Module Proforma

Approved, 2022.01

Summary Information

Module Code	4614IYO
Formal Module Title	Mechatronics 1
Owning School	Engineering
Career	Undergraduate
Credits	10
Academic level	FHEQ Level 4
Grading Schema	40

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
Lonnie Readioff	Yes	N/A

Module Team Member

Contact Name	Applies to all offerings	Offerings
Mohamed Kara-Mohamed	Yes	N/A

Partner Module Team

Contact Name	Applies to all offerings	Offerings

Teaching Responsibility

LJMU Schools involved in Delivery
LJMU Partner Taught

Partner Teaching Institution

Institution Name
Study Group

Learning Methods

Learning Method Type	Hours
Lecture	12
Seminar	24

Module Offering(s)

Offering Code	Location	Start Month	Duration
APR-PAR	PAR	April	12 Weeks
JAN-PAR	PAR	January	12 Weeks

Aims and Outcomes

Aims	The aim of this module is to introduce electromechanical systems focusing on applications in the areas of Mechanical Engineering. The module covers the essential concepts of electrical circuits including AC and DC systems and digital electronics.

Learning Outcomes

After completing the module the student should be able to:

Code	Description
MLO1	Describe and model the principles of electrical and electronic systems.
MLO2	Analyse circuits which include passive and active electrical components.
MLO3	Select appropriate transducers (sensors and actuators) for a mechatronic application and demonstrate an understanding of their characteristics and practical interfacing requirements.

Module Content

Outline Syllabus
Basic principles for Electrical Circuits and Systems: - Voltage, current and resistance. - Kirchhoff's voltage and current laws. - Thevenin and Norton theorems. - AC theory. Electronic Circuits: - Operational amplifier. - Voltage regulators and dividers. Digital Electronics: - Logic circuits and logic algebra. - Number Systems. - Semiconductor materials. - Diode circuits. - Transistor types and operation. - Signal types and Signal Processing: Embedded Systems and Microcontrollers: - Hardware synthesis. - Software tools. - Programming concepts and design. - Programming languages.

Module Overview

Additional Information
This module is designed to be linked with the level 5 module Mechatronics 2. It provides the basic foundations and theories of Mechatronic systems that students need for the practical based Mechatronics 2 module.

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Learning Outcome Mapping
Exam	Examination	100	2	MLO1, MLO2, MLO3