Programme Specification Document

Approved, 2022.03

Overview

Programme Code	42118
Programme Title	Electrical and Electronic Engineering
Awarding Institution	Liverpool John Moores University
Programme Type	Degree with Foundation
Language of Programme	All LJMU programmes are delivered and assessed in English
Programme Leader	Clifford Mayhew
Link Tutor(s)	

Awards

Award Type	Award Description	Award Learning Outcomes
Target Award	Bachelor of Engineering with Honours (Fnd) - BGHF	See Learning Outcomes Below
Recruitable Target	Bachelor of Science with Honours (SW) (Fnd) - SBSHF	See Learning Outcomes Below
Alternative Exit	Diploma of Higher Education (Fnd) - DHEF	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. Demonstrate a clear understanding of the business context of engineering development and activities and to demonstrate a range of business skills.
Alternative Exit	Diploma in Higher Education (SW) (Fnd) - SDHEF	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. Demonstrate a clear understanding of the business context of engineering development and activities and to demonstrate a range of business skills. A student who successfully completes a placement year will be eligible for the Sandwich award and will, in addition to the above, be able to demonstrate the professional and personal skills necessary for effective employment within a professional environment.
Alternative Exit	Certificate of Higher Education (Fnd) - CHEF	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.

Alternate Award Names	

External Benchmarks

Subject Benchmark Statement	UG-Engineering (2019)

Accreditation
Programme Accredited by

PSRB Name	Type of Accreditation	Valid From Date	Valid To Date	Additional Notes
Institution of Engineering and Technology (IET)	Accredited by the Institution of Engineering and Technology (IET) on behalf of the Engineering Council for the purposes of fully meeting the academic requirement for registration as an Incorporated Engineer and partially meeting the academic requirement for registration as a Chartered Engineer.			

Programme Offering(s)

Mode of Study, Mode of Delivery	Intake Month	Teaching Institution	Programme Length
Full-Time, Face to Face	September	LJMU Taught	4 Years
Sandwich Year Out, Face to Face	September	LJMU Taught	5 Years

Aims and Outcomes

Educational Aims of the Programme

The BEng. programme in Electrical Engineering partially fulfils all the educational requirements for Chartered Engineer status. It 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 employers 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-4 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. To encourage students to engage with the development of employability skills by completing a self-awareness statement. For students undertaking a placement year the aim is to provide students with an extended period of work experience at an approved partner that will complement their programme of study at LJMU. This will give the students the opportunity to develop professional skills relevant to their programme of study, as well as attitude and behaviours necessary for employment in a diverse and changing environment.

Learning Outcomes

Code	Description
PLO1	Maintain and extend a sound theoretical approach to the application of technology in engineering practice.
PLO2	Communicate in English with others at all levels.
PLO3	Present and discuss proposals.
PLO4	Demonstrate personal and social skills.
PLO5	Comply with relevant codes of conduct.
PLO6	Manage and apply safe systems of work.
PLO7	Undertake engineering activities in a way that contributes to sustainable development.
PLO8	Carry out and record CPD necessary to maintain and enhance competence in own area of practice
PLO9	Exercise responsibilities in an ethical manner.
PLO10	Use a sound evidence-based approach to problem-solving and contribute to continuous improvement.
PLO11	Identify, review and select techniques, procedures and methods to undertake engineering tasks.
PLO12	Contribute to the design and development of engineering solutions.
PLO13	Implement design solutions and contribute to their evaluation.

Code	Description
PLO14	Plan for effective project implementation.
PLO15	Manage tasks, people and resources to plan and budget.
PLO16	Manage teams and develop staff to meet changing technical and managerial needs.
PLO17	Manage continuous quality improvement.

