

## PROGRAMME SPECIFICATION

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### Higher Diploma in Mechatronics

<b>Awarding institution</b>	Liverpool John Moores University
<b>Teaching institution</b>	ICBT, Colombo
<b>JACS Code</b>	
<b>Programme Duration</b>	Part-Time: 2 Years
<b>Language of Programme</b>	All LJMU programmes are delivered and assessed in English
<b>Subject benchmark statement</b>	Engineering Council UK Spec 2015
<b>Programme accredited by</b>	
<b>Description of accreditation</b>	
<b>Validated target and alternative exit awards</b>	Higher Diploma in Mechatronics Engineering Certificate of Higher Education in Mechatronics Engineering
<b>Link Tutor</b>	Karl Jones

### Educational aims of the programme

Develop knowledge of scientific and engineering principles to be able to apply them to produce routine solutions to familiar engineering problems and to model and analyse mechatronic systems.

Develop specialist knowledge and understanding of the key mechanical and electrical principles which underpin the design and operation of a mechatronic system.

Develop a range of relevant transferable skills such as team working, communication, management, problem solving, computing and technical computing.

Prepare students for employment by equipping them with the with knowledge, understanding and skills expected of holders of a Higher Diploma in Mechatronics to enable them to progress to a range of technical and management careers or to progress to an undergraduate degree or further professional qualification in automotive engineering or related area

Provide the engineering base for progression to Incorporated Engineer level.

#### Alternative Exit/ Interim Award Learning Outcomes - Certificate of Higher Education

*A student who is eligible for this award will be able to:*

Undertake basic mathematical analysis. Apply the basic principles of applied mechanics, thermodynamics and fluid mechanics, materials science, electrical and electronic engineering and control to routine engineering problems. Design and manufacture simple engineering components and assemblies. Demonstrate key skills appropriate to the professional engineer

#### Target award Learning Outcomes - Higher Diploma

*A student successfully completing the programme of study will have acquired the following subject knowledge and understanding as well as skills and other attributes.*

*A student who is eligible for this award will be able to:*

1. Demonstrate their knowledge and understanding of essential facts, concepts, theories and principles of mechanical and electrical systems and the underpinning science and mathematics.
2. Review and select appropriate mathematical methods, tools and notations proficiently in the analysis and solution of routine engineering problems.

3. Use appropriate scientific, technical or engineering principles to analyse key engineering processes.
4. Demonstrate an ability to apply quantitative methods and computer software relevant to Mechatronics and related engineering disciplines to solve engineering problems.
5. Demonstrate a knowledge of management techniques which may be used to achieve engineering objectives.
6. Demonstrate an awareness of the framework of relevant legal requirements governing engineering activities, including personnel, health, safety, and risk (including environmental risk) issues.
7. Understand the need for a high level of professional and ethical conduct in engineering.
8. Understand the use of technical literature and other information sources.
9. Demonstrate an awareness of nature of intellectual property and contractual issues.
10. Demonstrate an understanding of appropriate codes of practice and industry standards.
11. Illustrate an awareness of quality issues.
12. Demonstrate an ability to work with technical uncertainty.

## Teaching, Learning and Assessment

*The methods used to enable outcomes to be achieved and demonstrated are as follows:*

Lectures, tutorials, problem solving sessions, seminars, workshops, computer sessions, participation in projects.

Examinations, assignments, preparation of reports, essays, technological reports, oral presentations, workshops, peer review, computer-based exercises.

## Programme structure - programme rules and modules

This programme will be studied on a part time basis. The schedule for the delivery of the modules will be determined by ICBT Campus and communicated to LJMU prior to students commencing on each stage of the programme.

Level 5	Potential Awards on completion	Higher Diploma
Core	Option	Award Requirements
<a href="#">5500ICBTEG</a> ANALYTICAL MATHEMATICS (15 credits) <a href="#">5500ICBTEL</a> DESIGN PROJECT (15 credits) <a href="#">5501ICBTEG</a> ENGINEERING ECONOMICS (15 credits) <a href="#">5501ICBTMT</a> INDUSTRIAL ROBOTICS (15 credits) <a href="#">5502ICBTEL</a> CONTROL SYSTEM (15 credits) <a href="#">5504ICBTEL</a> PROGRAMMABLE LOGIC CONTROLLERS AND INDUSTRIAL AUTOMATION (15 credits) <a href="#">5505ICBTEL</a> PRINCIPLES AND APPLICATIONS OF MICROCONTROLLERS (15 credits) <a href="#">5509ICBTEL</a> ELECTRICAL MACHINES AND DRIVES (15 credits)		120 core credits at level 5 0 option credits at level 5
Level 4	Potential Awards on completion	
Core	Option	Award Requirements
<a href="#">4500ICBTEG</a> ENGINEERING MATHEMATICS (15 credits) <a href="#">4500ICBTME</a> ENGINEERING MECHANICS (15 credits) <a href="#">4500ICBTMT</a> FUNDAMENTALS OF MECHANICS AND ELECTRICAL CIRCUITS (15 credits) <a href="#">4502ICBTEL</a> DIGITAL		120 core credits at level 4 0 option credits at level 4

