EC-308 **GRAPHICAL SYSTEM DESIGN** **L T P C**
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COURSE OBJECTIVES:

1. To know about LabVIEW environment and various controls & indicators.
2. To know about the concepts of arrays ,loops and clusters.
3. To know about the graphs, charts and file I/Os.
4. To provide knowledge in process analysis by using debugging tools.
5. To understand the creation of sub VI and DAQ.

COURSE OUTCOMES:

After successful completion of the course, the students are able to

1. understand the LabVIEW Environment
2. describe the DAQ interface process for real time applications.
3. demonstrate advanced LabVIEW structures.
4. design Complex-VI's using sub-VI's.
5. Construct VI's using Structures, Arrays and Clusters

UNIT I **(15)**

Virtual Instrumentation : Overview, Using LabVIEW in the Real World, The Evolution of LabVIEW, What Is Data Acquisition, Communication Using the Serial Port.

The LabVIEW Environment : Front Panels, Block Diagrams, LabVIEW Projects, SubVIs, the Icon, and the Connector, Alignment Grid, Pull-Down Menus, Floating Palettes, The Toolbar ,Pop-Up Menus, Help, Express VIs.

LabVIEW Foundations : Creating VIs, Basic Controls and Indicators, Wiring Up, Running the VI, Loading and Saving VIs, Debugging Techniques, Creating SubVIs, Documenting Your Work.

UNIT II **(12)**

Controlling Program Execution with Structures : Two Loops, Shift Registers, The Case Structure, Dialogs, The Sequence Structure, Flat or Stacked, Timing, The Timed Structures, The Formula Node, The Expression Node,The While Loop + Case Structure Combination.

Arrays and Clusters : Creating Array Controls and Indicators, Using Auto-Indexing, Two-Dimensional Arrays, Functions for Manipulating Arrays, Polymorphism, Compound Arithmetic, All About Clusters, Interchangeable Arrays and Clusters, Error Clusters and Error-Handling Functions.

UNIT III **(12)**

LabVIEW's Exciting Visual Displays : Waveform Charts, Graphs, XY Graphs, Chart and Graph Components, Intensity Charts and Graphs Colour as a Third Dimension, Time Stamps, Waveforms, and Dynamic Data, Mixed Signal Graphs, Exporting Images of Charts and Graphs.

Exploring Strings and File I/O : Overview, More About Strings, Using String Functions, Parsing Functions, File Input/output.

UNIT IV **(12)**

Advanced LabVIEW Structures and Functions : Local, Global, and Shared Variables, Property Nodes, Invoke Nodes, Event-Driven Programming : The Event Structure ,Type Definitions, The State Machine and Queued Message Handler, Messaging and Synchronization, Structures for Disabling Code, Halting VI and Application Execution.

UNIT V **(12)**

Signal Measurement and Generation : Data Acquisition DAQ and Other Data Acquisition Acronyms, How to Connect Your Computer to the Real World, Signals, Selecting and Configuring DAQ Measurement Hardware.

Advanced LabVIEW Features : Overview, The LabVIEW Options Dialog, Configuring Your VI, The VI Server, Radices and Units, Automatically Creating a SubVI from a Section of the Block Diagram.

LEARNING RESOURCES:

TEXT BOOK(s):

Jeffrey Travis & Jim Kring - LabVIEW for Everyone-Graphical Programming Made Easy and fun, Third Edition, Prentice Hall.

REFERENCE BOOK(s):

Gary W.Johnson & Richard Jennings - LabVIEW Graphical Programming, Fourth Edition-McGraw Hill.