

Summary Information

Module Code	5312ELE
Formal Module Title	Applied Instrumentation
Owning School	Engineering
Career	Undergraduate
Credits	20
Academic level	FHEQ Level 5
Grading Schema	40

Teaching Responsibility

LJMU Schools involved in Delivery
Engineering

Learning Methods

Learning Method Type	Hours
Lecture	24
Tutorial	48

Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
SEP-CTY	CTY	September	12 Weeks

Aims and Outcomes

Aims	To introduce the students to a graphical based programming language that enablesthe user to program via a CAD style environment enabling them to create virtualinstruments as a base for data acquisition and instrument control.
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After completing the module the student should be able to:

Learning Outcomes

Code	Number	Description
MLO1	1	Use LabView to design a simple control and instrumentation system simulation
MLO2	2	Use LabView designs as subVI's in more complicated designs
MLO3	3	Control external hardware using LabView
MLO4	4	Perform data collection, analysis and storage.

Module Content

Outline Syllabus	LabVIEW environment How LabVIEW differs from traditional programming languages. Define a VI, how to open, create and save VI's and templates. Front panels How they function and what are they used for. What components make up the front panel. Block diagrams How they differ to front panels. How they are constructed. Data Flow What is the dataflow paradigm. Loops Different types of loops in LabVIEW. Controlling execution using loops. Shift registers What are the functions of shift registers. How and when to use them. Case Structures How to construct a case structure. How they differ from other structures in LabVIEW. Visual Displays: Charts & Graphs Difference between charts and graphs and how to select and use them Displaying several signals in the same chart. Using Built in Functions Performing data analysis, for example FFT using built in functions Strings & File I/O String operations and conversions. Using files to input data into a LabVIEW application. Saving data from a LabVIEW program. Connecting external hardware Connecting external instruments and logging data Connecting simple I/O boards
Module Overview	The aim of the module is to introduce you to a graphical based programming language that enables the user to program via a CAD style environment enabling them to create virtual instruments as a base for data acquisition and instrument control.
Additional Information	This module introduces students to a graphical based programming language that enables the user to program via a CAD style environment enabling them to create virtual instruments as a base for data acquisition and instrument control. Where this module is part of a Degree Apprenticeship programme, the knowledge learning outcomes is K5.

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Technology	Design Assignment 1	25	0	MLO1
Report	Mini Project	75	0	MLO2, MLO3, MLO4

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
Dingli Yu	Yes	N/A

Partner Module Team

Contact Name	Applies to all offerings	Offerings
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