

Overview

Programme Code	35424-MG
Programme Title	Architectural Engineering
Awarding Institution	Liverpool John Moores University
Programme Type	Integrated Masters
Language of Programme	All LJMU programmes are delivered and assessed in English
Programme Leader	Badr Abdullah
Link Tutor(s)	

Awards

Award Type	Award Description	Award Learning Outcomes
Target Award	Master of Engineering - MG	See Learning Outcomes Below
Recruitable Target	Master of Engineering (SW) - SMG	See Learning Outcomes Below
Alternative Exit	Bachelor of Engineering with Honours - BGH	See 35424-BHG for learning outcomes
Alternative Exit	Bachelor of Engineering Honours (SW) - SBGH	See 35424-BHG for learning outcomes
Alternative Exit	Certificate of Higher Education - CHE	<p>Demonstrate a knowledge of the underlying concepts and principles associated with Architectural Engineering, and an ability to evaluate and interpret these within that context. Demonstrate an ability to present, evaluate and interpret qualitative and quantitative data, in order to develop lines of argument and make sound judgments in accordance with basic theories and concepts of Architectural Engineering. Evaluate the appropriateness of different approaches to solving problems related to Architectural Engineering. Communicate the results of their study accurately and reliably using structured and coherent arguments. Undertake further training and develop new skills within a structured and managed environment. Demonstrate the qualities and transferable skills necessary for employment requiring the exercise of some personal responsibility.</p>
Alternative Exit	Diploma of Higher Education - DHE	<p>Demonstrate knowledge and critical understanding of the well-established principles of Architectural Engineering, and of the way in which those principles have developed an ability to apply underlying concepts and principles outside the context in which they were first studied, including, where appropriate, the application of those principles in an employment context. Demonstrate knowledge of the main methods of enquiry in subject(s) relevant to Architectural Engineering, and ability to evaluate critically the appropriateness of different approaches to solving problems in this field of study. Use a range of established techniques to initiate and undertake critical analysis of information, and to propose solutions to effectively communicate information, arguments and analysis. Effectively communicate information, arguments and analysis in a variety of forms to specialist and non-specialist audiences, and deploy key techniques of the discipline effectively. Undertake further training, develop existing skills and acquire new competences that will enable them to assume significant responsibility within organisations.</p>
Alternative Exit	Bachelor of Engineering (SW) - SBG	<p>Demonstrate a broad and comparative knowledge of the general scope of the subject, its different areas and applications, and its interactions with related subjects. A detailed knowledge of a defined subject or a more limited coverage of a specialist area balanced by a wider range of study. In each case, specialised study will be informed by current developments in the subject. Demonstrate a critical understanding of the essential theories, principles and concepts of the subject(s) and of the ways in which these are developed through the main methods of enquiry in the subject.</p>

Alternative Exit	Diploma in Higher Education (SW) - SDHE	Demonstrate knowledge and critical understanding of the well-established principles of Architectural Engineering, and of the way in which those principles have developed an ability to apply underlying concepts and principles outside the context in which they were first studied, including, where appropriate, the application of those principles in an employment context. Demonstrate knowledge of the main methods of enquiry in subject(s) relevant to Architectural Engineering, and ability to evaluate critically the appropriateness of different approaches to solving problems in this field of study. Use a range of established techniques to initiate and undertake critical analysis of information, and to propose solutions to effectively communicate information, arguments and analysis. Effectively communicate information, arguments and analysis in a variety of forms to specialist and non-specialist audiences, and deploy key techniques of the discipline effectively. Undertake further training, develop existing skills and acquire new competences that will enable them to assume significant responsibility within organisations.
Alternative Exit	Bachelor of Engineering - BG	Demonstrate a broad and comparative knowledge of the general scope of the subject, its different areas and applications, and its interactions with related subjects. A detailed knowledge of a defined subject or a more limited coverage of a specialist area balanced by a wider range of study. In each case, specialised study will be informed by current developments in the subject. Demonstrate a critical understanding of the essential theories, principles and concepts of the subject(s) and of the ways in which these are developed through the main methods of enquiry in the subject.

Alternate Award Names	
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External Benchmarks

Subject Benchmark Statement	UG-Engineering (2019)
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Accreditation

Programme Accredited by

PSRB Name	Type of Accreditation	Valid From Date	Valid To Date	Additional Notes
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Chartered Institution of Building Services Engineers (CIBSE)	Accredited by the Chartered Institute of Building Services Engineers (CIBSE) on behalf of the Engineering Council for the purposes of fully meeting the academic requirement for registration as a Chartered Engineer.		
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Programme Offering(s)

