

Overview

Programme Code	36617
Programme Title	Mechanical Engineering
Awarding Institution	Liverpool John Moores University
Programme Type	Level 3/4/5 Qualification
Language of Programme	All LJMU programmes are delivered and assessed in English
Programme Leader	
Link Tutor(s)	Graham Sherwood

Partner Name	Partnership Type
Nelson and Colne College Group	Validated

Awards

Award Type	Award Description	Award Learning Outcomes
Target Award	Higher National Diploma - HND	See Learning Outcomes Below
Recruitable Target	Higher National Certificate - HNC	Understand, select and apply appropriate scientific and mathematical techniques, procedures and methods to undertake mechanical engineering tasks Demonstrate an understanding of the need to work within the constraints of common business, commercial and financial environments Identify problems and apply appropriate methods to identify causes and achieve satisfactory solutions Identify, organise and use resources effectively to complete tasks, with consideration for cost, quality, safety, security and environmental impact. Demonstrate an understanding of the environmental impact of engineers' work, and the need to promote sustainable development. Communicate appropriately with others in person, in writing and through ICT Be appropriately proficient in the use of ICT

Alternate Award Names	
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External Benchmarks

Subject Benchmark Statement	UG-Engineering (2019)
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Programme Offering(s)

Mode of Study, Mode of Delivery	Intake Month	Teaching Institution	Programme Length
Full-Time, Face to Face	January	Nelson Campus, Nelson and Colne College	2 Years
Full-Time, Face to Face	September	Nelson Campus, Nelson and Colne College	2 Years

Aims and Outcomes

Educational Aims of the Programme

The general aims of the programme are: • To provide students with the knowledge, skills, techniques and behaviours needed to support a career as a professional Mechanical Engineer • To provide a well-rounded and valuable qualification at level 5 tailored to the needs of local and regional employers as part of a structured ladder of progression from level 4 to level 6 and beyond. • To prepare students to work in an environment characterized by rapid change and the need to use knowledge and make judgements slightly beyond the taught syllabus. • To provide students with the maximum practicable flexibility of study (in terms of study mode, timescales and recognition of prior learning) thus enabling them to match their study commitments to personal needs and aspirations.

Learning Outcomes

Code	Description
PLO1	Understand, select and apply appropriate scientific and mathematical techniques, procedures and methods to undertake mechanical engineering tasks
PLO2	Communicate appropriately with others in person, in writing and through ICT
PLO3	Be appropriately proficient in the use of ICT
PLO4	Work effectively with colleagues, clients, suppliers or the public
PLO5	Demonstrate personal and social skills and awareness of diversity and inclusion issues
PLO6	Demonstrate an understanding of the need to work within the constraints of common business, commercial and financial environments
PLO7	Demonstrate a sound theoretical understanding of key mathematical and scientific principles relevant to mechanical engineering

Code	Description
PLO8	Identify problems and apply appropriate methods to identify causes and achieve satisfactory solutions
PLO9	Identify, organise and use resources effectively to complete tasks, with consideration for cost, quality, safety, security and environmental impact.
PLO10	Contribute to the design and development of solutions to mechanical engineering problems.
PLO11	Demonstrate an understanding of the environmental impact of engineers' work, and the need to promote sustainable development.
PLO12	Understand the ethical issues that may arise in their role and carry out their responsibilities in an ethical manner.
PLO13	Apply research methods and skills in engineering

Programme Structure

Programme Structure Description

For modules with practical competencies, students will be given multiple opportunities to demonstrate competency. A student who achieves a pass mark in the module but who has not yet demonstrated competency will be required to demonstrate competency before credit can be released. It will not be recorded as a failed attempt.

Structure - 240 credit points	
Level 4 - 120 credit points	
Level 4 Core - 100 credit points	CORE
[MODULE] 4501NCCG Engineering Mathematics Approved 2022.01 - 20 credit points	
[MODULE] 4502NCCG Engineering Science Approved 2022.01 - 20 credit points	
[MODULE] 4503NCCG Design and Project Approved 2022.01 - 20 credit points	
[MODULE] 4508NCCG Thermodynamics, Heat Pumps and Engines Approved 2022.01 - 20 credit points	
[MODULE] 4514NCCG Mechanical Principles Approved 2022.01 - 20 credit points	
Level 4 Optional - 20 credit points	OPTIONAL
[MODULE] 4506NCCG Computer Aided Design Approved 2022.01 - 20 credit points	
[MODULE] 4507NCCG Fluid Mechanics Approved 2022.01 - 20 credit points	
[MODULE] 4509NCCG Engineering Materials Approved 2022.01 - 20 credit points	
Level 5 - 120 credit points	
Level 5 Core - 120 credit points	CORE
[MODULE] 5501NCCG Research Project Approved 2022.01 - 20 credit points	
[MODULE] 5502NCCG Professional Engineering Approved 2022.01 - 20 credit points	
[MODULE] 5503NCCG Further Mathematics Approved 2022.01 - 20 credit points	
[MODULE] 5515NCCG Computational Engineering Approved 2022.01 - 20 credit points	
[MODULE] 5516NCCG Advanced Materials Approved 2022.01 - 20 credit points	
[MODULE] 5517NCCG Further Mechanical Principles Approved 2022.01 - 20 credit points	

