INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad – 500043

Electronics and Communication Engineering

List of Laboratory Experiments

VIRTUAL INSTRUMENTATION LABORATORY								
Course Code	**Category**	**Hours / Week**			**Credits**	**Maximum Marks**		
AECC30	**Core**	**L**	**T**	**P**	**C**	**CIA**	**SEE**	**Total**
		0	0	3	1.5	30	70	100
Contact Classes: Nil	**Tutorial Classes: Nil**	**Practical Classes: 36**				**Total Classes:36**		
Branch: ECE	**Semester: V**	**Academic Year: 2021-22**				**Regulation: UG20**		

Course overview:

The Laboratory Virtual Instrument Engineering Workbench (LabVIEW) is a development environment designed by National Instruments that creates graphic-based programs called virtual instruments (VIs) that simulate actual laboratory instruments. The course imparts the basic knowledge about the software based tools for the development of virtual instruments for use in real world data acquisition and measurement systems. The course seeks to provide a hands-on environment and uses a number of VI-programming.

Course objectives:

The students will try to learn:

I. The concept of virtual instrumentation and to develop basic VI programs using loops, case structures etc. including its applications in image, signal processing and motion control.

II. LabVIEW tool to design basic operations and data acquisition using myDAQ and myRIO cards.

III. Prototype model for distribute stand-alone applications using LabVIEW.

Course outcomes:

After successful completion of the course, students should be able to:

CO1: Build the arithmetic and logical operations based applications using the LabVIEW graphical programming environment.
CO2: Apply single and multiple-loop design patterns for application functionality.
CO3: Analyze data log waveform graphs for system monitoring, processing and controlling
CO4: Demonstrate the formula node in LabVIEW for signal processing, image processing etc.
CO5: Design data acquisition systems using myDAQ and myRIO data cards.
CO6: Illustrate the data acquisition and interfacing concepts using a state-of-the-art software platform such as National Instrument's LabVIEW.

WEEK NO	EXPERIMENT NAME	CO
WEEK – I	**OPEN AND RUN A VIRTUAL INSTRUMENT**	CO1
	Open the front panel and block diagram in Lab VIEW software	
WEEK – II	**SUM OF "n" NUMBERS USING "FOR" LOOP AND WHILE LOOP FACTORIAL OF A GIVE NUMBER USING FOR LOOP AND WHILE LOOP**	CO2
	Design a program to find the sum of _n,, numbers using FOR loop and WHILE loop Design a program to perform the factorial of a given number using FOR loop and WHILE loop.	
WEEK – III	**BUNDLE AND UNBUNDLE CLUSTER**	CO1
	Design a program to bundle and unbundle a cluster.	
WEEK – IV	**APPLICATION USING FORMULA NODE & DISCRETE COSINE TRANSFORM**	CO4

	Design a program to create a sine wave using formula node and to perform discrete cosine transform on the given signal.	
WEEK – V	**FLAT AND STACKED SEQUENCE**	**CO2**
	Design a program to perform functions using flat and stacked sequence.	
WEEK – VI	**AMPLITUDE MODULATION**	**CO3**
	Design a program to perform Amplitude Modulation.	
WEEK – VII	**REAL TIME TEMPERATURE MONITORING USING VIRTUAL INSTRUMENTATION.**	**CO6**
	Design a program for real time temperature monitoring by using virtual instrumentation	
WEEK –VIII	**MEASURE DISTANCE USING IR RANGER AND MYDAQ**	**CO5**
	Design a program for measure distance using ir ranger and myDAQ	
WEEK - IX	**MEASUREMENT OF VIBRATIONS USING PIZEO ELECTRIC TRANSDUCER AND MYDAQ**	**CO5**
	Design a program for measurement of vibrations using pizeo electric transducer and myDAQ	
WEEK - X	**MEASUREMENT OF VIBRATIONS USING PIZEO ELECTRIC TRANSDUCER AND MYRIO**	**CO5**
	Design a program for measurement of vibrations using pizeo electric transducer and myRIO	
WEEK - XI	**INTERFACE SERVO MOTOR AND DC MOTORS USING MYDAQ**	**CO5**
	Acquire the data from the sensors by using myDAQ and myRIO	
WEEK - XII	**INTERFACE SERVO MOTOR AND DC MOTORS USING MYRIO**	**CO5**
	Design a program to interface servo motor and dc motors using myRIO	
WEEK - XIII	**MEASURE DISTANCE USING IR RANGER AND MYRIO**	**CO5**
	Design a program to develop signal generator by using myRIO cards	
WEEK - XIV	**DEVELOPING SIGNAL GENERATOR USING DAQ CARDS**	**CO5**
	Design a program to develop signal generator by using myDAQ cards	