Liverpool John Moores University

Title:	MECHATRONIC SYSTEMS AND ROBOTICS
Status:	Definitive
Code:	**5505ICBTME** (127062)
Version Start Date:	01-08-2021
Owning School/Faculty:	Engineering
Teaching School/Faculty:	ICBT, Colombo

Team	Leader
Alison Cotgrave	Y

Academic Level:	FHEQ5	**Credit Value:**	15	**Total Delivered Hours:**	68
Total Learning Hours:	150	**Private Study:**	82		

Delivery Options
Course typically offered: Semester 1 and Summer

Component	Contact Hours
Lecture	45
Practical	6
Tutorial	15

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	AS1	Examination	70	2
Portfolio	AS2	Practical Assignment (1500 words)	30	

Aims

This module aims to develop understanding of concepts in mechatronics and robotics. It introduces the student to basic programming as well as problem solving strategies. This course will involve students in the development, building and programming of a basic robot.

Learning Outcomes

After completing the module the student should be able to:

1 Demonstrate an understanding of mechatronic systems and robotics.
2 Demonstrate an understanding of computer control of machines including microprocessors and microcontrollers.
3 Solve the problems related to embedded systems in mechatronics with C++ language.
4 Demonstrate an understanding of how to design robots for specific activities and scenarios.

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

Examination	1	2	3
Practical Assignment	4		

Outline Syllabus

State-Space Representation
PLCs and Micro controllers
Design control circuits using electronic gates
Carno-Maps and design electronic circuit using J-K flip-flop
Calculate stability and determine the controllability and observability of a systems when differential equations are given
Introduction to robotics
Robolab programming software

Learning Activities

Students will be supported in their learning, to achieve the above learning outcomes, in the following ways:
By a series of lectures and tutorials and through participation for a group project.
Self-managed investigative study to analyse cases related to mechatronics and robotics.
A recommended resource list - indicating key reading, internet support and physical learning assistance, is provided to help enable students to undertake self-directed study.

Notes

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