Subject	Graphical Prog. (lab view)	Course Code	CT312	Theoretical	3hrs / wk
Semester	5	Prerequisite	IT112	Practical	3hrs / wk

Program Learning Component

Week 1-2

1. LabView Basics

Specific Learning Outcomes	Resources	Practical
Lab VIEW Basics This introduces the Lab View environment and helps orient students when they open a VI. • Windows • Toolbars • Menus • Palettes.	Projector. PCs and Lab View software	Introducing students to Lab View. Installation of Software on desktops.

Week 3

2. Virtual Instruments

Specific Learning Outcomes	Resources	Practical
Virtual Instruments Virtual instrument components are introduced: • front panel • block diagram • icon/connector • subVIs • Using VIs in other VIs or.	Projector. PCs and LabView software	This Lab illustrates the concept of controls (inputs) and indicators (outputs) and how to wire objects together in the block diagram.

Week 4

3. Math Script

Specific Learning Outcomes	Resources	Practical
Math Script These classes introduces the new interactive Math Script environment, which combines: • intuitive graphical dataflow	Projector. PCs and Labview software	The Lab covers both the interactive MathScript environment for command line computation and

<table>
<tr><td></td><td>programming
• Mathematics-oriented textual programming environment.
• Math Script Node for integrating textual scripts within the LabVIEW block diagram.</td><td></td><td>programming</td></tr>
<tr><td rowspan="3">Week 5</td><td colspan="3">4. Debugging Virtual Instruments</td></tr>
<tr><td>Specific Learning Outcomes</td><td>Resources</td><td>Practical</td></tr>
<tr><td>Editing and Debugging VIs
• Resizing
• Coloring
• labeling objects</td><td>Projector.
PCs and LabView software</td><td>Students in this LAB can find errors using execution highlighting, probes, single-stepping, breakpoints, and other debugging tools.</td></tr>
<tr><td rowspan="3">Week 6</td><td colspan="3">5. Sub-Vis</td></tr>
<tr><td>Specific Learning Outcomes</td><td>Resources</td><td>Practical</td></tr>
<tr><td><u>Sub-VIs</u>
These classes emphasize the importance of reusing code and illustrate how to create a VI icon/connector.</td><td>Projector.
PCs and LabView software</td><td>The LAB shows parallels between LabVIEW and text-based programming languages.</td></tr>
<tr><td rowspan="3">Week 7</td><td colspan="3">6. Structures</td></tr>
<tr><td>Specific Learning Outcomes</td><td>Resources</td><td>Practical</td></tr>
<tr><td><u>Structures</u>
These Classes presents loops, case structures, and sequence structures governing the execution flow in a VI.</td><td>Projector.
PCs and LabView software</td><td>In this LAB, the Formula Node is introduced as a way to implement complex mathematical equations.</td></tr>
<tr><td rowspan="3">Week 8-9</td><td colspan="3">7. Arrays and Clusters</td></tr>
<tr><td>Specific Learning Outcomes</td><td>Resources</td><td>Practical</td></tr>
<tr><td><u>Arrays and Clusters</u>
Shows students how they can group data, either with elements of the same type (arrays) or elements of a different type</td><td>Projector.
PCs and LabView software</td><td>This LAB illustrates how to create and manipulate arrays and clusters on the front</td></tr>
</table>

<table>
<tr><td></td><td>(clusters).</td><td></td><td>panel as well as on the block diagram.</td></tr>
<tr><td rowspan="3">Week 10</td><td colspan="3">8. Charts and Graphs</td></tr>
<tr><td>Specific Learning Outcomes</td><td>Resources</td><td>Practical</td></tr>
<tr><td><u>Charts and Graphs</u>
This chapter shows how to display and customize the appearance of single and multiple charts and graphs.</td><td>Projector.
PCs and LabView software</td><td>This LAB covers the annotation and exportation of chart and graph images.</td></tr>
<tr><td rowspan="3">Week 11</td><td colspan="3">9. Data Acquisition</td></tr>
<tr><td>Specific Learning Outcomes</td><td>Resources</td><td>Practical</td></tr>
<tr><td><u>Data Acquisition</u>
Discusses :
• Basic analog and digital signal characteristics
• Acquiring and generating digital signals.</td><td>Projector.
PCs and LabView software</td><td>This LAB introduces Measurement & Automation Explorer (MAX), simulated data acquisition, and the USB DAQ student kits.</td></tr>
<tr><td rowspan="3">Week 12</td><td colspan="3">10.Analysis</td></tr>
<tr><td>Specific Learning Outcomes</td><td>Resources</td><td>Practical</td></tr>
<tr><td><u>Analysis</u>
Students can use LabVIEW in a variety of ways to support signal and system analysis. This class discusses several important analysis topics including:
• how to use LabVIEW for signal generation
• signal processing
• linear algebra
• curve fitting
• formula display on the front panel
• differential equations
• finding roots (zero finder)
• Integration and differentiation.</td><td>Projector.
PCs and LabView software</td><td>This LAB enforces all mathematical tools introduced in the theoretical part.</td></tr>
<tr><td rowspan="2">Week 13-14</td><td colspan="3">11.Applications & Instrument Control</td></tr>
<tr><td>Specific Learning Outcomes</td><td>Resources</td><td>Practical</td></tr>
</table>

	Applications The concluding classes briefly discusses other LabVIEW features, such as: • Sound Card I/O • simulation and control • new shared variable • Instrument control system • using a GPIB • serial interface	Projector. PCs and LabView software	Students are introduced to instrument drivers, as well as the use of MAX to detect and install instrument drivers and the use of Instrument I/O Assistant to communicate with traditional instruments.

Course Assessment:

Course Work	Mid-Term Tests	Final Exam Practical	Final Examination
10	30	20	40

NOTE: Course Work may include assignments, projects and practical activities.

Textbook:

Title: LabVIEW 7 Express Student Edition
Author: Robert Bishop
Publisher: Prentice Hall
ISBN: 0-13-123926-0