Applied Instrumentation

Module Information

2022.01, Approved

Summary Information

Module Code	5512USST
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
LJMU Partner Taught

Partner Teaching Institution

Institution Name
University of Shanghai For Science and Technology

Learning Methods

Learning Method Type	Hours
Lecture	24
Tutorial	48

Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
SEP-PAR	PAR	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.

After completing the module the student should be able to:

Learning Outcomes

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

Module Content

Outline Syllabus	LabVIEW environmentHow LabVIEW differs from traditional programming languages.Define a VI, how to open, create and save VI's and templates.Front panelsHow they function and what are they used for.What components make up the front panel.Block diagramsHow they differ to front panels.How they are constructed.Data FlowWhat is the dataflow paradigm.LoopsDifferent types of loops in LabVIEW.Controlling execution using loops.Shift registersWhat are the functions of shift registers.How and when to use them.Case StructuresHow to construct a case structure.How they differ from other structures in LabVIEW.Visual Displays: Charts & GraphsDifference between charts and graphs and how to select and use themDisplaying several signals in the same chart.Using Built in FunctionsPerforming data analysis, for example FFT using built in functionsStrings & File I/OString operations and conversions.Using files to input data into a LabVIEW application.Saving data from a LabVIEW program.Connecting external hardwareConnecting external instruments and logging dataConnecting simple I/O boards
Module Overview	
Additional Information	This module introduces students to a graphical based programming language thatenables the user to program via a CAD style environment enabling them to createvirtual instruments as a base for data acquisition and instrument control.

Assessments

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

Module Contacts