

## PROGRAMME SPECIFICATION

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### Bachelor of Engineering with Honours (Fnd) in Electrical and Electronic Engineering

<b>Awarding institution</b>	Liverpool John Moores University
<b>Teaching institution</b>	LJMU University of Shanghai For Science and Technology
<b>JACS Code</b>	H600
<b>Programme Duration</b>	Full-Time: 4 Years
<b>Language of Programme</b>	All LJMU programmes are delivered and assessed in English
<b>Subject benchmark statement</b>	Engineering Council UK Spec and AHEP 3rd Edition Engineering Subject Benchmark Statement (2015)
<b>Programme accredited by</b>	
<b>Description of accreditation</b>	
<b>Validated target and alternative exit awards</b>	Bachelor of Engineering with Honours (Fnd) in Electrical and Electronic Engineering  Diploma of Higher Education (Fnd) in Electrical and Electronic Engineering  Certificate of Higher Education (Fnd) in Electrical and Electronic Engineering  Foundation Certificate in Electrical and Electronic Engineering
<b>Link Tutor</b>	Michael Shaw

### Educational aims of the programme

The BEng. programme in Electrical and Electronic Engineering (with Foundation) is designed to develop a high level of technical expertise together with the emotional intelligence to be able to practice successfully as a professional engineer in a modern interdisciplinary engineering environment. New graduate engineers are increasingly expected to take on important technical leadership and management responsibilities early in their careers and the knowledge and skills gained from this programme are designed to produce graduates who are able to make an immediate contribution to their employer's organisations.

The programme aims to:

- Provide a programme of study, which develops core knowledge, and understanding of engineering principles, mathematics, and computation, appropriate to the field of Electrical and Electronic engineering.
- Enable students to develop specialist knowledge, intellectual and practical skills that will enable them to analyse, investigate and develop robust solutions to Electrical and Electronic engineering problems.
- Develop relevant study and personal skills so that students progressively take responsibility for their learning, becoming, independent learners, while receiving appropriate tutoring and support.
- Equip students with a range of transferable skills and attributes in the use of computers, software packages, team working, communication, time management and problem solving methodology which will enable them to undertake responsible roles in industry and commerce.
- Provide a degree programme which meets the accreditation requirements of AHEP-3 UK Spec and the needs of industry.
- Develop students to work in and manage teams and also work independently at managerial level utilising project management and technical skills.
- Encourage students to engage with the development of employability skills by completing a self-awareness statement.

### **Alternative Exit/ Interim Award Learning Outcomes - Foundation Certificate**

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

Study effectively as reflective and independent learners at level 4 and above

Select and apply appropriate basic mathematical techniques to engineering and technology problems

Use basic physical models and understand how physical principles underpin a range of engineering and technology disciplines

Carry out an effective experimental investigation

### **Alternative Exit/ Interim Award Learning Outcomes - Certificate of Higher Education (Fnd)**

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

Undertake basic mathematical analysis suitable to enable the study of engineering.

Apply the basic principles of Electrical circuits, Electronics, Programming, Measurement and Control, Communications and microprocessors to simplified engineering problems.

Design, simulate and construct, and test simple circuits.

Demonstrate key skills appropriate to the professional engineer.

### **Alternative Exit/ Interim Award Learning Outcomes - Diploma of Higher Education (Fnd)**

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

Undertake advanced mathematical and computational studies of engineering systems and problems.

Demonstrate the application of basic principles of electrical circuits, electronics, programming, measurement and control and microprocessors from level 4 to the solution of standard engineering problems.

Demonstrate the intermediate engineering skills required of an Engineering Technician

Demonstrate a clear understanding of the business context of engineering development and activities and to demonstrate a range of business skills.

## **Target award Learning Outcomes - Bachelor of Engineering with Honours (Fnd)**

*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. Maintain and extend a sound theoretical approach in enabling the introduction and exploitation of new and advancing technology.
2. Engage in the creative and innovative development of engineering technology and continuous improvement systems.
3. Identify potential projects and opportunities.
4. Conduct appropriate research, and undertake design and development of engineering solutions.
5. Manage implementation of design solutions, and evaluate their effectiveness.
6. Plan for effective project implementation.
7. Plan, budget, organise, direct and control tasks, people and resources.
8. Lead teams and develop staff to meet changing technical and managerial needs.
9. Bring about continuous improvement through quality management.
10. Communicate in English with others at all Levels
11. Present and discuss proposals.
12. Demonstrate personal and social skills.
13. Comply with relevant codes of conduct.
14. Manage and apply safe systems of work.
15. Undertake engineering activities in a way that contributes to sustainable development.
16. Carry out and record CPD necessary to maintain and enhance competence in own area of practice
17. Exercise responsibilities in an ethical manner

## Teaching, Learning and Assessment

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

Acquisition of underpinning knowledge is achieved mainly through lectures and directed student-centred learning. Student-centred learning is used where appropriate resource material is available. The economic, Social and Environmental context of engineering operations is delivered by means of lectures and case studies. The use of appropriate case study material is an essential part of teaching in this area.

