Programme Specification Document

Approved, 2022.04

Overview

Programme Code	36191
Programme Title	Mechanical Engineering
Awarding Institution	Liverpool John Moores University
Programme Type	Top-up
Language of Programme	All LJMU programmes are delivered and assessed in English
Programme Leader	
Link Tutor(s)	Dante Matellini

Partner Name	**Partnership Type**
Sino British College of USST	Franchised

Awards

Award Type	**Award Description**	**Award Learning Outcomes**
Target Award	Bachelor of Engineering with Honours - BGH	See Learning Outcomes Below
Alternative Exit	Diploma of Higher Education - DHE	Undertake advanced mathematical and computational studies of engineering systems and problems. Demonstrate the application of intermediate level applied mechanics, thermodynamics and fluid mechanics, and electrical engineering to the solution of standard engineering problems. Demonstrate the intermediate engineering skills that will be required for further study. Demonstrate a competence in technical reporting and an ability to analyse and present engineering data.

Alternate Award Names	

External Benchmarks

Subject Benchmark Statement	UG-Engineering (2019)

Programme Offering(s)

Mode of Study, Mode of Delivery	Intake Month	Teaching Institution	Programme Length
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 Mechanical Engineering 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 key 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. -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 manufacturing engineering, engineering management and teamwork to enable them to rapidly assume technical leadership and management roles.

Learning Outcomes

Code	Description
PLO1	Apply knowledge of mathematics, statistics, natural science and engineering principles to the solution of complex problems. Some of the knowledge will be at the forefront of the particular subject of study.
PLO2	Analyse complex problems to reach substantiated conclusions using first principles of mathematics, statistics, natural science and engineering principles.
PLO3	Select and apply appropriate computational and analytical techniques to model complex problems, recognising the limitations of the techniques employed.
PLO4	Select and evaluate technical literature and other sources of information to address complex problems.

Code	Description
PLO5	Design solutions for complex problems that meet a combination of societal, user, business and customer needs as appropriate. This will involve consideration of applicable health & safety, diversity, inclusion, cultural, societal, environmental and commercial matters, codes of practice and industry standards.
PLO6	Apply an integrated or systems approach to the solution of complex problems.
PLO7	Evaluate the environmental and societal impact of solutions to complex problems and minimise adverse impacts.
PLO8	Identify and analyse ethical concerns and make reasoned ethical choices informed by professional codes of conduct.
PLO9	Use a risk management process to identify, evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity.
PLO10	Adopt a holistic and proportionate approach to the mitigation of security risks.
PLO11	Adopt an inclusive approach to engineering practice and recognise the responsibilities, benefits and importance of supporting equality, diversity and inclusion.
PLO12	Use practical laboratory and workshop skills to investigate complex problems.
PLO13	Select and apply appropriate materials, equipment, engineering technologies and processes, recognising their limitations.
PLO14	Discuss the role of quality management systems and continuous improvement in the context of complex problems.
PLO15	Apply knowledge of engineering management principles, commercial context, project and change management, and relevant legal matters including intellectual property rights.
PLO16	Function effectively as an individual, and as a member or leader of a team.
PLO17	Communicate effectively on complex engineering matters with technical and non-technical audiences.
PLO18	Plan and record self learning and development as the foundation for lifelong learning/CPD.

Programme Structure

Programme Structure Description

Students will receive RP(E)L for Level 4 based on successful completion of the NCUK International Diploma (Engineering) or equivalent that can demonstrate that they are able to: Undertake suitable basic mathematical analysis. Apply the basic principles of applied mechanics, thermodynamics and fluid mechanics, materials science and electrical engineering to simplified engineering problems. Design and manufacture simple engineering components and assemblies. Demonstrate key skills appropriate to the professional engineer.

Continuing students who started prior to 2022 will adopt the programme rules on this version.

Programme Structure - 240 credit points	
Level 5 - 120 credit points	
Level 5 Core - 120 credit points	CORE
[MODULE] 5514USST Modelling and Simulation Approved 2022.01 - 10 credit points	
[MODULE] 5515USST Engineering Mathematics 2 Approved 2022.01 - 20 credit points	
[MODULE] 5516USST Materials and Processes Approved 2022.01 - 10 credit points	
[MODULE] 5517USST Thermodynamics and Fluid Mechanics 2 Approved 2022.01 - 20 credit points	
[MODULE] 5518USST Applied Mechanics 2 Approved 2022.02 - 20 credit points	
[MODULE] 5519USST Engineering Design 2 Approved 2022.01 - 20 credit points	
[MODULE] 5520USST Mechatronics 2 Approved 2022.01 - 20 credit points	
Level 6 - 120 credit points	
Level 6 Core - 80 credit points	CORE
[MODULE] 6556USST Engineering Project Approved 2022.01 - 40 credit points	
[MODULE] 6557USST Industrial Management Approved 2022.02 - 20 credit points	
[MODULE] 6558USST Engineering Design 3 Approved 2022.01 - 20 credit points	
Level 6 Optional - 40 credit points	OPTIONAL
[MODULE] 6559USST Fluid Dynamics & Heat Transfer Approved 2022.01 - 10 credit points	
[MODULE] 6560USST Materials Engineering Approved 2022.01 - 10 credit points	
[MODULE] 6564USST Dynamics and Control Approved 2022.01 - 10 credit points	
[MODULE] 6565USST Computational Fluid Dynamics Approved 2022.01 - 10 credit points	
[MODULE] 6566USST Finite Element Analysis Approved 2022.01 - 10 credit points	
[MODULE] 6567USST Sensors and Robotics Approved 2022.01 - 10 credit points	

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

Approved variance from Academic Framework Regulations

Variance
A variance permits the use of more than 2, but not more than four, 10 credit modules at level 6.

The following criteria will apply for students at Level 5 and 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 (40%). This requirement only applies to assessment elements that contribute more than 30% towards the final module mark.

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

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	This programme operates as a top-up for holders of an appropriate level 4 qualifications. Students who have successfully passed 120 credits on the NCUK International Diploma (Mechanical and Manufacturing) at SBC can progress into Level 5 of this programme. 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.

Extra Entry Requirements