

## Overview

<b>Programme Code</b>	35944
<b>Programme Title</b>	Building Services Engineering Project Management
<b>Awarding Institution</b>	Liverpool John Moores University
<b>Programme Type</b>	Apprenticeship
<b>Language of Programme</b>	All LJMU programmes are delivered and assessed in English
<b>Programme Leader</b>	Badr Abdullah
<b>Link Tutor(s)</b>	

## Awards

Award Type	Award Description	Award Learning Outcomes
Target Award	Bachelor of Science with Honours - BSH	See Learning Outcomes Below
Alternative Exit	Certificate of Higher Education - CHE	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 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. 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. 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. 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. 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. Demonstrate the qualities and transferable skills necessary for employment requiring the exercise of some personal responsibility.
Alternative Exit	Diploma of Higher Education - DHE	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

<b>Subject Benchmark Statement</b>	UG-Engineering (2019)
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## Apprenticeship Standard

<b>Apprenticeship Standard</b>	<b>End Point Assessment</b>	<b>Proposed Off the Job Training delivery</b>
Building services design engineer (degree) - ST0372	Integrated	

## Accreditation

### Programme Accredited by

<b>PSRB Name</b>	<b>Type of Accreditation</b>	<b>Valid From Date</b>	<b>Valid To Date</b>	<b>Additional Notes</b>
Chartered Institute of Building (CIOB)	Accredited by the Chartered Institute of Building (CIOB), having been judged to meet the CIOB Education Framework. Prospective members holding these qualifications have full academic exemption and may enter CIOB membership without the requirement for an Individual Assessment.			
Royal Institution of Chartered Surveyors (RICS)	Accredited by the Royal Institution of Chartered Surveyors (RICS) for the purpose of graduate membership.			

## Programme Offering(s)

<b>Mode of Study, Mode of Delivery</b>	<b>Intake Month</b>	<b>Teaching Institution</b>	<b>Programme Length</b>
Full-Time, Face to Face	September	LJMU Taught	5 Years

## Aims and Outcomes

### Educational Aims of the Programme

This programme is for degree apprentice students only. 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. Since the programme has a bias towards providing students with the project management skills and knowledge with respect to the design and installation of engineering services systems for buildings, it is suited to those employed in or seeking employment in the contractual arm of the Building Services Engineering industry. 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. 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 Project Management 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 practising 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.
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.

Code	Description
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.
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.

Code	Description
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 part-time attendance mode. Entry to the programme is normally at level 4 for suitably qualified candidates, but entry may be offered to applicants at other levels dependent upon the applicant's prior qualifications (see "Admission" below). The part-time delivery pattern is typically as follows: Year 1 - 4200BEUG-Construction Technology 1, 4201BEUG-Collaborative Interdisciplinary Project 1, 4215BEUG-Building Services Engineering Project 1, 4216BEUG-Engineering Principles, Year 2 - 4205BEUG-Academic & Digital Literacy, 4227BEUG-Engineering Mathematics, 4204BEUG-Science & Materials Year 3 - 5216BEUG-Mechanical Engineering for Buildings, 5217BEUG-Electrical Engineering for Buildings, 5218BEUG-Building Services Engineering Project 2, 5201BEUG-Procurement and Contracts Year 4 - 5220BEUG-Site Production Management, 6227BEUG-Business Management, 5223BEUG-Building Engineering Research Methods, 5204BEUG-Collaborative Interdisciplinary Project 2, 6223BEUG-Building Services Engineering Project 3 Year 5 - 6220BEUG-Construction Site Management, 6222BEUG-Buildings, Energy & Sustainability, 6226BEUG-Research Project The programme adheres to the University Academic Framework with 360 credits needed to achieve the BSc (Hons) award in Building Services Engineering Project Management. Students who do not attain 360 credits may be eligible for alternative exit awards in accordance with the Academic Framework.

Apprentices all need to complete mandatory training in Safeguarding, British Values and Prevent before they can undertake the End Point Assessment. Generic, mandatory online training programmes will offered to apprentices and this may be supplemented by additional training that is specific to the programme.

Programme Structure - 360 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] 5201BEUG Procurement and Contracts Approved 2022.01 - 20 credit points	
[MODULE] 5204BEUG Collaborative Interdisciplinary Project 2 Approved 2022.02 - 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] 5223BEUG Building Engineering Research Methods Approved 2022.01 - 10 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] 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] 6227BEUG	Business Management Approved 2022.02 - 20 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 part-time course is designed specifically for students in employment in the Building Services industry. The modules and assessments have been carefully planned to mimic real projects that the student would encounter in the workplace.

## Entry Requirements

Type	Description
A levels	104 points: minimum two A2 levels
NVQ	HNC/HND (Non-cognate) Level 4 Entry: Pass HNC (Cognate) Level 4 Entry: Pass HNC (Cognate) Level 5 Entry: Pass HND (Cognate) Level 5 Entry: Pass HND (Cognate) Level 6 Entry: Pass
Alternative qualifications considered	Foundation degree from LJMU Partner College Level 6 entry: Foundation Degree in Building Services Engineering (commercial route) from a LJMU partner college with a mean award mark of at least 40%. Foundation degree (cognate) from other institutions Level 5 entry: Foundation Degree in Building Services Engineering or other related subject discipline from other institutions with a mean award mark of at least 40%.
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.
International Baccalaureate	Level 4: 104 UCAS points
BTECs	Level 4: 104 UCAS points



## Extra Entry Requirements