Testing of the knowledge base is through a combination of unseen written examinations, and coursework assignment submissions.

Engineering Analysis is developed through lectures, case-studies and coursework assignments. Fundamental principles are delivered predominantly by lectures and laboratory classes. More advanced techniques are delivered by project work and coursework supported by lectures.

Engineering Analysis and problem solving skills are assessed through a combination of unseen written examinations, assessed coursework and laboratory work, and project work

Design is taught by coursework, individual and group project work supported by an appropriate lecture programme.

Design skills are assessed by coursework, individual and group written design project reports, and student presentations.

Engineering Practice permeates almost every activity within the programme content and assessment.

Assessment of Engineering Practice is varied throughout the programme but is mostly coursework based.

## Programme structure - programme rules and modules

RP(E)L is not permitted on this programme. This is a requirement of the Chinese Ministry of Education (MOE).

Level 6	Potential Awards on completion	Bachelor of Engineering with Honours (Fnd)
Core	Option	Award Requirements
6500USST Industrial Automation (10 credits) 6504USST Industrial Management (20 credits) 6505USST Power Electronics, Drives and Systems (20 credits) 6515USST Process Control (20 credits) 6516USST Signal Processing (20 credits) 6555USST Engineering Project (30 credits)		120 core credits at level 6 0 option credits at level 6
Level 5	Potential Awards on completion	
Core	Option	Award Requirements
5501USST Digital and Embedded Systems (20 credits) 5502USST Engineering Mathematics 2 (10 credits) 5504USST Linear Electronics (10 credits) 5506USST Electrical Engineering Practice 2 (20 credits) 5511USST Electric Machines (20 credits) 5512USST Applied Instrumentation (20 credits) 5513USST Control System Design and Analysis (20 credits)		120 core credits at level 5 0 option credits at level 5
Level 4	Potential Awards on completion	
Core	Option	Award Requirements

4501USST Engineering Mathematics 1a (10 credits) 4502USST Engineering Mathematics 1b (10 credits) 4503USST Electrical Circuit Principles (20 credits) 4504USST Digital and Analogue Electronics (20 credits) 4510USST Microprocessors and Software (20 credits) 4511USST Engineering Principles (20 credits) 4512USST Electrical Engineering Practice 1 (20 credits)		120 core credits at level 4 0 option credits at level 4
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Level 3	Potential Awards on completion	
Core	Option	Award Requirements
3501USST Engineering and Technology Practice (20 credits) 3502USST Foundation Mathematics for Engineering and Technology 1 (20 credits) 3503USST Foundation Mathematics for Engineering and Technology 2 (20 credits) 3504USST Foundation Physics - Mechanics, Materials and Waves (20 credits) 3505USST Foundation Physics - Particles, Fields and Electricity (20 credits) 3507USST English Language Studies (20 credits)		120 core credits at level 3 0 option credits at level 3

## 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)

The curriculum fosters and embeds employability by the fact that it has been designed based on UKSPEC which details the knowledge, understanding and skills required of a professional engineer, which are transferable internationally. Currently there are no work placement opportunities within the programme although students are encouraged to seek employment during the summer vacation. Further, work based learning is included in the curriculum via case studies and a number of students undertake their final year 'engineering projects' with industry involvement.

## Criteria for admission

### Other

To be enrolled, students should attend national university entrance examinations and pass the line of second level (Normally their scores should be higher than the provincial score of second level).

In China, the college entrance outcomes are divided into 3 levels (1st, 2nd, 3rd).

Students will be able to demonstrate efficiency in English to a standard equivalent to IELTS 5.5.

USST will operate within the guidance of the LJMU Admissions Policy, please see LJMU Code of Practice for Admissions at:

<https://www.ljmu.ac.uk/~media/files/ljmu/public-information-documents/student-regulations/guidance-policy-and-process/admissions-policy>

### Overseas qualifications

National University Entrance Examinations, Second Level

## 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.*