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

Approved variance from Academic Framework Regulations

Variance

Some modules within this programme contain assessed practical work that does not contribute to the module mark but that must be completed satisfactorily for the module credit to be awarded. (Approved 28 July 2021)

Teaching, Learning and Assessment

Key themes of the teaching and learning strategy on this programme are:

- Varied assessment and feedback to enhance the experience of the student.
- The availability of flexible teaching and learning modes, using face to face, on-line and blended learning.
- Student support through the use of structured and targeted tutorials.
- The development and application of theory into practice.
- The use of inclusive learning methods
- Development of students' practical skills.

The teaching and learning throughout the programme will mirror the expectations of the QAA benchmark statement for Engineering, the expectations of the Engineering Council and of professional engineering institutions. Teaching sessions will allow for the introduction of new skills, techniques, concepts and theories to enable students to develop their own practice further. Learning and teaching opportunities will be designed to allow for the transfer of learning between the different modules and the integration of theory with practice. Students will learn to produce employment-relevant outcomes, designs, presentations, reports and projects. Students will be expected to think of themselves as independent learners, encouraged by using flexible teaching methods and varied methods of assessment. At level 5 students are introduced to the wider engineering community through an individual research project. There is considerable diversity of delivery needs among the likely candidates for this programme. These include

- Traditional full-time learners, mainly students progressing internally from level 4 awards
- Day-release part-time learners, mainly those on day release from partner employers
- Evening class students, principally either those in engineering employment whose employers will not release them during the day or those in other employment wishing to retrain as engineers
- Those unable to study on a week-by-week basis but who could attend in week-long blocks
- Those who wish to offset RPEL of their previous studies or experience against module learning outcomes.

This programme is intended to meet all of these needs. While the mode and timing of delivery may vary, all students will be assessed against the same learning outcomes and will have the same skills on exit. This programme is designed to use a variety of different assessment methods to ensure that all students, of whatever preference in assessment, have the opportunity to demonstrate their achievement of learning outcomes. Assessment is designed to be both formative, in building knowledge and skills, and summative in assessing whether and to what extent required outcomes have been met. At level 4, assessment is focused on evidencing that necessary knowledge and skills have been acquired. Level 4 modules typically have two assessments of different types. One is often designed simply to ensure that particular knowledge, skill and experience has been gained. Assessments of this type are commonly practical tasks or multiple choice online tests and are sometimes assessed on a pass/fail basis only. Pass/fail assessments must be passed for the module to be passed. The second assessment is a generally graded task in which the extent of a student's level of attainment can be judged. This is typically a presentation, seminar paper, written assignment or, occasionally, an essay. Students entering this programme will generally not have experienced a formal examination since GCSE, which for some will have been many years ago. For this reason, there are no formal, written examinations at level 4. At level 5, students are expected to have matured academically and some level 5 modules are assessed in part by formal examinations. This is principally to prepare students who may wish to progress to honours level for the assessment diet they are likely to experience later. Reflecting the fact that engineers seldom work without access to data, examinations are 'open-book' and focussed on the application of knowledge.

Opportunities for work related learning

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.

Entry Requirements

Type	Description
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Alternative qualifications considered

Candidates are selected on the basis of their ability to cope with and benefit from the programme. Their suitability can be demonstrated either through previous educational achievement or through experience and aptitude. Admission by prior qualification will normally require a minimum of 48 UCAS Tariff points for entry to HND, with the majority of the points gained in engineering, mathematics or science subjects. Typically, points can be derived from:

- One GCE A level or Vocational A level pass or equivalent
- Two AS level passes
- BTEC National Diploma/Certificate
- Other qualifications such as Scottish Highers, Welsh Baccalaureate, Irish Leaving Certificates, International Baccalaureate, with the required UCAS points
- A pass in a recognised Access course
- Equivalent Scottish or Irish qualifications

Candidates should normally have a qualification at level 3 that has appropriate mathematical content. Admission by experience and aptitude will be based on the length and type of the candidate's employment experience and his/her ability to demonstrate an aptitude and enthusiasm for the subject. As part of this process, candidates may be required to undertake aptitude tests and/or to provide personal and/or employment references. The mathematical and scientific content of this programme is extensive and, irrespective of the candidate's ability, cannot be learned quickly enough to enter without prior knowledge in these areas. Candidates who can demonstrate the required level of ability but not the necessary prior knowledge may be offered places conditional on the successful completion of specified additional learning prior to admission. Candidates whose first language is not English will be required to demonstrate English language competence equivalent to IELTS 5.5 or higher.

Extra Entry Requirements