Industrial Electronics and Control Engineering

Programme Information

2022.01, Approved

Overview

Programme Code	35523
Programme Title	Industrial Electronics and Control Engineering
Awarding Institution	Liverpool John Moores University
Programme Type	Top-up

Awards

Award Type	Award Description	Award Learning Outcomes
Target Award	Bachelor of Engineering with Honours - BGH	N/A
Alternative Exit	Diploma of Higher Education - DHE	To undertake advanced mathematical and computational studies of automated and controlled engineering systems and problems. To 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 relevant to the Control and Automation industry To demonstrate the intermediate engineering skills. Demonstrate a competence in technical reporting and an ability to analyse and present engineering data.

Alternate Award Names	

Partner Name	Partnership Type
Sino British College of USST	Franchised

External Benchmarks

Subject Benchmark Statement	UG-Engineering (2019)

Programme Offering(s)

Mode of Study, Mode of Delivery	Intake Month	Teaching Institution	Programme Length Programme Length Unit
Full-Time, Face to Face	September	Sino British College of USST	2 Years

Aims and Outcomes

Educational Aims of the Programme	The B.Eng. programme in Industrial Electronics and Control Engineering (IECE) is designed to deliver the initial educational requirements for a professional engineer together with an appropriate range of transferable and engineering management skills. It will enable graduates to operate effectively in the early stages of their careers and provide a strong basis for future career development. The programme delivers a coherent and progressive course of study in engineering principles, mathematics, computing, engineering management and skills. The programme aims to: -Deliver the educational experience in which students can develop their knowledge of engineering science, core engineering principles and fundamental underpinning subjects such as mathematics and computation. -Develop students confidence to analyse challenging technical problems and to further develop their core engineering knowledge and skills through the investigation and development of credible and robust solutions to control and automation problems. -Provide students with appropriate support and encouragement to develop the necessary skills such that they can study independently and take responsibility for their own learning and subsequent professional development. -Provide engineering graduates with a range of highly relevant transferable skills such as team working, communication, engineering management, problem solving, computing and technical computing. -Provide a programme of study that fully meets the requirements of the Engineering Councils UK Standard for Professional Engineering Competence (UKSpec) and partially qualifies the successful graduate for the attainment of the Engineering Council Chartered Engineer status after completion of an appropriate period of industrial experience. -Produce graduates with a depth, breadth of knowledge and understanding of electronics and control engineering, engineering management and teamwork to enable them to rapidly assume technical leadership and management roles.

Learning Outcomes

Code	Number	Description
PLO1	1	Demonstrate their knowledge of essential facts, concepts, theories and principles of their engineering discipline, and its underpinning science and mathematics. They must have an appreciation of the wider multidisciplinary engineering context and its underlying principles. They must appreciate the social, environmental, ethical, economic and commercial considerations affecting the exercise of their engineering judgement.
PLO2	2	Demonstrate a knowledge and understanding of the commercial and economic context of engineering processes.
PLO3	3	Illustrate a knowledge of management techniques which may be used to achieve engineering objectives within that context.
PLO4	4	Understand the requirement for engineering activities to promote sustainable development.
PLO5	5	Demonstrate an awareness of the framework of relevant legal requirements governing engineering activities, including personnel, health, safety, and risk (including environmental risk) issues.
PLO6	6	Understand the need for a high level of professional and ethical conduct in engineering. The students must appreciate the social, environmental, ethical, economic and commercial considerations affecting the exercise of their engineering judgement.

PLO7	7	Students must possess practical engineering skills acquired through, for example, work carried out in laboratories and workshops; in industry through supervised work experience; in individual and group project work; in design work; and in the development and use of computer software in design, analysis and control. Evidence of group working and of participation in a major project is expected.
PLO8	8	Investigate and define a problem and identify constraints including environmental and sustainability limitations, health and safety and risk assessment issues
PLO9	9	Understand customer and user needs and the importance of considerations such as aesthetics.
PLO10	10	Identify and manage cost drivers
PLO11	11	Demonstrate creativity to establish innovative solutions
PLO12	12	Demonstrate a knowledge and understanding of scientific principles and methodology necessary to underpin their education in industrial electronics and control, to enable appreciation of its scientific and engineering context, and to support their understanding of historical, current, and future developments and technologies.
PLO13	13	Illustrate creativity to establish innovative solutions
PLO14	14	Ensure fitness for purpose for all aspects of the problem including production, operation, maintenance and disposal
PLO15	15	Manage the design process and evaluate outcomes
PLO16	16	Demonstrate a knowledge of the characteristics of particular equipment, processes or products.
PLO17	17	Develop engineering workshop and laboratory skills.
PLO18	18	Demonstrate an understanding of contexts in which engineering knowledge can be applied (e.g. operations and management, technology, development, etc).
PLO19	19	The student must have developed transferable skills including problem solving, communication, and working with others, as well as the effective use of general IT facilities and information retrieval skills.
PLO20	20	Understand the use of technical literature and other information sources.
PLO21	21	Demonstrate an awareness of nature of intellectual property and contractual issues.
PLO22	22	Demonstrate an understanding of appropriate codes of practice and industry standards.
PLO23	23	Illustrate a knowledge and understanding of mathematical principles necessary to underpin their education in industrial electronics and control and related engineering disciplines and to enable them to apply mathematical methods, tools and notations proficiently in the analysis and solution of engineering problems.
PLO24	24	Illustrate an awareness of quality issues.
PLO25	25	Demonstrate an ability to work with technical uncertainty.
PLO26	26	Demonstrate an ability to apply and integrate knowledge and understanding of other engineering disciplines to support study of industrial electronics and control and related engineering disciplines.
PLO27	27	Understand engineering principles and the ability to apply them to analyse key engineering processes.
PLO28	28	Illustrate an ability to identify, classify and describe the performance of systems and components through the use of analytical methods and modelling techniques.

