INSTITUTEOFAERONAUTICALENGINEERING

(Autonomous)

Dundigal,Hyderabad– 500043

Electrical and Electronics Engineering

List of Laboratory Experiments

ELECTRICAL NETWORKS AND SIMULATION LABORATORY								
CourseCode	**Category**	**Hours/Week**			**Credits**	**MaximumMarks**		
AEEC08	**Core**	**L**	**T**	**P**	**C**	**CIA**	**SEE**	**Total**
		1	0	2	2	30	70	100
Contact Classes: Nil	**Tutorial Classes: Nil**	**Practical Classes: 36**				**TotalClasses: 36**		
Branch: EEE	**Semester:III**	**Academic Year: 2023-24**				**Regulation:UG20**		

Course overview:

The Network Analysis and Scientific Computing Laboratory is designed to give hands-on experience on virtual instrumentation through digital simulation techniques. These techniques enable the students in examining characteristics of DC and AC circuits, filters, solution of differential equation, generation of three phase and complex wave forms using MATLAB.

Course objectives:

I.Time varying characteristics of series and parallel circuits using MATLAB.
II. Transfer function of electrical circuits using MATLAB.
III.Relations between electrical quantities in complex electrical networks using MATLAB.
IV. The performance of single phase and three phase circuits using Lab View.

Course outcomes:

CO1: Identify the symbols, tool kits and connections in Simulink environment for computing the quantities associated with electrical circuits.
CO2: Examine the transfer function for studying transient response of RL, RC and RLC circuits.
CO3: Analyze the virtual instrumentation (VI) using control loops, arrays, charts and graphs.
CO4: Determine various alternating quantities of single phase and three phase signals generated in MATLAB/ LabVIEW.
CO5: Design the various sensors for measuring electrical and non-electrical quantities through digital simulation.

WEEK NO	EXPERIMENT NAME	CO
WEEK–I	**INTRODUCTION TO MALAB**	CO1
	Check the symbols, tool kits and connections related to electrical circuits in MATLAB.	
WEEK–II	**TRANSIENT RESPONSE OF SERIES RL, RC AND RLC CIRCUITS**	CO2
	Plot the time varying characteristics of series circuits using MATLAB.	
WEEK–III	**SOLVING DIFFERENTIAL EQUATIONS**	CO1
	Obtain the solution of different equations representing electric network using MATLAB.	
WEEK–IV	**TRANSFER FUNCTION OF ELECTRICAL CIRCUIT**	CO2
	Determine the transfer function of electrical circuit.	
WEEK–V	**TRANSIENT RESPONSE OF PARALLEL RL, RC AND RLC CIRCUITS**	CO3
	Plot the time varying characteristics of parallel circuits using MATLAB.	
WEEK–VI	**GENERATION OF THREE PHASE WAVE FORMS**	CO4

	Generation of three phase AC wave forms for different phases difference and phase sequences using MATLAB.	
WEEK–VII	**THREE PHASE MEASUREMENTS**	**CO4**
	Determine the electrical quantities of three phase wave form using MATLAB.	
WEEK–VIII	**VIRTUAL INSTRUMENTS (VI) USING MATLAB**	**CO3**
	Editing and building a VI, creating a sub VI.	
WEEK-IX	**GENERATION OF COMMON WAVE FORMS USING LAB VIEW**	**CO4**
	Signal generation of triangular wave; saw tooth, square wave and display of wave form, minimum and maximum values of wave form and modulation.	
WEEK-X	**FREQUENCY MEASUREMENT USING LISSAJOUS FIGURES IN LAB VIEW**	**CO3**
	Measure the frequency of unknown signal using Lissajous pattern in LAB view.	
WEEK-XI	**STRUCTURES USING LAB VIEW**	**CO3**
	Using FOR loop, WHILE loop, charts and arrays, graph and analysis Vis.	
WEEK-XII	**SIMULATION OF LAW PASS AND HIGH FILTERS USING DIGITAL SIMULATION**	**CO5**
	Plot the characteristics of low pass and high pass filters using MATLAB	
WEEK-XIII	**SENSOR CIRCUIT USING LAB VIEW**	**CO5**
	Design the electric and electronic circuit of sensor using LAB View.	
WEEK-XIV	**PROXIMITY SENSOR USING LAB VIEW**	**CO5**
	Measure the speed of the machine with proximity sensor in LAB View.	