

# LV Mastery Applications: Course Outline

These pages are intended to assist you in taking notes as you complete lessons, and to assist in organizing and tracking your progress. They are printable, so you can create as many as necessary.

| Category                              | Topics                               | Content   |
|---------------------------------------|--------------------------------------|---|
| <b>Review Exercise</b>                |                                      | <ul style="list-style-type: none"> <li>Selected topics from the Beginner course</li> </ul>  |
| <b>Strings</b>                        | String Display Modes                 | <ul style="list-style-type: none"> <li>Normal display</li> <li>Hex Display</li> <li>Code Display</li> <li>Password display</li> </ul>   |
|                                       | String Functions                     | <ul style="list-style-type: none"> <li>Concatenate Strings</li> <li>Match Pattern</li> <li>Scan from String</li> </ul>  |
|                                       | Edit Format String                   | <ul style="list-style-type: none"> <li>Format into string</li> <li>Edit format string</li> </ul>  |
|                                       | Format Specifiers                    | <ul style="list-style-type: none"> <li>Creating format specifiers</li> <li>Syntax elements</li> </ul>   |
|                                       | Dialog Functions                     | <ul style="list-style-type: none"> <li>One-, two-, three- button dialogs</li> </ul>   |
| <b>Reading and Writing Data Files</b> | File Paths                           | <ul style="list-style-type: none"> <li>Path data type</li> <li>Path controls and constants</li> <li>Build paths</li> <li>Strip paths</li> <li>Converting: strings and paths</li> </ul>  |
|                                       | Text Files                           | <ul style="list-style-type: none"> <li>Writing a string to text file</li> <li>Writing by file vs. by file reference</li> <li>Reading from text files</li> </ul>                         |
|                                       | Format Into Files                    | <ul style="list-style-type: none"> <li>Format into file</li> <li>Scan from file</li> </ul>  |
|                                       | Spreadsheet Files                    | <ul style="list-style-type: none"> <li>Purpose within LabVIEW</li> <li>Write to and read from spreadsheet</li> </ul>  |
|                                       | File Manipulation                    | <ul style="list-style-type: none"> <li>Path dialog box</li> <li>Move, copy, delete files</li> <li>Create folder, list folder</li> <li>Zip files</li> </ul>                              |
|                                       | Binary Files                         | <ul style="list-style-type: none"> <li>Purpose</li> <li>Costs and benefits</li> </ul>   |
|                                       | Express VI Functions                 | <ul style="list-style-type: none"> <li>Write to measurement file</li> <li>Read from measurement file</li> <li>Test data measurement (TDM) files</li> <li>Streaming TDM files</li> </ul> |
| <b>Exercise #1</b>                    |                                      | <ul style="list-style-type: none"> <li>Strings and File I/O</li> </ul>  |
| <b>Local and Global Variables</b>     | Data Management Basics               | <ul style="list-style-type: none"> <li>What is dataflow?</li> <li>Troubleshooting dataflow problems</li> </ul>  |
|                                       | Creating Local Variables             | <ul style="list-style-type: none"> <li>What is it?</li> <li>Two methods for creating local variables</li> </ul>   |
|                                       | Local Variables: Race Conditions     | <ul style="list-style-type: none"> <li>What is it?</li> <li>How do you overcome them?</li> </ul>  |
|                                       | Local Variables with Clusters        | <ul style="list-style-type: none"> <li>Strategies and benefits</li> </ul>   |
|                                       | Global Variables                     | <ul style="list-style-type: none"> <li>What is it?</li> <li>Creating and using global variables.</li> </ul>   |
|                                       | Tips About Locals and Globals        |   |
| <b>VI Properties</b>                  | Customizing VI Properties            | <ul style="list-style-type: none"> <li>How to..</li> </ul>  |
|                                       | Creating Pop-Up Panels               | <ul style="list-style-type: none"> <li>Types</li> <li>Customizing</li> </ul>  |
|                                       | Key Navigation                       | <ul style="list-style-type: none"> <li>What is it?</li> </ul>   |
| <b>Event Structure</b>                | What is Event-Driven Programming?    |   |
|                                       | Event Structure Basic Usage          | <ul style="list-style-type: none"> <li>What is it?</li> <li>How does it work?</li> </ul>  |
|                                       | Notify and Filter Events             | <ul style="list-style-type: none"> <li>What are they?</li> <li>How do they work?</li> <li>When do you use them?</li> </ul>  |
|                                       | Event Registration and Panel Locking | <ul style="list-style-type: none"> <li>When are events registered?</li> <li>When are events locked?</li> </ul>  |
|                                       | Advanced Event Structure             | <ul style="list-style-type: none"> <li>How else can you use event structures?</li> </ul>  |

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| <b>Exercise #2</b>                     |                                   | <ul style="list-style-type: none"> <li>Locals, VI properties, event structure</li> </ul>   |
| <b>State Machines</b>                  | Simple State Machines             | <ul style="list-style-type: none"> <li>Creating simple state machines.</li> <li>Strategies for choosing the best functions for your state machine.</li> </ul>      |
|  | Next Case Selector                | <ul style="list-style-type: none"> <li>Modifying state machines to allow the software to decide where to go next.</li> </ul>                                       |
|  | Enum Selector                     | <ul style="list-style-type: none"> <li>Benefits of using enums in state machines</li> <li>Creating and using enum state machines.</li> </ul>                       |
|  | Idle Cases                        | <ul style="list-style-type: none"> <li>Benefits of combining an event structure and a state machine</li> <li>How to create idle cases in state machines</li> </ul> |
| <b>Exercise #3</b>                     |                                   | <ul style="list-style-type: none"> <li>State Machines</li> </ul>   |
| <b>Controls</b>                        | Listbox Control                   | <ul style="list-style-type: none"> <li>Properties of Listbox controls</li> <li>Multicolumn listbox controls</li> </ul>   |
|  | Table Indicator                   | <ul style="list-style-type: none"> <li>What is a table indicator?</li> <li>How are table indicators used?</li> </ul>   |
|  | Tree Controls                     | <ul style="list-style-type: none"> <li>Properties of tree controls.</li> <li>Populating tree controls.</li> </ul>  |
|  | Radio Buttons                     | <ul style="list-style-type: none"> <li>Properties of radio buttons</li> </ul>  |
|  | Combo Box                         | <ul style="list-style-type: none"> <li>Properties of a combo box</li> </ul>  |
|  | Tab Control                       | <ul style="list-style-type: none"> <li>Properties of tab controls</li> </ul>   |
|  | System Controls Palette           | <ul style="list-style-type: none"> <li>Controls that match the theme or operating system of the machine.</li> </ul>  |
|  | Decorations Palette               | <ul style="list-style-type: none"> <li>Add colour, objects, and text to your front panels.</li> </ul>  |
| <b>Express VI and Data Acquisition</b> | Control References                | <ul style="list-style-type: none"> <li>What is a control reference?</li> <li>Creating control references.</li> </ul>   |
|  | Express VIs and Dynamic Data Type | <ul style="list-style-type: none"> <li>What are express VIs?</li> <li>Advantages and disadvantages</li> <li>Properties of the dynamic data type.</li> </ul>        |
|  | Express VI Examples               | <ul style="list-style-type: none"> <li>Consider the examples.</li> </ul>   |
| <b>Exercise #4</b>                     | Intro to Data Acquisition         | <ul style="list-style-type: none"> <li>MAX</li> <li>DAQ</li> </ul>   |
|  |                                   | <ul style="list-style-type: none"> <li>Controls</li> </ul>   |