Programme Structure

Programme Structure Description

Students have the option to undertake a placement year. The placement year, module 5330ELE, will follow Level 5 and students will be enrolled on a 600 credit honours sandwich programme. The Level 5 mean for the final award mark will be calculated based upon the 240 credits at Level 5. Students successfully completing the assessment of the placement year are eligible for a Sandwich award. Students not undertaking a placement year are registered on the non-sandwich version of the programme and will have the opportunity of an additional study year abroad following Level 5. Students will be enrolled on a 600 credit honours with study abroad programme. Of those 600 credits, 120 will be taken via a Level 5 study abroad module 5331ELE. The modules to be studied in the host institution must be agreed in advance. The Level 5 mean for the final award mark will be calculated based upon the 240 credits at Level 5.

Programme Structure - 480 credit points	
Level 3 - 120 credit points	
Level 3 Core - 120 credit points	CORE
[MODULE] 3100FNDET Algorithms and Computing Approved 2022.02 - 10 credit points	
[MODULE] 3101FNDET Engineering and Technology Practice Approved 2022.02 - 20 credit points	
[MODULE] 3102FNDET Foundation Mathematics for Engineering and Technology 1 Approved 2022.02 - 20 credit points	
[MODULE] 3103FNDET Foundation Mathematics for Engineering and Technology 2 Approved 2022.03 - 20 credit points	
[MODULE] 3107FNDET Introductory Foundation Physics Approved 2022.01 - 20 credit points	
[MODULE] 3108FNDET Additional Foundation Physics Approved 2022.01 - 20 credit points	
[MODULE] 3116FNDET Programming for Engineers Approved 2022.01 - 10 credit points	
Level 4 - 120 credit points	
Level 4 Core - 120 credit points	CORE
[MODULE] 4301MECH Engineering Mathematics 1a Approved 2022.03 - 10 credit points	
[MODULE] 4302MECH Engineering Mathematics 1b Approved 2022.02 - 10 credit points	
[MODULE] 4401ELE Digital Electronics Approved 2022.02 - 20 credit points	
[MODULE] 4402ELE Software Development for Embedded Systems Approved 2022.01 - 20 credit points	
[MODULE] 4403ELE Engineering Circuit Analysis Approved 2022.02 - 20 credit points	
[MODULE] 4404ELE Analogue Electronics Approved 2022.02 - 20 credit points	
[MODULE] 4405ELE Professional Practice and the Environment Approved 2022.02 - 20 credit points	
Level 5 - 120 credit points	
Level 5 Core - 120 credit points	CORE
[MODULE] 5401ELE Embedded Systems Programming and Applications in the Environment Approved 2022.01 - 20 credit points	
[MODULE] 5402ELE Electric machines, power systems and clean energy Approved 2022.02 - 20 credit points	
[MODULE] 5404ELE Linear Electronics Design and the Environment Approved 2022.02 - 10 credit points	
[MODULE] 5405ELE Instrumentation and Control Engineering Approved 2022.01 - 20 credit points	
[MODULE] 5406ELE Professional Practice Integrative Project Approved 2022.02 - 20 credit points	

[MODULE] 5412ELE Local Communications Systems and Applications Approved 2022.02 - 20 credit points	
[MODULE] 5421ELE Advanced Mathematics Approved 2022.01 - 10 credit points	
Optional placement - 120 credit points	OPTIONAL
Placement Year - 120 credit points	OPTIONAL
[MODULE] 5330ELE Sandwich Year - Electrical and Electronic Engineering Approved 2022.01 - 120 credit points	
OR Study Abroad - 120 credit points	OPTIONAL
[MODULE] 5331ELE Study Year Abroad - Electrical and Electronic Engineering Approved 2022.01 - 120 credit points	
Level 6 - 120 credit points	
Level 6 Core - 80 credit points	CORE
[MODULE] 6401ELE Signals and Systems with Real World Applications Approved 2022.03 - 10 credit points	
[MODULE] 6405ELE Power Electronics and Energy Efficient Drives Approved 2022.02 - 20 credit points	
[MODULE] 6455ELE Engineering Project Approved 2022.02 - 40 credit points	
[MODULE] 6465ELE Engineering Management Approved 2022.01 - 10 credit points	
Level 6 Optional - 40 credit points	OPTIONAL
[MODULE] 6400ELE Automation and IoT Approved 2022.03 - 20 credit points	
[MODULE] 6406ELE Further Electronic Design Approved 2022.02 - 20 credit points	
[MODULE] 6412ELE Process Control and Applications Approved 2022.02 - 20 credit points	