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

Aims and Outcomes

Educational Aims of the Programme

The overall aim of the programme is to develop knowledge, understanding and intellectual and practical skills appropriate to a variety of roles within the Architectural Engineering sector. Since the programme has a bias towards providing students with engineering skills and knowledge and the design of engineering systems for buildings, it is suited to those employed in or seeking employment in the design and consultancy arm of the Architectural Engineering and Building Services Engineering industries. The intention is to provide a stimulating and challenging programme of study that accurately reflects the activities in the Architectural Engineering industry and prepares students for effective, productive and responsible employment in the sector. The programme will offer the appropriate type and level of support as students build their knowledge, understanding and skills to become independent learners for the future. Students participating in the Sandwich placement option will develop, in addition to those skills they acquire as part of the main programme, a range of skills and knowledge relevant for immediate employment in the Architectural Engineering industry. The specific aims of the programme are to provide: 1. A programme of study in Architectural Engineering which facilitates acquisition of the essential skills and knowledge of the subject supported by industry. 2. The appropriate learning experiences to enable students to develop their skills and attitudes as independent researchers and innovative problem solvers to the fullest potential in the Architectural Engineering Sector. 3. An awareness of existing and future issues in the construction and property industry and how they are likely to impinge on the role and function of the Architectural Engineer. 4. Opportunities for development of the student's interpersonal and communication skills, with special reference to aspects of Engineering, Technology, Design and Management. 5. Opportunities for development of the student's professional attitude commensurate with that of the practicing Architectural Engineering professional and to permit them to specialise in selected areas of Architectural Engineering. 6. Raised awareness of the responsibilities of the Architectural professional in relation to sustainability, energy efficiency and environmental issues within the built environment. 7. To ensure that successful graduates will have the potential to contribute to significant advances in engineering and technological issues associated with their chosen industry. 8. To provide students with appropriate learning experiences to enable them to develop their skills and attitudes as independent researchers and innovative and creative problem solvers to the fullest possible potential in the Architectural Engineering sector. 9. To prepare students for the transition from Higher Education to employment within a professional context; and develop those transferable, specialist and employability skills that all stakeholders could reasonably expect of students who successfully complete a Architectural Engineering programme. 10. To encourage students to engage with the development of employability skills by completing a self-awareness statement.

Learning Outcomes

Code	Description
PLO1	Apply mathematical and scientific skills, including fundamental concepts, principles and theories that are relevant to the various disciplines within the Architectural Engineering industry.
PLO2	Apply appropriate Engineering solutions to real industrial needs using standard as well as specialist Architectural Engineering, commercial or construction computational tools and packages effectively.
PLO3	Work as an effective member of teams both within the Architectural Engineering disciplines and with the wider construction industry. Manage and evaluate individual and collective performance within teams.
PLO4	Manage the communication of data and information between the various participants in the design and construction process in a form which is relevant to its ultimate user.
PLO5	Use industry best practice procurement and managerial techniques.
PLO6	Develop a client's brief with regard to performance criteria and selection of appropriate Architectural Engineering solutions.
PLO7	Apply appropriate economic and environmental principles to Architectural Engineering design.

Code	Description
PLO8	Plan and record self-learning and development as the foundation for lifelong learning/CPD and Identify ways to improve their own learning.
PLO9	Work with knowledge in the relevant field, to develop new and appropriate solutions to the task as required.
PLO10	Use creativity and innovation in problem solving.
PLO11	Work with limited or contradictory information.
PLO12	Apply technical solutions to challenging design problems using appropriate mathematical techniques to evaluate complex concepts and theories.
PLO13	Apply appropriate legal, economic, design, environmental, business and management techniques that are relevant to Architectural Engineering and other professionals working within the construction and Architectural Engineering industries to prepare technical reports/drawings which underpin technical presentations.
PLO14	Demonstrate a detailed and comprehensive knowledge and critical understanding and awareness of the essential facts, concepts, principles, and theories relevant to the Architectural Engineering profession.
PLO15	Demonstrate an understanding of the limits of their knowledge of their own specialist area together with other associated engineering fields and how this influences analysis and interpretations based on that knowledge.
PLO16	Apply project management skills related to Architectural Engineering projects in the construction sector.
PLO17	Recognise all risk and ethical issues around a project and develop suitable mitigation and management practices for these issues.
PLO18	Critically evaluate the appropriateness of different approaches to solving problems.
PLO19	Critically analyse and integrate information and data from a variety of sources (surveys, reports, data, information, experimental results) and present it in a variety of ways

Programme Structure

Programme Structure Description

The programme is offered in full-time and full-time sandwich attendance modes. Entry to the programme is normally at level 4 for suitably qualified candidates. The programme will offer the opportunity of 60 credits of study abroad at Level 5. Students will be enrolled on a 480 credit honours with study abroad programme. A 60 credit Level 5 study abroad module [5300BESAAE] will normally replace the semester 2 modules on the standard programme. This study abroad should cover the same learning outcomes as the modules being replaced. The modules to be studied in the host institution must be agreed in advance. The Level 5 mean for the final award will be calculated based upon the 120 credits at Level 5. Students have the option to undertake a placement year. The placement year, module 5200BESWAE, 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 the 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 5200BESAAE. 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. The programme adheres to the University Academic Framework with 600 credits needed to achieve the MEng award in Architectural Engineering (SW). Students who do not attain 600 credits may be eligible for alternative exit awards in accordance with the Academic Framework.

