

Programme Specification Document

Approved, 2022.02

Overview

Programme Code	43140
Programme Title	Building Services 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	Badr Abdullah
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 Engineering Honours (SW) (Fnd) - SBGHF	See Learning Outcomes Below
Alternative Exit	Certificate of Higher Education (Fnd) - CHEF	Demonstrate a knowledge of the underlying concepts and principles associated with Building Services 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 Building Services Engineering. Evaluate the appropriateness of different approaches to solving problems related to Building Services 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.
Alternative Exit	Diploma of Higher Education (Fnd) - DHEF	Demonstrate knowledge and critical understanding of the well-established principles of Building Services 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 Building Services 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	Diploma in Higher Education (SW) (Fnd) - SDHEF	Demonstrate knowledge and critical understanding of the well-established principles of Building Services 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 Building Services 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.
------------------	--	--

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
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 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	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 Building Services Engineering sector. The intention is to provide a stimulating and challenging programme of study that accurately reflects the activities in the Building Services 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. Since the programme has a bias towards providing students with engineering skills and knowledge and the design of engineering services systems for buildings, it is suited to those employed in or seeking employment in the design and consultancy arm of the Building Services Engineering industry. To facilitate study for employed students the programme is offered in part-time as well as full-time attendance mode. 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 suitable for immediate employment in the Building Services Engineering industry. Students studying part-time whilst employed in the industry, will develop, in addition to those skills they acquire as part of the main programme, a range of skills and knowledge suitable for continued employment in the Building Services Engineering industry and higher levels of responsibility. The specific aims of the programme are to provide: 1. A programme of study in Building Services 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 Building Services 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 Building Services 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 Building Services professional and to permit them to specialise in selected areas of Building Services Engineering. 6. Raised awareness of the responsibilities of the Building Services professional in relation to sustainability, energy efficiency and environmental issues within the built environment. 7. 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 Building Services Engineering programme. 8. 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 that are relevant to the various disciplines within the Building Services Engineering industry.
PLO2	Critically evaluate the appropriateness of different approaches to solving problems.
PLO3	Critically analyse and evaluate complex concepts and theories.
PLO4	Critically analyse and integrate information and data from a variety of sources.

Code	Description
PLO5	Apply appropriate Engineering solutions to real industrial needs.
PLO6	Use standard as well as specialist building services engineering, commercial or construction computational tools and packages effectively.
PLO7	Analyse surveys, reports, data, information and experimental results accurately.
PLO8	Prepare technical reports/drawings appropriate for a range of technical and non-technical purposes.
PLO9	Make technical presentations to specialist and non-specialist audiences.
PLO10	Use construction and building services engineering literature effectively.
PLO11	Work as an effective member of a team.
PLO12	Apply the fundamental concepts, principles and theories of Building Services Engineering.
PLO13	Use appropriate mathematical methods for analysing Building Services Engineering problems.
PLO14	Use industry best practice procurement and managerial techniques.
PLO15	Take a leading role in commerce and industry in a range of situations.
PLO16	Develop a client's brief with regard to performance criteria and selection of appropriate Building Services Engineering solutions.
PLO17	Use information and communication technology to generate and manage project information.
PLO18	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.
PLO19	Apply appropriate economic and environmental principles to Building Services Engineering design.
PLO20	Identify ways to improve their own learning.
PLO21	Use information and communications technology effectively.
PLO22	Manage resources and time effectively.
PLO23	Apply appropriate legal, economic, design, environmental business and management techniques that are relevant to Building Services Engineers and other professionals working within the construction and building services industries.
PLO24	Transfer techniques and solutions from one field of engineering to another.
PLO25	Manipulate and sort data.
PLO26	Present data in a variety of ways.
PLO27	Use scientific evidence based methods in the solution of problems.
PLO28	Use creativity and innovation in problem solving.
PLO29	Work with limited or contradictory information.
PLO30	Develop their own communication skills.

Code	Description
PLO31	Demonstrate team-working and leadership skills.
PLO32	Work effectively with others.
PLO33	Demonstrate a detailed knowledge and critical understanding of the essential facts, concepts, principles and theories relevant to the Building Services Engineering profession.
PLO34	Apply technical solutions to complex design problems.
PLO35	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.
PLO36	Apply project management skills related to Building Services Engineering projects in the construction sector.
PLO37	Apply the legal, economic, design, environmental, business and management techniques that are relevant to Building Services Engineers and other professionals working within the construction industry.
PLO38	Identify and solve complex problems.

