

**MVJ COLLEGE OF ENGINEERING
NI LabVIEW ACADEMY
NI LabVIEW Graphical programming**

Course Content

Total no. of periods: 50

Hours	Topics to be Covered
1.	Introduction
2.	Data flow, Polymorphism, LabVIEW environment, Front panel window, block diagram, and connector pane
3.	Menus and palettes, Configuration options
4.	Examples
5.	Software constructs in LabVIEW: Front panel window and block diagram objects, Controls, indicators, IO controls, and refnums Terminals, constants, and nodes, Palettes
6.	Examples
7.	Update modes and legends of charts and graphs
8.	Examples
9.	Mechanical action of Boolean objects Property Nodes, Data types as Numeric
10.	Examples on Numeric data type
11.	String data type and Examples
12.	Boolean data type and Examples.
13.	Array and cluster data types
14.	Examples on arrays and Cluster data types.
15.	Waveform and timestamp data types, Variant data types, Working with objects and data types on front panel windows, Ranges, formats, representation, and scaling, Customizing controls
16.	Type definitions and strict type definitions
17.	Program control structures and data storage, Looping structures (For Loops and While Loops), Indexing on loop boundaries
18.	Examples on For loop
19.	Examples on While loop
20.	Shift registers and Examples
21.	Case Structures , Case selector values and data types, Data passing—tunnels and sequence locals and Examples
22.	Sequence structures, Flat and Stacked sequence structures and Examples
23.	Event structures and Examples
24.	Notify and filter events (user interface), Value (Signaling) properties of controls, Dynamic events and user events
25.	Formula Node, Conditional Disable and Diagram Disable structures, Timed structures
26.	Local, global, and shared variables

Hours	Topics to be Covered
27.	Programming VIs and functions : Numeric, Boolean, string, path, and variant, Conversion, comparison, and manipulation, Arrays and clusters
28.	Timing i. Wait timers, Tick Count (ms), and Date/Time functions ii. Timing functions
29.	Waveform and waveform file I/O, Dynamic and User events
30.	Data communication and synchronization VIs and functions: Local, global, and shared variables, DataSocket, TCP and UDP, Synchronization i. Notifiers ii. Queues iii. Semaphores
31.	VI Server VIs and functions: Configuring the VI Server, Class hierarchy, references, Property Nodes, and Invoke Nodes, Dynamically loading Vis
32.	Error handling VIs and functions: Error clusters, Dialog & User Interface Vis, Custom error codes
33.	Design patterns: Simple state machine, User interface event handler, Queued message handler, Producer/consumer (data) and producer/consumer (events), Functional global variables
34.	SubVI design: SubVI creation methods, Connector panes and connection types, Polymorphic subVIs, Options related with examples
35.	Debugging tools and techniques: Debugging tools i. Error list window ii. Execution highlighting iii. Breakpoints and single stepping iv. Generic and custom probes, Debugging practices and techniques for different situations
36.	VI design and documentation (style) practices: Refer to the LabVIEW Style Checklist topic of the LabVIEW Help for information on the following items i. User interface design and block diagram layout
37.	Modular and hierarchical design
38.	SubVI icons and connector pane layout (standard)
39.	VI properties
40.	Documenting VIs
41.	Programming practices i. Enforcing dataflow
42.	User interface updates and response to user interface controls
43.	Data type selection, coercion, and buffer allocation
44.	Array, string, and loop operations
45.	Local and global
46.	Examples
47.	Solving CLAD Question papers
48.	Mock CLAD test
49.	Examples.
50.	Examples


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