation of Superposition theorem using PSIM Software.	**Superposition Theorem** Simulate Superposition theorem using PSIM Software.	CO3
15	**LLO 15.1** Analyse different types of supply using PSIM Software.	**Types of Supply** Simulate the different types of supply using PSIM Software.	CO2
16	**LLO 16.1** Learn the use of different AI tools for electrical engineering	**AI Tools** Use of AI tools for electrical engineering	CO5

VI. SUGGESTED MICRO PROJECT / ASSIGNMENTS / ACTIVITIES FOR SELF LEARNING / SKILL DEVELOPMENT (SELF LEARNING)

- Make a report on different types of electrical symbols.

- Make a report on different types of supply.

- Simulate different types of DC circuit using software.

- Simulate different types of AC circuit using software.

- Use any other AI tool to explore information.
  Mini projects

  - Perform a survey on various input and output devices available in market and make its report.

  - Carry-out survey on different AI tools.

  - Create and analyse circuit based on any application using PSIM.

VII. LIST OF INSTRUMENTS / EQUIPMENT / TRAINER BOARD	
1	Computer System with all necessary Peripherals and Internet connectivity
2	PSIM Software

VIII. LIST OF REFERENCE BOOKS

Sr.No.	Title	Author	Publication
1	PSIM User Guide	-	Powersim Inc
2	Power Electronics Circuit Analysis with PSIM	Farzin Asadi, Kei Eguchi	De Gruyter

IX. LINK OF LEARNING WEB RESOURCE

1	https://everycircuit.com/
2	https://www.falstad.com/circuit/

X. SUGGESTED WEIGHTAGE TO LEARNING EFFORTS & ASSESSMENT PURPOSE

Unit	Unit Title	Aligned COs	Learning Hours	R-Level	U-Level	A-Level	Total Marks
1	Basics of Computer Systems	CO1	4	1	1	0	2
2	Introduction to PSIM	CO2	2	0	1	1	2
3	Electrical Symbols in PSIM	CO2	2	0	1	1	2
4	Ohm's Law	CO2	4	1	1	2	4
5	Kirchhoff's Current Law	CO2	4	1	1	2	4
6	Kirchhoff's Voltage Law	CO2	4	1	1	2	4
7	Series Circuit	CO3	4	1	1	2	4
8.	Parallel Circuit	CO3	4	1	1	2	4
9.	RL circuit	CO4	4	1	1	2	4
10.	RC Circuit	CO4	4	1	1	2	4
11.	RLC Circuit	CO4	4	1	1	2	4
12.	Mesh Analysis	CO3	4	1	1	2	4
13.	Node Analysis	CO3	4	1	1	2	4
14.	Superposition Theorem	CO3	4	1	2	3	6
15.	Types of Supply	CO2	2	0	1	1	2
16.	AI Tools	CO5	6	1	2	3	6
		Grand Total	60	13	18	29	60

XI. COs AND POs AND PSOs MAPPING

Course outcome (Cos)	Programme Outcomes (POs)							Programme Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
CO1	1	1	0	3	1	1	1	1	0	1
CO2	2	1	2	3	1	0	1	2	1	1
CO3	2	3	2	3	1	1	1	2	0	1
CO4	2	3	2	3	1	1	1	2	1	1
CO5	1	1	1	2	1	2	1	1	1	1

Legends: - *3- High   2-Moderate/Medium   1-Slight/Low   0-None*