Module specifications may be accessed at https://proformas.ljmu.ac.uk/Default.aspx

Approved variance from Academic Framework Regulations

Variance
The following criteria will apply for students at Level 5, Level 6: Where a module comprises two or more assessment elements (e.g. examination and coursework), successful completion of the module should require a mark of greater than 10% less than the module pass mark in each element, as well as the overall module mark being above the normal pass mark (normally 40% or 50%). This requirement only applies to assessment elements that contribute more than 30% towards the final module mark. Variance approved on January 21st 2022.

Teaching, Learning and Assessment

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.

Opportunities for work related learning

Students are encouraged to undertake a year long industrial placement between Level 5 and 6. There is a further opportunity to undertake summer placements between academic years to gain valuable industrial experience. This work experience will help develop understanding of the world of work environment suitable for the programme and increase a student's professional practical skills.

Entry Requirements

Type	Description
GCSEs and equivalents	Prior to starting the programme applicants must have obtained Grade C or Grade 4 or above in English Language and Mathematics GCSE or an approved alternative qualification below: Key Skills Level 2 in English/Maths NVQ Level 2 Functional skills in Maths and English Writing and or Reading Skills for Life Level 2 in Numeracy/English Higher Diploma in Maths/English Functional Skills Level 2 in Maths/English Northern Ireland Essential Skills Level 2 in Communication or Application of Number Wales Essential Skills Level 2 in Communication or Application of Number
Access awards	**Access to Higher Education Diploma acceptability:** Acceptable on its own and combined with other qualifications **Further information:** 88 UCAS tariff points from Access to HE Diploma
Welsh awards	**Welsh Baccalaureate:** Acceptable only when combined with other qualifications

International Baccalaureate	**International Baccalaureate:** Acceptable on its own and combined with other qualifications **Additional information:** 88 UCAS tariff points from IB
BTECs	**National Certificate (RQF):** Acceptable only when combined with other qualifications **National Extended Certificate:** Acceptable only when combined with other qualifications **National Diploma (RQF):** Acceptable on its own and combined with other qualifications **National Diploma subjects / grades required:** DD if studied on its own or to the total of 88 UCAS points when combined with other qualifications **National Extended Diploma (RQF):** Acceptable on its own and combined with other qualifications **National Extended Diploma subjects / grades required:** MMM if studied on its own or to the total of 88 UCAS points when combined with other qualifications
IELTS	6.0 (minimum of 5.5 in each component) or equivalent English language proficiency test.
UCAS points	88
T levels	**T Level requirements:** 88 UCAS tariff points from relevant subjects. Please contact the Faculty for further information.
OCR Cambridge Technical	**Technical Certificate:** Acceptable only when combined with other qualifications **Technical Diploma:** Acceptable on its own and combined with other qualifications **Technical Extended Diploma:** Acceptable on its own and combined with other qualifications **Technical Foundation Diploma:** Acceptable only when combined with other qualifications **Technical Introductory Diploma:** Acceptable only when combined with other qualifications **Technical Subsidiary Diploma:** Acceptable only when combined with other qualifications

A levels	**Minimum number of A Levels required:** 1
	Is general studies acceptable? Yes
	Average A Level offer: CCD
	Are AS level awards acceptable? Acceptable only when combined with other qualifications
	Maximum AS Level points accepted: 20
Irish awards	**Irish Leaving Certificate:** Acceptable on its own and combined with other qualifications
	Grades / subjects required: 88 UCAS points from a minimum of 5 subjects
Reduced offer scheme	As part of LJMU's commitment to widening access we offer eligible students entry to their chosen course at a reduced threshold between 8 and 16 UCAS points. This applies if you are a student who has experience of living in local authority care or if you have participated in one of LJMU's sustained outreach programmes such as a summer university. Please contact course enquiries for further details.
Interview required	No interview required (UCAS application form only)

Extra Entry Requirements

Is a DBS check required?
No