

EC-308**GRAPHICAL SYSTEM DESIGN**

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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

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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.