Dynamic Systems Simulation

Module Information

2022.01, Approved

Summary Information

Module Code	7303ELEM
Formal Module Title	Dynamic Systems Simulation
Owning School	Engineering
Career	Postgraduate Taught
Credits	20
Academic level	FHEQ Level 7
Grading Schema	50

Teaching Responsibility

LJMU Schools involved in Delivery
Engineering

Learning Methods

Learning Method Type	Hours
Lecture	22
Practical	6
Tutorial	11

Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
SEP-CTY	CTY	September	12 Weeks
SEP_NS-CTY	CTY	September (Non-standard start date)	12 Weeks

Aims and Outcomes

Aims	To develop for students dynamic system simulation method and the techniques using Matlab/Simulink.

After completing the module the student should be able to:

Learning Outcomes

Code	Number	Description
MLO1	1	Construct high level mathematical models to describe engineering systems.
MLO2	2	Critically discuss numerical methods for solving ODEs.
MLO3	3	Use graphical methods to build simulation models of complex dynamic systems using appropriate software
MLO4	4	Apply appropriate software to simulate complex dynamic systems.

Module Content

Outline Syllabus	Introduction to simulation and dynamic system modelling.Numerical methods to solve ODEs: Euler method, Runge-Kutta method. Introduction of Matlab: matrix operations, plots, etc.Matlab programming: loops, functions, conditional statements, etc.Introduction to Simulink: real time and iteration number, sample times,Build Simulink models based on differential equations.Data communication between Matlab and Simulink.Simulation of dynamic systems by calling Simulink model.Discrete time simulations using Simulink.
Module Overview	This MSc module will teach you how to use Matlab/Simulink to simulate a dynamic system.
Additional Information	This is a MSc module with which students will learn how to use Matlab/Simulink to simulate a dynamic system.

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Report	Assignment 1	50	0	MLO1, MLO2
Report	Assignment 2	50	0	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