PLO29	29	Demonstrate an ability to apply quantitative methods and computer software relevant to industrial electronics and control and related engineering disciplines to solve engineering problems.
PLO30	30	Apply appropriate quantitative science and engineering tools to the analysis of problems. They must be able to demonstrate creative and innovative ability in the synthesis of solutions and in formulating designs. They must be able to comprehend the broad picture and thus work with an appropriate level of detail.
PLO31	31	Demonstrate an understanding of and ability to apply a systems approach to engineering problems.

Course Structure

Programme Structure Description	Students will receive RP(E)L for Level 4 (based on successful completion of the NCUK International Diploma (Engineering)) and as such the Level 4 modules listed are not delivered at SBC.

Programme Structure - 360 credit points	
Level 5 - 120 credit points	
Level 5 Core - 120 credit points	CORE
[MODULE] 5102SBC Engineering Mathematics 2 Approved 2022.01 - 10 credit points	
[MODULE] 5304SBC Linear Electronics Approved 2022.01 - 10 credit points	
[MODULE] 5305SBC Control System Design and Analysis Approved 2022.01 - 20 credit points	
Level 6 - 120 credit points	
Level 6 Core - No credit points	CORE
[MODULE] 6104SBC Industrial Management Approved 2022.01 - 20 credit points	
[MODULE] 6300SBC Industrial Automation Approved 2022.01 - 10 credit points	
[MODULE] 6302SBC Embedded Systems Approved 2022.01 - 20 credit points	
[MODULE] 6305SBC Power Electronics, Drives and Systems Approved 2022.01 - 20 credit points	
[MODULE] 6312SBC Process Control Approved 2022.01 - 20 credit points	
[MODULE] 6355SBC Engineering Project Approved 2022.01 - 30 credit points	

Teaching, Learning and Assessment

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. Understanding is reinforced through case-studies. Testing of the knowledge base is through a combination of unseen written examinations, coursework in the form of case-study reports and coursework assignment submissions. Acquisition of these skills is achieved mainly through lectures and directed student-centred learning. Student-centred learning is used where appropriate resource material is available. Understanding is reinforced through case-studies. Testing of the skills and knowledge base is through a combination of unseen written examinations, coursework in the form of case-study reports and coursework assignment submissions. Engineering design, analysis and practical skills are taught almost exclusively by individual and group project work supported by a lecture programme appropriate to the demands of the project. Engineering design and practical skills are assessed by individual and group written design project reports, student presentations and presentations using computer graphics. 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. Assessment is via a combination of unseen written examinations and coursework in the form of case-study reports.

Opportunities for work related learning

Opportunities for work related learning
Students are encouraged to undertake industrial placements throughout the duration of their studies (particularly between levels in the summer). There are also opportunities to complete industrially based projects via individual engineering projects at Level 6. 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
Other international requirements	Applicants offering other awards will be considered on an individual basis in line with the agreed entry criteria.
Alternative qualifications considered	Students who have successfully passed 120 credits on the NCUK International Diploma (Electrical and Electronic Engineering) at SBC can progress into Level 5 of the BEng (Hons) Industrial Electronics and Control Engineering award. Students would be awarded 120 Level 4 credits for the BEng (Hons) award by virtue of their prior certificated studies on the International Diploma (RPL). In addition, students must have at least a Grade 'C' for the NCUK 'English for Academic Purposes (EAP)' module, or demonstrate equivalence of this with an IELTS score of 6. Non-standard: Applications considered through standard RPL processes at LJMU.

Programme Contacts

Programme Leader

Contact Name

Link Tutor

Contact Name