ELECTRONICS (15 credits) <a href="#">4503ICBTEL</a> ANALOGUE ELECTRONICS (15 credits) <a href="#">4503ICBTME</a> ENGINEERING MATERIALS AND MANUFACTURING PROCESSES (15 credits) <a href="#">4504ICBTEL</a> PROGRAMMING CONCEPTS (15 credits) <a href="#">4506ICBTEL</a> SIGNALS AND SYSTEMS (15 credits)		
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## Information about assessment regulations

All programmes leading to LJMU awards operate within the University's Academic Framework.  
<https://www.ljmu.ac.uk/about-us/public-information/academic-quality-and-regulations/academic-framework>

## Opportunities for work-related learning ( location and nature of activities)

Work-related learning is included within this programme, so students will have the opportunity to engage in real world projects and activities.

The programme has active links with industry and involves employers in the industrial projects, utilising real world case studies wherever possible. As this is a part time programme, students will be apply knowledge attained in their employment to their academic studies.

## Criteria for admission

### Mature entry

In exceptional circumstances, candidates with non-standard qualifications, may qualify for entry to the course on the basis of considerable work experience in mechatronics, mechanical engineering or electrical/electronic engineering.

### Overseas qualifications

Completion of 13 years of formal education in Sri Lanka (or equivalent) and have studied A levels in subjects that include Maths, a Science or Technology.

Ordinary level qualifications plus the successful completion of a NARIC approved Foundation programme in a Mechatronics Engineering subject.

A programme of study that is equivalent to a UK level 3 qualification

## External Quality Benchmarks

All programmes leading to LJMU awards have been designed and approved in accordance with the UK Quality Code for Higher Education, including the Framework for Higher Education Qualifications in the UK (FHEQ) and subject benchmark statements where applicable.

The University is subject to periodic review of its quality and standards by the Quality Assurance Agency (QAA) Published review reports are available on the QAA website at [www.qaa.ac.uk](http://www.qaa.ac.uk)

Programmes which are professionally accredited are reviewed by professional, statutory and regulatory bodies (PSRBs) and such programmes must meet the competencies/standards of those PSRBs.

## Support for students and their learning

The University aims to provide students with access to appropriate and timely information, support and guidance to ensure that they are able to benefit fully from their time at LJMU. All students are assigned a Personal Tutor to provide academic support and when necessary signpost students to the appropriate University support services.

Students are able to access a range of professional services including:

- Advice on practical aspects of study and how to use these opportunities to support and enhance their personal and academic development. This includes support for placements and careers guidance.

- Student Advice and Wellbeing Services provide students with advice, support and information, particularly in the areas of: student funding and financial matters, disability, advice and support to international students, study support, accommodation, health, wellbeing and counselling.
- Students studying for an LJMU award at a partner organisation will have access to local support services

## **Methods for evaluating and improving the quality and standards of teaching and learning**

### **Student Feedback and Evaluation**

The University uses the results of student feedback from internal and external student surveys (such as module evaluations, the NSS and PTES), module evaluation questionnaires and meetings with student representatives to improve the quality of programmes.

### **Staff development**

The quality of teaching is assured through staff review and staff development in learning, teaching and assessment.

### **Internal Review**

All programmes are reviewed annually and periodically, informed by a range of data and feedback, to ensure quality and standards of programmes and to make improvements to programmes.

### **External Examining**

External examiners are appointed to programmes to assess whether:

- the University is maintaining the threshold academic standards set for awards in accordance with the FHEQ and applicable subject benchmark statements
- the assessment process measures student achievement rigorously and fairly against the intended outcomes of the programme(s) and is conducted in line with University policies and regulations
- the academic standards are comparable with those in other UK higher education institutions of which external examiners have experience
- the achievement of students are comparable with those in other UK higher education institutions of which the external examiners have experience

and to provide informative comment and recommendations on:

- good practice and innovation relating to learning, teaching and assessment observed by external examiners
- opportunities to enhance the quality of the learning opportunities provided to students

### **Please note:**

*This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. More detailed information on the learning outcomes, content, teaching, learning and assessment methods of each module can be found in module and programme guides.*