Modelling and Simulation

Module Information

2022.01, Approved

Summary Information

Module Code	7502ENRST
Formal Module Title	Modelling and Simulation
Owning School	Engineering
Career	Postgraduate Taught
Credits	10
Academic level	FHEQ Level 7
Grading Schema	50

Teaching Responsibility

LJMU Schools involved in Delivery
LJMU Partner Taught

Partner Teaching Institution

Institution Name
Sri Lanka Technological Campus

Learning Methods

Learning Method Type	Hours
Lecture	11
Practical	11

Module Offering(s)

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

Aims and Outcomes

Aims	This module is designed to introduce Matlab coding for scientific computation, system modelling, and system simulation using Simulink.

After completing the module the student should be able to:

Learning Outcomes

Code	Number	Description
MLO1	1	Use MATLAB coding to solve higher level engineering, and other scientific computation problems
MLO2	2	Formulate MATLAB programs to solve first-order ODEs and systems modelling and simulation
MLO3	3	Synthesize and implement a Simulink simulation of dynamic systems

Module Content

Outline Syllabus	Matlab coding: vector/matrix input and calculation, loop coding, conditional coding, plotcurves, coding and calling functions, M-file coding, M-file debugging.Solving ODEs: dynamic system modelling, numerical methods for solving ODE'sincluding Euler method, fourth-order Runge Kutta method, and calling ODE45.Simulink with Matlab: data communication including From-workspace, To-workspace,In-port and Out-port, calling Simulink model from Matlab.Simulation with Simulink: dynamic system simulation examples with Matlab/Simulink.
Module Overview	
Additional Information	This is a level 7 module for students to learn how to use Matlab/Simulink & LABVIEW for scientific computation and dynamic system simulation.United Nations Sustainable Development Goals:4 Quality Education7 Affordable and Clean Energy8 Decent Work and Economic Growth9 Industry, Innovation and Infrastructure

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Report	Simulation - Matlab/Simulink	100	0	MLO1, MLO2, MLO3

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