Programme Structure

Programme Structure Description

The programme is offered in full-time and full-time sandwich attendance modes. Entry to the programme is at level 3 for suitably qualified candidates. Students have the option to undertake a placement year. The placement year, module 5200BESWSE, 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 5200BESASE. 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 480 credits (inclusive of the foundation year) needed to achieve the BEng (Hons) award in Building Services Engineering. Students who do not attain 480 credits may be eligible for alternative exit awards in accordance with the Academic Framework.

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] 3106FNDET Programming Approved 2022.01 - 10 credit points	
[MODULE] 3107FNDET Introductory Foundation Physics Approved 2022.01 - 20 credit points	
[MODULE] 3108FNDET Additional Foundation Physics Approved 2022.01 - 20 credit points	
Level 4 - 120 credit points	
Level 4 Core - 120 credit points	CORE
[MODULE] 4200BEUG Construction Technology 1 Approved 2022.01 - 20 credit points	
[MODULE] 4201BEUG Collaborative Interdisciplinary Project 1 Approved 2022.02 - 10 credit points	
[MODULE] 4204BEUG Science and Materials Approved 2022.01 - 20 credit points	
[MODULE] 4205BEUG Academic and Digital Literacy Approved 2022.01 - 10 credit points	
[MODULE] 4215BEUG Building Services Engineering Project 1 Approved 2022.01 - 20 credit points	
[MODULE] 4216BEUG Engineering Principles Approved 2022.01 - 20 credit points	
[MODULE] 4227BEUG Engineering Mathematics Approved 2022.01 - 20 credit points	
Level 5 - 120 credit points	
Level 5 Core - 120 credit points	CORE
[MODULE] 5202CIV Applied Mathematics Approved 2022.01 - 10 credit points	
[MODULE] 5216BEUG Mechanical Engineering for Buildings Approved 2022.01 - 20 credit points	
[MODULE] 5217BEUG Electrical Engineering for Buildings Approved 2022.01 - 20 credit points	
[MODULE] 5218BEUG Building Services Engineering Project 2 Approved 2022.01 - 20 credit points	
[MODULE] 5220BEUG Site Production Management Approved 2022.02 - 20 credit points	

[MODULE] 5221BEUG Building Engineering Collaborative Project 2 Approved 2022.01 - 20 credit points	
[MODULE] 5223BEUG Building Engineering Research Methods Approved 2022.01 - 10 credit points	
Level 5 Optional - 120 credit points	OPTIONAL
Optional Study Semester - 120 credit points	OPTIONAL
Placement Year - 120 credit points	OPTIONAL
[MODULE] 5200BESWSE Sandwich Year - Building Services Engineering Approved 2022.01 - 120 credit points	
OR Study Semester - 120 credit points	OPTIONAL
[MODULE] 5200BESASE Study Year Abroad - Building Services Engineering Approved 2022.01 - 120 credit points	
Level 6 - 120 credit points	
Level 6 Core - 120 credit points	CORE
[MODULE] 6220BEUG Construction Site Management Approved 2022.02 - 20 credit points	
[MODULE] 6221BEUG Environmental Analysis Approved 2022.01 - 20 credit points	
[MODULE] 6222BEUG Buildings, Energy and Sustainability Approved 2022.01 - 20 credit points	
[MODULE] 6223BEUG Building Services Engineering Project 3 Approved 2022.01 - 20 credit points	
[MODULE] 6226BEUG Building Engineering Research Project Approved 2022.01 - 40 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

The project modules are all based on real life buildings and employed students are encouraged to use their work experiences within all modules. The full-time course is offered in Sandwich mode so that after two years of study, students would work in Building Services design and/or consultancy 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
Other international requirements	Applicants offering other awards will be considered on an individual basis in line with the agreed entry criteria.

A levels	Applicants should have or expect to obtain a total of 88 UCAS points, of which at least 20 should come from A2.
International Baccalaureate	Applicants should have or expect to obtain a total of 88 UCAS points overall.
BTECs	BTEC Extended Diploma To the value of 88 UCAS points BTEC Diploma / 90 Credit Diploma / Subsidiary Diploma /Certificate To the value of 88 UCAS points when combined with other qualifications.
Alternative qualifications considered	Qualifications deemed equivalent to the above upon completion of appropriate assessment will be considered acceptable. Applicants should have five GCSE (or equivalent) passes of at least grade C including Mathematics and English (or IELTS 6.0).

Extra Entry Requirements