Programme Structure - 480 credit points	
Level 4 - 120 credit points	
Level 4 Core - 120 credit points	CORE
[MODULE] 4311BEUG Introduction to Construction Technology Approved 2022.01 - 20 credit points	
[MODULE] 4319BEUG Science and Materials Approved 2022.02 - 20 credit points	
[MODULE] 4327BEUG Professional and Digital Skills for Engineers Approved 2022.01 - 20 credit points	
[MODULE] 4328BEUG Engineering Mathematics Approved 2022.01 - 20 credit points	
[MODULE] 4329BEUG Electrical and Mechanical Engineering Principles Approved 2022.01 - 20 credit points	
[MODULE] 4330BEUG Design Project 1 Approved 2022.01 - 20 credit points	
Level 5 - 120 credit points	
Level 5 Core - 120 credit points	CORE
[MODULE] 5316BEUG Procurement and Contracts Approved 2022.01 - 20 credit points	
[MODULE] 5332BEUG Mechanical Engineering for Buildings Approved 2022.01 - 20 credit points	
[MODULE] 5334BEUG Electrical Engineering for Buildings Approved 2022.01 - 20 credit points	
[MODULE] 5336BEUG Site Construction Management Approved 2022.03 - 20 credit points	
[MODULE] 5338BEUG Applied Mathematics Approved 2022.01 - 10 credit points	
[MODULE] 5340BEUG Design Project 2 Approved 2022.01 - 20 credit points	
[MODULE] 5342BEUG The Professional Environment Approved 2022.02 - 10 credit points	
Optional Study Semester - 120 credit points	OPTIONAL
Placement Year - 120 credit points	OPTIONAL
[MODULE] 5200BESWAE Sandwich Year - Architectural Engineering Approved 2022.01 - 120 credit points	
OR Study Semester - 120 credit points	OPTIONAL

[MODULE] 5200BESAAE Study Year Abroad - Architectural Engineering Approved 2022.01 - 120 credit points	
Optional Study Semester - 60 credit points	OPTIONAL
[MODULE] 5300BESAAE Study Semester Abroad - Architectural Engineering Approved 2022.01 - 60 credit points	
Level 6 - 120 credit points	
Level 6 Core - 120 credit points	CORE
[MODULE] 6331BEUG Environmental Analysis Approved 2022.01 - 20 credit points	
[MODULE] 6333BEUG Commissioning and Facilities Management Approved 2022.01 - 20 credit points	
[MODULE] 6335BEUG Low Carbon Systems and Sustainability Approved 2022.02 - 20 credit points	
[MODULE] 6337BEUG Design Project 3 Approved 2022.01 - 20 credit points	
[MODULE] 6339BEUG Building Engineering Research Project Approved 2022.01 - 40 credit points	
Level 7 - 120 credit points	
Level 7 Core - 120 credit points	CORE
[MODULE] 7300BEUG Sensors, Control and Applications Approved 2022.01 - 20 credit points	
[MODULE] 7302BEUG Operational Performance and Modelling Approved 2022.01 - 20 credit points	
[MODULE] 7304BEUG Energy Engineering and Environment Approved 2022.01 - 20 credit points	
[MODULE] 7306BEUG Building Engineering Research and Design Project Approved 2022.01 - 60 credit points	

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

Teaching, Learning and Assessment

The programme will be delivered using a mixture of lectures, tutorials, workshops, laboratory practical classes and design studio sessions. All aspects of the programme will seek to develop vocationally relevant skills and knowledge. Assessment will be carried out using a mixture of examinations and coursework; specifically assessments could consist of formal unseen examinations, in-class open book tests, online multiple choice tests, technical and/or research based written reports, and simulated design projects.

Opportunities for work related learning

To put the students' learning into appropriate vocational contexts several of the modules at all levels are assessed in realistic, vocationally relevant contexts. At each level of the course students participate in cross disciplinary project modules as well as specialist design project modules based on real buildings. The course is offered in Sandwich mode so that after two years of study, students may elect to work in a design and/or consultancy practice or with a contractor for a one year placement. This would afford students the opportunity to contextualise their theoretical learning in a real life working environment.

Entry Requirements

Type	Description
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Alternative qualifications considered	Progression from LJMU BEng (Hons) Architectural Engineering Level 6 entry: available for LJMU students who have completed level 5 LJMU BEng (Hons) Architectural Engineering with a capped mean mark from all level 5 modules of at least 55%. 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
BTECs	128 UCAS points
A levels	128 UCAS points: Minimum Two A2 levels (Inc. Maths, Physics, Chemistry or Biology)
Other international requirements	Overseas student applicants must have the equivalent qualifications as UK students. In addition they must have achieved an IELTS score of at least 6.
NVQ	HNC/HND (Non-cognate) Level 4 Entry: Pass HNC/HND (Cognate) Level 4 Entry: Pass HNC (Cognate) Level 5 Entry: Pass HND (Cognate) Level 6 Entry: Pass
International Baccalaureate	Level 4: 128 UCAS tariff points

Extra Entry Requirements